

**The social life of a flood.
Experiences of medium and small rice growers in the face of the Caregato flood,
Ayapel, Colombia.**

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The Social life of the flood: Experiences of medium and small rice growers in the face of the Caregato flood.

This research paper analyzes the social life of the Caregato flood that took place in the municipality of Ayapel, municipality of Córdoba, Subregion of La Mojana, Colombia, in the year 2021. To do this, I will focus on how medium and small rice farmers in this municipality experienced, conceptualized and contested this flood. In order to understand the experiences of rice farmers, I will describe the processes of conceptualization and materialization of floods in Ayapel. I will explain how flood waters have been used to create boundaries between water and land and promote the expansion of the agricultural frontier. I will describe the ecological relationships that occur on this frontier and the human and non-human actors that have a presence on it. I will show the flood event, and analyze how the disastrous waters contest, challenge and rapidly change the boundaries constructed between river water and arable land, while altering the agrarian dynamics of small and medium rice farmers in the region. I will expose how rice farmers respond to the socioeconomic, political and ecological challenges provoked by the Caregato flood. By way of conclusion, and through the lens of political ecology, I propose some key elements for understanding floods in development policies and interventions.

Relevance to development studies

This research paper joins the field of water studies and political ecology that interpellated the divide between society and nature. Broadly, it builds on efforts that have been made to understand the complex relationships between human and non-human nature, culture and power. For several years, politicians, engineers and farmers have carried out processes of conceptualization and materialization about waters around the world. In the Mojana Subregion (Colombia), these processes have promoted the creation of boundaries between water and land and the expansion of an agrarian frontier. Hence, the waters of rivers, streams and marshes have been shaped and contained with the objective of guaranteeing agrarian prosperity and the development of the region, while also shaping ecological, class and labor relations in this area. But floodwaters and climate crisis are actors that have challenged this containment and have played a pivotal role in the rapid and unexpected shifts in the boundaries between water and arable land in Ayapel. The analysis I conduct throughout this paper recognizes and contributes to the understanding of how the work, livelihoods and lives of small-scale rice farmers in this municipality are informed by non-human actors who overstep and contest resource boundaries and the boundaries between arable land and water. Hence, any initiative or program designed to address agrarian scenarios affected by severe flooding must fairly take into account the human and non-human, political and ecological aspects and contestations present in this region.

Keywords

Agrarian frontiers, social life of flooding, floods, environmental disasters, embankments, small rice farmers, water.

Introducción

1.1 What is this research paper about?



Photograph of the Ciénaga of Ayapel. Taken during field work.

On the afternoon of July 22, I walked to the Ayapel Rice Mill located on the shores of the Ciénaga of the same name. While waiting for the mill owner, I sat and watched the rice workers carrying bundles of rice back and forth. In the bundles, they were carrying dry, but still unprocessed rice. They were carrying them from a warehouse where the drying process was done, to another warehouse where the machines that selected the different types of rice were located, and packaged it for distribution to different markets in the region. When Aníbal, the owner of the mill, an adult man who knew the details of rice cultivation and production, arrived, we walked together to the swamp to board a canoe with a motor and a couple of chairs that was waiting to take us to one of the farms where the rice was cultivated. I was excited to tour the Ayapel swamp by boat because many farmers had told me how wonderful and diverse this body of water was. Also, I wanted to meet the crops and rice farmers and understand how the flood water had affected them. A couple of days earlier, I had had the opportunity to interview Anibal who had recovered and repaired that rice mill after a flood that, years before, almost washed it away. As the boat went into the swamp, I watched the water, the river houses, and some of the fishermen as I asked Aníbal about the Caregato flood.

Aníbal had already told me that on August 27, 2021, the waters of the Cauca River broke the embankment located in the area known as Caregato on the left bank of this river, but as we sailed through the swamp, he emphasized to me that it was not just about Caregato, but about the more complex history of hydro-social relations in Ayapel. Relationships that involved water, wetlands, rice, drowning, flooding, stagnant water, embankments, labor, and political disputes in the La Mojana region. In one of the conversations with Aníbal, he told me: "Caregato is a tragedy sustained over time. It is a very big tragedy because here in Ayapel many of us depend on agriculture, and the best and most fertile lands are the ones that are flooded...The most practical solution for now is to build the Caregato embankment again, but for that you need political will...Because if not, the waters of the Cauca rise and carry everything away".

This research stems from my concern and curiosity to understand the hydro-social relations of small and medium rice farmers in the Sub Region of La Mojana, Colombia. Some years ago, I had the opportunity to carry out field work in one of the municipalities of La Mojana. My objective at that time was to accompany a work team of one of the Colombian government entities in charge of land conflicts at the national level. Although I thought that the land was going to be the guiding thread of our journey, it was the water flows that set the pace of our inquiries. Together with the team, we sought to clarify and define the land ownership of small farmers in the region. However, this activity was difficult because according to the testimonies of the peasants, in the Mojana, the land changes and depends on water all the time. The conversations I had during that field season led me to want to inquire about how the peasants' productive relationships with land, water and labor shaped or were shaped by a broader political ecology of the relationships between nature and society.

As already mentioned, the municipality of Ayapel, department of Córdoba, is part of a sub-region known as La Mojana, located in the northwestern part of Colombia. The natural and cultural landscapes of this place are crossed by numerous bodies of water that include canals, streams, creeks, marshes, swamps, swamps, and the Cauca and San Jorge Rivers that are responsible for forming the floodplains of Ayapel (Humboldt Institute, 2021). La Mojana has been conceptualized as an amphibious landscape (Fals Borda, 1979) not only because of the particularity of being a space fed by multiple and diverse bodies of water, but also because of the ways of life that a human culture is built in a territory that is periodically flooded, caused by rainy seasons and droughts that occur throughout the year in this region (Fals Borda, 1979). The concept of amphibian peoples, in addition to describing how the farmers who inhabit these landscapes have traditionally obtained their livelihoods by adapting to the constant transition between land and water, emphasizes how human and non-human nature are intimately intertwined. The economy and political ecology of amphibian farmers are shaped by the forms and flows of wet land and water, and also by how humans have sought to intervene in these forms and flows to secure arable land. The difficulty in establishing property boundaries and the particularities of the amphibian communities that I identified the first time I visited La Mojana, made me interested in understanding the relationship of small and medium farmers who cultivate rice in the floodplains of the municipality of Ayapel. Although at the beginning my fieldwork for this research paper was focused on knowing how to delimit the cultivable lands that emerge from the water in the dry seasons, it was not until the first days of my fieldwork in Ayapel (during the month of July 2023), that the narrative of the floods and disastrous waters that have affected the region in recent years emerged and took hold. As I talked with rice farmers and public officials my questions about marshland ownership faded away to give way to the Caregato flood story.

The boat trip we took with Aníbal through the swamp lasted almost an hour until we arrived at the farm to see the rice fields. As we sailed, Aníbal showed me some of the communities that lived on the banks of the swamp and that had been affected by the Caregato flood (when the water of the Cauca River overflows, it reaches the Ayapel swamp). He also showed me the tambos, elevated constructions made of wood where some farmers and fishermen spend long periods of time, either to fish or to take shelter from the flood and the stagnant water. When we arrived at the farm, Aníbal was the first to go to check the rice crops, I stayed a while talking with some rice growers and some farm workers. Among the workers, I met Yonely, a young woman who had lived all her life in the Mojana region. She lived with her daughters, and her partner, a rice farmer. Yonely told me that, in the early morning of August 27, 2021, while her daughters were sleeping, her distressed partner woke her up to tell her that the Cauca River had overflowed its banks. Yonely got up from her bed and realized that murky, brown water, with the smell of dead animals, was all over the room and was rushing into her bedroom until it reached her daughters' beds and mattresses. Yonely, her partner and her daughters got up and quickly picked up the mattresses, clothes and chairs. She explained to me that that night they could not sleep anymore, and the next day everything was destroyed, the beds, the pots, the clothes, the crops, and even many animals had died. For her, the flood had been a tragedy. With the little they had managed to save, Yonely and her family built some drums and survived by fishing for several months. The house in which the family lived was submerged under a mixture of water, mud, sediment and plant debris such as sticks and leaves. According to Yonely, this was not the first time that the Cauca River overflowed its banks. On the contrary, several neighbors in the community were accustomed to filling sacks with sand to put on the banks of the swamp in an attempt to fight the water and contain it. But the flood water in Caregato was very strong and for a long time they could not go back to farming.

This research paper seeks to examine how medium and small rice farmers in the municipality of Ayapel experienced, conceptualized and contested the Caregato flood. As the testimonies of the rice farmers showed me that this flood was not an isolated event of a couple of days, but rather part of the history of socio-hydric events that have occurred in the Mojana region, involving different human and non-human actors, I decided to explore the social life of the Caregato flood. That is, on the one hand, I wanted to find out what ideas have been constructed about the water surpluses of the Cauca River and how and why these surpluses have become disasters for the rice farmers of Ayapel. On the other hand, I wanted to explore what happened to these ideas and how they have materialized in the daily life of the farmers. Throughout this paper, I will analyze what were the social, political and economic conditions through which the ideas of the Caregato flood have circulated and materialized. First, I will focus my attention on understanding how the conceptual framework that establishes a division between nature and society promoted the domestication of nature to build and expand agrarian frontiers (Li, 2014; Tsing, 2003; Ogden, 2011). Next, I will draw on water studies to show how interventions on water, which drove the division between water and land, produced ontological and material conflicts that challenged that division (Cortesi, 2021; Camargo, 2023; Cons, 2017; daCunha, 2018; McPhee, 1989). Studies on the relationship between nature and society, agrarian frontiers and water, will help me to understand and historically, socially, economically and ecologically situate the construction of embankments in Colombia, for example, the Caregato embankment. Above all, they will help me to unpack how the productive relations of the rice farmers in Ayapel shape and are shaped by the hydro-social relations of this municipality. To conclude, I will describe how the Caregato flood became a scenario of dispute in which part of the rice farmers demanded the reconstruction of the Caregato embankment by the Colombian government, while the current government is betting on a new form of water management in which the Cauca River should not be contained by an embankment.

1.2 The social life of the flood: ideas and materialization of water.

In his book "The Social Life of Things. A Cultural Perspective on Commodities," anthropologist Arjun Appadurai explores the social, cultural, and economic conditions in which commodities circulate. Appadurai argues that commodities are not simply objects of economic exchange, but are also deeply embodied in social and cultural systems, and their meaning depends precisely on these systems. This means that, depending on one context or another, commodities serve as elements for constructing different social relations. For Appadurai, the meaning of things is attributed and conferred by human transactions and motivations (Appadurai, 1981). In the same sense, the author points out that the production of goods is not only a material process, but also a cultural and cognitive process. This means that commodities are not produced and exist only in a material form, commodities must be culturally marked and identified as a particular kind of thing. According to Appadurai's arguments, a thing can be conceived of as a commodity at one point in time, but not at another. The same thing can be seen simultaneously as a commodity by one person and as something else by another (Appadurai, 1981).

Appadurai's arguments about how commodities are ideas and materiality that acquire specific meanings as they transit through social, cultural, economic and political dimensions have been embraced and used by several water scholars. In his article River - Basin planning and management: The Social Life of a Concept, François Molle explains how the concept of "river - basin" is political and ideological, and is created with the aim of controlling, managing, administering and operationalizing water resources. This concept is changing and is mobilized in multiple ways in different contexts. Throughout his article, Molle recounts the evolution of this concept and points out how it has sometimes been co-opted or mobilized by different social groups to legitimize their socio-economic and political agendas. Molle emphasizes that this concept has been controversial because it has been presented as a "natural" unit of water and environmental planning. Hence, the river basin became a political scenario mediated by tensions and multiple interests. Molle's study of the river basin is not of a technical nature, but, similar to Appadurai's exercise on the social life of commodities, it is an analysis that evidences the social and political nature of this concept and warns that it has been the object of various actors seeking to rearrange water power relations. In this way, the ideas and physical elements that constituted the river basins were used by the most powerful countries to try to tie up and order the waters (Molle, 2009).

Picking up on the ideas of Appadurai and Molle, Luisa Cortesi, in the introductory section of the book *Split Water*, focuses her interest on the idea of "water conflicts". Cortesi points out that, in the standard conception of this idea, two groups fight over a scarce resource. Cortesi first asks what are the consequences of this idea, and then questions the way in which we express the world, and how this form contributes to our knowledge and interpretation of it. Throughout his article, and based on Plato's arguments, Cortesi explains that the social life of an idea is constituted by substance and form. This means that the social life of the "conflict over water" rests on how it is materialized, how it is put into practice, how and among whom, and in what spheres it is communicated. Continuing his argument, Cortesi points out that the idea of water conflict has been used and mobilized to pursue a set of interests and to justify actions, decisions or changes behind that pursuit. According to Cortesi, the idea of conflict over water has a life of its own, engenders consequences for conflict, is instrumentalized to promote or justify specific interests, intersects, legitimizes or interpellates environmental, ecological or technological relations. For Cortesi, the idea of conflict over water creates values, senses of place, feelings of belonging, commonalities and differences, and all these are factors that influence conflict. This idea is also interpreted, instrumentalized and sometimes even serves to maintain the status quo or challenge it (Cortesi et al, 2021). Cortesi also explains that, the idea of conflict over water generates a fundamental role in how we understand nature and how some ideologies are solidified, for example, those that consider the environment as a set of resources.

In her book "A Future History of Water", Andrea Ballestero carries out an exercise similar to that of the authors I have just mentioned. Ballestero presents water as a social fact, an element with a social, political, economic and affective life. For Ballestero, a substance with a social life is not simply given in the world. On the contrary, it needs to be constituted or to be in the world through processes of abstraction and materialization. According to Ballestero, on the one hand, the process of abstraction can take the form of ideas or concepts, something that allows us to explain what water is. On the other hand, the process of materialization allows those ideas or concepts to become a reality, a reality that can be perceived through the senses. With these two processes in mind, Andrea Ballestero focuses on how water has been turned into a human right and a commodity. To understand how water became a commodity and a human right, Ballestero focuses on four "technical legal apparatuses" namely: the formula, the index, the list and the pact. Through these four devices, the author explains how water exists in the world and what its future may look like. In this research I want to understand the social life of the Caregato flood. For this, I will take as a basis the analytical exercises carried out by the previous authors and I will try to understand the ideas and material forms that accompany and define this flood. I saw in my fieldwork and literature review on this topic the opportunity to unpack this event and situate it in specific social, cultural, economic and political dimensions. Like the authors I have just presented, I consider that the disastrous waters of Caregato do not stand alone in a vacuum, but on the contrary are constituted by processes of abstraction and materialization involving rice farmers, politicians, engineers, and also non-human actors such as the Cauca River, the climate crisis, and water itself. This research paper is a window into how the medium and small rice farmers of Ayapel experienced, conceptualized, and contested the Caregato flood.

Research objectives

1. To describe how, during the 20th century to the present, practices and discourses were promoted in the region of La Mojana to construct limits and boundaries between water and land.
2. To identify how flood control in La Mojana during the 20th century promoted the expansion of the agricultural frontier.
3. To engage in conversations with medium and small rice farmers in Ayapel to identify their ideas about flooding, and how they materialized them.
4. Identify how the Caregato flood became a scene of dispute between the medium and small rice growers of the municipality of Ayapel and the current Colombian government.
5. To critically reflect on the ideas and material forms of separating land and water in Ayapel.

Research question.

How did the medium and small rice farmers of Ayapel conceptualize, experience and contest the Caregato flood?

Sub-questions

1. How was the flood mediated by the political, social, ecological and environmental relations of the region?
2. Who are the rice farmers and what was their relationship to water before and after the flood?
3. What were the responses of rice farmers and the government to the flood, and how were they articulated or contested?

Methodology, methods, ethics and positionality.

In conducting this research, I decided to use a qualitative methodology based on the development of Critic walking research methods, and semi-structured interviews (Springgay & Truman, 2018). The combination of these two methodologies allowed me to collect significant information about the daily practices and water relations between medium and small rice farmers, arable land, disastrous flood water, rainwater, standing water and embankments in Ayapel.

Walking critic research is a methodology with a feminist and decolonial approach that highlights how places are intertwined with the social, material, cultural, and political dimensions of diverse human bodies, experiences, and communities (Springgay & Truman, 2018). This methodology distances itself from understanding places as static, static backdrops, devoid of or separate from the social and cultural dimensions of life (Springgay & Truman, 2018). Rather, it provides an opportunity to situate places as spaces situated in contexts of colonialism and environmental degradation (Springgay & Truman, 2018). According to Springgay and Truman, these concepts are key as they pay attention to the materiality of non-human beings in the spaces in which research is conducted. In addition to this, the walking methodology recognizes the ways in which "lived experiences, perception, and meaning making are constructed through spatial practices and positionality" (Springgay & Truman, 2018). Springgay and Truman point out that the walking methodology places the researcher in tune with place, the connection of body, environment, and sensory is stimulated. Walking then becomes a "way of inhabiting place through experiencing and moving in that space" (Springgay & Truman, 2018). Having the experience of being in the place under investigation also allows for attention to the rhythm and flows of everyday life in the landscape (Springgay & Truman, 2018). Another important aspect of the walking methodologies, is that they privilege the categories of land and geos. On the one hand, this allows to explore about more than human actors to be recognized in the investigations. On the other, understanding that the recognition of non-human actors is a bet on decolonization processes that insist on a more ethical relationship with land, water, vegetation, etc. (Springgay & Truman, 2018). Walking critic research focuses on relevant (and sometimes neglected by other methodologies) aspects such as place, sensory inquiry, and rhythm.

The critical walks were carried out over a period of 3 weeks in the municipality of Ayapel. I visited some of the rice fields, the Ayapel swamp, and some of the areas that were affected by the flooding of Caregato. All the walks were accompanied by small and medium rice farmers, social leaders of the municipality, and fishermen. While walking with these people, I held informal and spontaneous conversations with them, in which I inquired and observed their daily practices in the rice fields, in the swamp, and in the water that was still stagnant in some of their farms. In total I made 10 walks in the municipality of Ayapel. The information from these walks was recorded in my field diary. The walks I took with these people were fundamental to recognize the ways in which they understood, conceptualized and experienced their relationship with the rainwater that irrigates their crops, with the water from the Cauca River and the Ciénaga de Ayapel that makes the arable land more fertile, with the stagnant water that remains suspended on the farms, with the time spent

waiting while the rice germinates, and with the embankments they build on the riverbanks. The walks not only allowed me to get to know this landscape from the peasants' point of view, but also to understand that the arable land of Ayapel is made up of human and non-human actors who have encounters, but also disagreements in the territory.

In addition to the walks, I conducted 21 semi-structured interviews with medium and small-scale rice farmers, community leaders, fishermen and 1 public official. The interviews were key to deepen my understanding of the history of water and agrarian relations in this region, and how these were shaped by discourses of development, agrarian prosperity and water control through the construction of dams and embankments. The interviews also allowed me to understand that the everyday practices of the rice farmers are informed and embodied by relations between other more-than-human actors such as climate change, overflowing water, sediment, the boundaries between land and water, and also by human actors such as local and national politicians. Likewise, the elaboration of semi-structured interviews led to the emergence in the narrative of some of the farmers of the story of a political alliance called "Pacto por la Mojana", which demanded from the national government the reconstruction of the Caregato embankment as the most appropriate solution so that the rice farmers would not be affected by the flooding.

In order to identify the 21 people, I interviewed, I was guided and accompanied by Johnny de la Ossa. Johnny is an adult man, historian and community leader from Ayapel. Johnny's role was fundamental in several ways. First, he was the one who facilitated my identification and access to the community of farmers, fishermen and public officials of Ayapel. Second, walking and riding on his motorbike to reach the homes of the interviewees served as a space in which he told me, through multiple and rich personal anecdotes, the political, social and economic context of the municipality of Ayapel. Third, Johnny was a translator. Although I conducted the interviews in Spanish, many of the technical words used in the farming practices were unfamiliar to me, and it was he who helped me understand them. Finally, part of the trust that emerged with the interviewees was mediated by Johnny's role, as without him it would have been difficult to delve deeper into the interviews and the life experiences of many of the interviewees (Annex 1).

Both the critical walk methodology and the semi-structured interviews allowed me to understand more comprehensively and fairly the relationships between rice farmers and the waters of the region. They also served as short spaces in which they reflected on possible solutions for dealing with floods in a context of environmental crisis.

2. Setting up the Research Paper: Conceptual and Theoretical Framework.

In the introductory part of this paper, I outlined some elements of social theory to contextualize the reader about the analytical exercise I want to undertake in this Research Paper. I presented some authors who show the relevance of understanding ideas and material forms as social facts that do not occur in a vacuum, but within complex socio-economic and political relations. In this chapter, I will continue with a theoretical and conceptual journey from political ecology, feminist political ecology and agrarian studies to analyze the information gathered during my fieldwork. I will discuss the concepts of agrarian frontier and entangled landscapes, which will be the basis for the development of the following chapters. I will also introduce some concepts from amphibian anthropology and water studies.



Photographs of the Ciénaga de Ayapel. Taken during field work.

2.1 Questioning the opposition between man and nature

Paul Robbins in his book "Political Ecology: a critical introduction" presents an image of wild wildebeest migrating across the Mara River in Kenya. The image is accompanied by a sentence explaining that the migration of these animals takes place in a fully humanized and political environment. Robbins asks us to look at this image broadly. Not to focus solely on the loss of habitat and the decline of wildlife as the consequence of the communities living around this river, but rather to understand that the migration of wild wildebeest has everything to do with the daily lives of people living in the countries of the developed world. Kenya's investment in and export of cereals to multiple countries around the world has led to intensive cultivation of crops that threaten the wildebeest ecosystem. As Kenya becomes increasingly linked to global markets and pressure on local producers increases, the loss of wildebeest habitat is accelerating. Through the description of this scene, Robbins introduces us to the field of political ecology, warning us that it is a field that seeks to unravel the political forces at work in accessing, managing and transforming the environment. Robbins also points out that it is essential to change the image of a world in which humans and non-humans are disconnected, arguing that this is "a fiction that remains part of our modern reasoning and is as difficult to unimagine as imagining a world without patriarchy and social classes" (Robbins, 2012).

To continue this argument, Robbins warns that political ecology is an analytical exercise that allows us to situate an event in broad economic and social systems, rather than just framing them in proximate and local forces. Political ecology, the author continues, is a field of critical enquiry that is based on the assumption that "any tug on the threads of the global web of human-environment linkages reverberates throughout the system" (Robbins, 2012). In the same vein, the author asserts that political ecology allows us to critically reflect on

approaches to environmental management. According to Robbins, these approaches ensure that efficient solutions, determined in optimal economic terms, can create win-win outcomes in which economic growth or development can occur alongside environmental conservation. However, Robbins criticizes this idea by arguing that the costs and benefits associated with environmental changes are unevenly distributed among the actors involved, which inevitably reinforces or reduces existing social and economic inequalities.

In a general way, Robbins notes that political ecology attempts to explain the state and change of environmental systems by explicitly emphasizing power relations. In short, says the author, political ecology is a field that emphasizes that not only are ecological systems political, but that our own ideas about them are bounded and driven by political and economic processes (Robbins, 2012).

Similar to Robbins, Val Plumwood in her book "Feminism and the Mastery of Nature" reflects on how Western culture has treated the human/nature relationship as a dualism in which human identity is outside of nature. According to the author, this logic of dualism has, on the one hand, constructed conceptual frameworks that produce categories of environmental oppression, and on the other, has generated numerous environmental crises. The conceptual framework of human/nature dualism has promoted the domination of nature by human reason. This framework has also defined nature as passive, devoid of agency, as an environment or an almost invisible background, which only becomes meaningful when tamed through reason and white male culture and expertise (Plumwood, 2003).

Plumwood teaches us that in this human/nature duality, nature is seen as terra nullis, as a resource empty of its own purposes or meanings and therefore available to be annexed and shaped by the purposes of those associated with reason. For Plumwood it is essential to reconceptualize nature and understand it with agency and intentionality, and to stop associating reason with superiority and nature with inferiority.

I turned to the analyses presented by Robbins and Plumwood to understand how the social life of the Caregato flood was not an isolated event, but is embedded in the history of political, economic, social and hydrological relations in the La Mojana region. The arguments of these two authors are the starting point for understanding how conceptual and material divisions between man and nature have given way to multiple interventions on water bodies in Ayapel and the Mojana region.

2.2 Agrarian Frontiers

The arguments provided by Robbins and Plumwood open the way to other analyses that illuminate the understanding of the social life of the Caregato flood. As I have already mentioned, dual human/nature thinking materialized in the Mojana region with the proliferation of mechanisms and technologies that sought to dominate water by controlling and intervening in streams, marshes and rivers (García & Marin, n.d.). However, these processes of water control and management in the Mojana did not happen in isolation, but on the contrary responded to the agrarian and economic expansion projects that took place during the twentieth century in Colombia (Camargo, 2014).

Tania Murray Li in her book "Land's End: Capitalist Relations on an Indigenous Frontier" tells the story of the indigenous Luaje community in Indonesia. Li explains in detail how capitalist relations arose here when the indigenous people living there privatized their common land for cocoa plantations and the expansion of the agricultural frontier (Li, 2014). Within his book, Li describes the indigenous people's attempt to join the dynamics of progress promised in modernization narratives, only to find the devastating effects of capitalist relations soon emerging among them (Li, 2014). In the ethnography presented by Li, the indigenous Luaje are shaped by, but also shape, ideas about the agrarian prosperity of cocoa cultivation. For Li, the expansion of the agrarian frontier has several meanings: "the change of land use, the end of a customary system of land sharing, and the end of a primary forest that had served as the indigenous people's land frontier, the place where they could expand when opportunity or need arose (Li, 2014). Overall, Li shows how ideas of progress and agrarian prosperity modified the socio-economic and ecological relations of a community, without these modifications allowing access to livelihoods for all members of the community.

Similar to Li, Ana Tsing throughout her book "Natural Resources and Capitalist Frontiers" argues that, during the 20th century, globally, new resource frontiers were created. According to Tsing, frontiers were born where entrepreneurs and armies could disengage nature from its previous ecologies, turning natural resources into raw materials for business (Tsing, 2003). These new resource frontiers appeared as the discovery of global supplies (forests, seas, mountainous areas). In the new resource frontiers, ecological dynamics and livelihoods were replaced by the cultural apparatus of capitalist expansion (Tsing, 2003). The author points out that borders are not only physical boundaries, but also geographical and temporal projects and experiences in which ecologies and livelihoods are taken away and turned into resources available for the world's industries (Tsing, 2003). In frontier spaces and projects, human subjects and animal objects are fabricated to serve the interests of capitalist frameworks. In the same vein, Tsing argues that most descriptions of resource frontiers take the existence of these resources for granted, and see them as a landscape without agency. In contrast, the author points out that landscapes should be understood as living actors with agency. Overall, Tsing emphasizes that frontiers are projects that travel and are transported globally, but require localization to come alive (Tsing, 2003).

The reflections elaborated by Li and Tsing on boundaries as spaces and practices that have served to think and materialize ideas about nature as something that can be taken over and intervened by humans, rather than as actors with agency and assets, connect with the arguments developed by Laura Ogden, in her book *Swamplife*. Throughout her ethnography, Ogden tells the story of a wetland complex in South Florida in the United States, the Everglades, inhabited by different human and non-human actors (Ogden, 2011). Ogden describes the story of a community of poor, white men who articulate alligator hunting with some agricultural activities, and shows the complex relationships between the human and non-human nature of a place that was thought to be devoid of life (Ogden, 2011). Ogden draws on the category of "rhizomatic thinking"¹ to explain that it is the relationship between the human and the non-human, the material and the semiotic that constitutes the landscape of the Everglades. In this ethnography, the author also develops a reflection on companion species² to draw attention to the different power relations that exist in the Everglades assemblage. The author narrates how, around the middle of the 19th century, in South Florida, a process of expansion of the agricultural frontier took place, based on the draining of wetlands and the displacement of poor men who hunted crocodiles. Wetlands were seen as bodies of water that only hindered the nation's progress and development, so flood control projects were implemented through the construction of levees, embankments, canals and water control structures (Ogden, 2011).

The arguments presented by Li, Tsing and Ogden are fundamental to understanding the process of agrarian expansion in the La Mojana region. The three authors show how, during the twentieth century, discourses and practices that promoted the expansion of regions and territories where crops were grown, sown and resources extracted were promoted globally. This expansion was accompanied by a series of discourses that promised economic and social prosperity while disengaging communities and non-human beings from their territories.

2.3 Ideas and infrastructures to control waters

As I tried to show in the previous section, borders are assemblages of human, non-human actors, ideas, meanings, languages, labour, policy makers, etc. Several authors have focused on understanding these assemblages in the spaces where water and land meet, overlap, collide or coexist. In this section I will show some studies that serve as examples to understand how many bodies of water have been intervened trying to separate water from land, and why this separation is unsuccessful.

Luisa Cortesi, in the introductory section "Hydrotopias and Waterland", warns that water is not a colorless, odorless, tasteless, flowing matter, passive and waiting to be shaped by human categories and practices. On the contrary, the author points out that water in many contexts is not just water, but water and land are part of the same coin. Water is precisely that which we cannot control, an example of which is the disastrous water of floods. To develop this argument, Cortesi suggests the term Waterland, through which we can understand

¹ Category taken from the works of the authors Gilles Deleuze and Felix Guattari.

² Category taken from the works of the author Donna Haraway.

that in many occasions water is not sufficiently separated from soil or land as many maps show us. Waterland allows us to understand disastrous waters or spaces where water coexists with land as ecological, ontological, semiotic, cognitive and political processes (Cortesi, 2022).

In another of his articles, "An Ontology of Water and Land in North Bihar, India", Cortesi presents a semiotic and ontological conflict that arises when water and land have been thought of as separate in the cultivated areas of North Bihar. Cortesi explains how the institutions that have sought to control floods in this area have built infrastructures that, instead of mitigating floods, have worsened them. The author pays special attention to the embankment to explain how this structure focused on separating water from land in a region where these two elements are linked in a material and cognitive way. Cortesi argues that embankments are structures produced by a way of thinking that, on the one hand, believes that rivers are only water; on the other hand, ignores local knowledge in which neither water nor land can even be named separately (Cortesi, 2021).

In their article "Floods and Society", Cortesi, co-authored with Camargo, critique some of the analytical tools that have been used to study water. Using floods as an example, the authors question the relevance of the hydro-social cycle. Cortesi and Camargo point out that the hydro-social cycle has been a useful analytical framework for understanding that water moves through social, power, economic, etc. relations. However, this framework is insufficient to explain flood water and standing water. The authors argue that the hydro-social cycle overemphasizes social relations and this obscures the ecological relationships between water and other non-human elements and processes. In addition, the authors point out that while the hydro-social cycle allows us to understand how society has manipulated water bodies through the construction of embankments and dykes for agricultural profitability, floods are precisely the proof that humans cannot always control water and that power relations cannot always contain or act upon it. To contribute to the study of floods, the authors suggest understanding that they occur in specific historical contexts, under specific conditions of infrastructure, power and economy, but it is also essential to take into account the materiality and ecology of floods, the states of water stagnation, and to understand that there are hydrological, climatic and ecological phenomena behind them (Camargo & Cortesi, 2019).

Other authors such as John McPhee, in one of the essays in his book "The Control of the Nature", address man-made interventions on rivers. McPhee focuses on the Mississippi River and analyses the processes by which a group of US Army engineers have constructed a series of dams and canals to maintain the flow of the river on a specific side and ensure that businesses and communities continue to derive resources from it (McPhee, 1989). Throughout his essay, McPhee describes how over the last hundred years, infrastructure has been built to separate the Mississippi River channel from the Atchafalaya Canal. Through the construction of an infrastructure called "Old River Control", an attempt was made to control the waters of the Atchafalaya River from flowing into the Mississippi and thus not affecting the cities that had emerged in this area. Although attempts to direct this river were initially successful, over time, they involved more and more interventions in the river (McPhee, 1989). These interventions eventually led to more intense flooding, subsidence and erosion of the land near the river, and the idea that engineering could be the solution to the Mississippi's water problems (McPhee, 1989). As a main argument, McPhee warns that, over time, the interventions made by the corps of engineers will not be successful, as in man's quest to control nature, nature will pose more and more challenges. McPhee reflects on whether such interventions in rivers should really be made, and whether they should continue to be promoted by public policy makers (McPhee, 1989).

In the same vein, authors such as Dilip da Cunha have focused on the study of human interventions on rivers. In his book "The Invention of Rivers", Da Cunha argues that the lines used on maps to divide land and water give way to the invention of rivers (da Cunha, 2018). According to the author, the lines that delimit rivers are not an attempt to identify where water separates from land, but on the contrary, they are a choice to divide them (da Cunha, 2018). Building on this idea, the author focuses on the study of the Ganges River and argues that it was constructed through the making of maps defining its boundaries. To advance his argument, Da Cunha also discusses the Mississippi River and argues that the indigenous people who lived in what is now the United States did not conceive of the Mississippi as a great river, but rather as an open space of wetness (da Cunha, 2018). Based on this idea of wet spaces or fields, Da Cunha points out that understanding a river through the boundaries that separate water and land is only one way and one choice of how to see it, which does not correspond to wetlands where water and land meet.

Jason Cons also focuses on wetlands and wetlands. In his article "Global Flooding", Cons argues that climate change and flooding have increasingly become the rule that guides the daily lives of farmers around the world. According to Cons, flooding is a strong indication that we are living in an era of climate change that will alter and rethink the way we relate to land and water. Cons warns that floods and the impossibility of being able to control them are generating crises of habitability and this suggests questions such as: what are the aspirations for life and agricultural production in a wet context exacerbated by floods and climate change? (Cons, 2017).

Similarly, Veronica Strang, in her article "Water", studies how the material control of water has been used in multiple contexts to guarantee political, economic and social power, although this control does not always lead to despotic regimes. Strang mentions that the manipulation of rivers through dams, locks, canals and reservoirs are infrastructures that materialize ideas, values and social practices in relation to water. Hence, the 20th century has been characterized by a race in the construction of different technologies to direct water to irrigated areas. Strang argues that, in today's world, marked by increasing volatility and uncertainty in water flows, the study of water becomes fundamental to understanding the ways of life and production and life of communities around rivers (Strang, 2019).

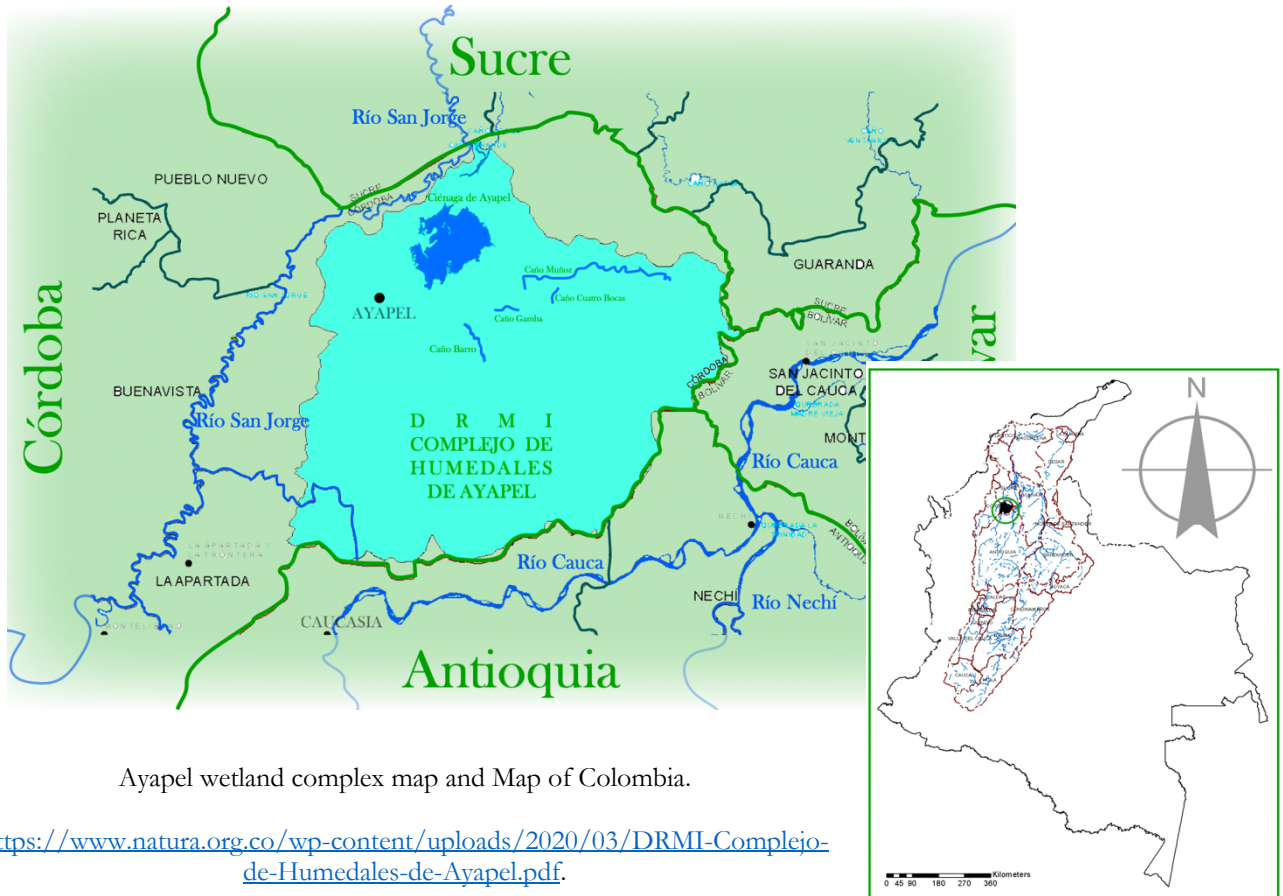
Throughout this section I wanted to show how water studies are relevant to understanding the social life of the Caregato flood. Several of the authors presented here showed how water bodies have been intervened by separating and constructing boundaries between water and land. However, these separations are not necessarily given; on the contrary, they are the product of social, economic, ontological, and semiotic relations.

3. Boundaries between water and land, and agrarian promises. The construction of embankments in the La Mojana region.

In this section I will present how these ideas of dividing water and land materialized in the La Mojana region through the construction of embankments, and how the planting of crops was promoted as a way to guarantee progress and economic development in Colombia.

In my travels through the municipality of Ayapel I always encountered water. The first night I arrived in the municipality, there was a torrential downpour that flooded some streets and left the town without electricity all night. The next day, I went with Johnny (a community leader who would accompany me throughout my fieldwork) to the town hall to try to talk to the town mayor and tell him about my research. Because there are currently several illegal armed groups in Ayapel, it was necessary to inform the mayor who I was and what I was going to investigate. Since we were unable to talk to the mayor, I asked Johnny to take me on his motorcycle to get to know the town, and we toured part of the southwestern edge of the Ayapel swamp.

The following images show two maps. The first is of the swamp complex (light blue body of water), the Ciénaga (dark blue body of water) and the urban center of the municipality of Ayapel. In the lower right margin, the Cauca River (whose waters overflowed at the point known as Caregato, on August 27, 2021) can be seen. The second is the map of Colombia that serves as a guide to contextualize the reader about the geographical position of the municipality of Ayapel.



Ayapel wetland complex map and Map of Colombia.

<https://www.natura.org.co/wp-content/uploads/2020/03/DRMI-Complejo-de-Humedales-de-Ayapel.pdf>.

That same afternoon, I met Isidro. An adult man who had held political office in Ayapel and had also been a rice farmer. Isidro was one of the few medium-sized rice farmers I was able to interview, so his point of view was of interest to me to contrast or complement the stories of the small farmers in the region. After Isidro explained to me in detail the economics of rice farming in Ayapel, I asked him about the Caregato flood and his experience of that flood.

Isidro: "Look, I am going to tell you something. Caregato is not something that happened from one day to the next, just like that. Caregato has a long history. It is a long history. Look, I am going to tell you what is going on. That area of Caregato is a very vulnerable area. Vulnerable, why? Because in that area the Cauca River has a depression, that is to say it leans towards the left bank, and the Cauca River was looking for, it looks for its course and looks where it was going and that is where it gets in, that is why they built that embankment, that is to say the Caregato embankment. That area has been very worked, that is why I tell you that it has a long history... In that area many works have been done and very mediocre, for example, they used machinery and plugged the river with earth, but that comes from years ago, they have made embankments, they have plugged, they invest money to control the river, but we are the same or worse than before".

The history of embankments in the Mojana region is a long history that dates back to the 1950s. At that time, at the international level, the development discourses led by the North American government began to be positioned. These discourses privileged the knowledge systems of the "modern West" over non-Western knowledge systems (Escobar, 2011). Development discourses considered that the social problems of third world countries should be addressed by technical and expert knowledge, which would promote the expansion of agrarian frontiers and thus advance industrialization and economic development projects (Escobar, 2011).

The ideas of development were well received by the Colombian government of the time, which through alliances with entities such as the World Bank implemented a series of diagnostic and intervention missions in the poorest regions of the Colombian territory (Camargo, 2014). One of the most outstanding missions was that of economist Lauchlin Currie, who after having diagnosed several "poverty circles" in the national territory, suggested the draining of swamps and wetlands to make the land more arable (Camargo, 2014).

In particular, the La Mojana region and the marshes, rivers and wetlands that inhabit it became one of the main targets of these development missions. In her article "In Deep Waters: a history of lost battles against water and disastrous floods in Colombia, 1950-2011", Katherin Mora explains how the inhabitants of pre-Hispanic communities in the La Mojana region lived with the temporary water surplus and used it for their benefit, for example, through canal systems, piedmont crops, or the choice of planting short-cycle plants that adapted to dry seasons (Mora, 2023). Mora points out that, during the centuries of Spanish occupation, there is no evidence of a radical rupture in the relationship of coexistence with water. In fact, says the author, until the nineteenth century, stories of struggle against water were not predominant and floods were not considered a tragedy (Mora, 2023). It was not until the mid-twentieth century that efforts to "domesticate water in the framework of projects to overcome underdevelopment" proliferated (Pacheco, 2023).

The Currie mission was one of those that precisely identified agriculture as one of the sectors with the greatest potential for development. However, "this potential was truncated by a critical factor: a considerable part of the agricultural land was covered by water or periodically flooded" (Camargo, 2014). Around 1957, the Colombian government hired the engineer Hugo Vlugter who recommended the elimination of 250,000 hectares of swamp in the Mojana (Camargo, 2023). In addition to the draining of swamps, the construction of embankments along riverbanks was proposed as the main tool for flood control, which led to a decrease in fishery resources in this region (Camargo, 2023).

Manuel, an older man, over 70 years old who has dedicated almost his entire life to fishing in the Ayapel swamp, relates what he thinks about the embankments and the contradictions he perceives in this type of construction:

Manuel: "Before here in Ayapel there was a lot of fish, fishing was very abundant. It was so abundant that we even had a cooperative, I was part of that cooperative, and we used to send fish to other cities. I don't know what has happened, it could be many things, but we have noticed that now the quality of the water is worse, more turbid, brownish. They say that it could be that the walls built next to the rivers do not allow the water to pass and fill the swamp... but also when those walls are broken, one is very damaged because the water that arrives with force, that is, not the water that should reach the swamp, but the water that arrives from the floods, devastates everything. Floods devastate everything".

The history of the construction of the embankment³ located in the Caregato area is part of these initiatives to contain water and guarantee arable land for the La Mojana region. On the left bank and parallel to the Cauca River, an embankment and a series of hydraulic infrastructures were built with the main objective of controlling floods to guarantee the habitability of this region and the cultivation of rice. When it was built, the embankment measured 54 square kilometers (approximately) and was used in the summer seasons as a road to connect some municipalities (Vargas, 2021). However, along this embankment there are several neuralgic points, i.e., points that the water of the Cauca River can break. One of the points most susceptible to these breaks is located in the region known as Caregato (between the municipalities of Nechí and San Jacinto del Cauca).

The following map shows in red the embankment just mentioned. On the left side of the river, you can see the municipality of Ayapel. Between the Cauca River and the municipality of Ayapel are the floodplains that are the most prosperous lands for rice cultivation.

³ Embankment: a wall or bank of stone or earth made to keep water back.



Figure 1. Map showing the embankment (red color) covering the point known as Caregato. Source: <https://www.elcolombiano.com/colombia/la-mojana-ora-por-un-dique-que-frene-al-río-NI14949361>

In one of the interviews, I conducted with Mrs. Flor María, one of the leaders and political activists of the Zenú indigenous community that has ancestrally inhabited this region, she can identify several fundamental aspects of the changes in the relationship with water, peasants, arable land and water in Ayapel:

Flor María: "There have always been floods in this area, and what used to be a blessing for the indigenous communities has now become a curse for the growers. Now they are talking about water governance, what I understand is that the water wants to find its own course. What has happened here is that the growers and landowners have altered these forms of water. It is man, eager to take nature, who has generated the floods, who activates the floods. Because this territory used to belong to the water, because the river sooner or later seeks its course. I believe that it is not only Caregato, here there are more urgent problems to solve. I don't think they will be able to cover or rebuild the Caregato embankment because nature is so strong that it sweeps away everything. Water looks for its space, if its space is reduced, it looks for a way out, water looks, it is always looking, and the embankments and dams have been built to separate water from its space, from its course, and that is why what is happening is happening".

So far, I have talked about how development discourses in the 1950s promoted the expansion of the agrarian frontier in the La Mojana region through the intervention of swamps, rivers and other bodies of water. I explained how the construction of the Caregato embankment and the agricultural activities of medium and small rice farmers in Ayapel were practices that were framed within these discourses.

4. Ecology of the Caregato Flood

As I have mentioned in the previous chapters, and as I tried to evidence through the arguments of different authors, floods are not just isolated events that happen in a vacuum, but they have a complex social life. In this social life, many actors participate in it. During my fieldwork, and through the narratives of medium and small rice farmers, teachers, and social leaders, I identified some of the actors involved in the Caregato flood. As I tried to show above, the Caregato flood acquired the specific form of disaster in Ayapel, because for the indigenous communities that inhabited this area before the arrival of the Spaniards, the excess of water from the Cauca River was not considered a destructive event. In this section, I will describe the cultivation practices of the medium and small rice growers of Ayapel. Also, I will present the geomorphological and hydrological conditions of the Cauca River, which show why the Cauca River overflows in the region where the Caregato embankment was built.

4.1 The Caregato Flood

In my second week in the field, I attended a cattle auction where I met Luís. Luís was one of the small rice farmers in the floodplains of Ayapel. In addition to farming, Luis had a couple of herds on his farm, sometimes milking them or trading them. I found the conversation I had with Luis very interesting because it gave me another perspective on the flood. Luis explained to me that the Caregato flood was about many things. First, there was the uncertainty in which the rice farmers lived, before the flood happened. The rumors, the fear, the visits to the Caregato embankment, the demands to the local governments, and the disbelief as to whether or not the river could breach the embankment. Then there were the hours leading up to the flood. During this period of time (which depends on the location of the farms), the people who live closest to the river make phone calls to alert all the farmers about the overflowing waters and the danger of flooding. According to Luis, this period of time is key because that is when the farmers must try to save their crops, their domestic animals and their belongings. If the crop has already germinated, it can be cut and saved before the water arrives; if it has not germinated, everything is lost. For small rice growers, the challenge is even greater because they must rent or borrow machines to be able to cut the rice, which implies more expenses than budgeted. Luis reports that when the flood comes, it is not only water that comes with the flood, but a mixture of water with mud, logs, sediments, dead animals, vegetation remains and mercury from mining activities in the region.

As we walked, Luis described the flood as follows:

"That catastrophe occurred on August 27, 2021...it was something terrible...For the rice growers of Ayapel, the flood of Caregato was the greatest tragedy. It was terrible because it ended with everything, I lost almost 22 hectares of rice and there went the savings of my whole life. I still get tears in my eyes when I talk about it, why? Because Caregato is a living tragedy. Caregato is not only the water of the Cauca River that comes one day, destroys and then leaves. No. Caregato was the uncertainty we lived in before the river overflowed, that fear in which one lives thinking that the river is going to break the embankment and take our lives, everything... Before the water reached my farm... people warn you, the people who live closest to the river, call you and warn you that the river has already broken and you have a few hours to save things. As I don't have machines, the day of the flood, I had to rent some machines to cut the rice. The problem for me and many of my neighbors was that the rice was not ready yet, many others could not get machines, or did not have the money to rent a machine to cut the rice...another aspect is that the water does not come alone, the water from the Cauca River is full of dirt, mud, earth, mud. It is a turbid water, that drags many dead fish, squirrels, monkeys, tree trunks because the water is so strong that it carries the trees and pulls them out of the ground. It is also water that brings a lot of mercury because there is a lot of gold mining here, all of which ends up in our farms and kills the land and rice crops.

4.2 Small and medium farmers: life between rice, water, and land.



Photograph taken during field work.

In this section I will describe how the lives of the medium and small rice farmers of Ayapel were built around water, land and rice. I will also show how the constant flooding in this area, but especially the flooding of Caregato, modified the boundaries of arable land while modifying the lives of these people.

"Rice farmers in Ayapel are learners. Learning to grow rice is a process that takes time, first you start by growing a little and then you can become the manager of a crop". This quote is part of a conversation with Aristobulo, an older man, almost 70 years old, who has dedicated his whole life to growing rice. Aristóbulo told me about the advantages of the mud and water of the lowlands of Ayapel, he told me that the growers in this area had learned to identify the best land for cultivation, this land, was the wet land, the one that could store more water. That the land in the lowlands was a humid land, and not just soil, was what had allowed the boom of rice cultivation in Ayapel. Aristobulo also told me that before the flood, or rather, in the periods between floods, the life of the farmers was based on planting rice, and it is an activity that allows them to earn their livelihood. Aristobulo describes the experience in front of Caregato as follows:

Aristóbulo: "I learned to farm very young. I was taught by my family, but more than teaching, I saw my family cultivating, and so, observing, I learned what rice was, the importance of water for rice cultivation, the importance of the land, the moon and many other factors that are related to cultivation. The life of a rice farmer involves living in uncertainty because you never know when the river is going to overflow and that generates anxiety and fear. But in general, one's life is to know how to observe, to observe the soil, that it is at the exact point of humidity, to observe the seeds, to observe the weeds, the pests. It is also to know how to negotiate, to negotiate to rent the machines, to rent the land... And the life of those of us who do not have land to cultivate is also to work, it is the life of the worker who is dedicated to sowing, we have to go and sow the seeds, fumigate, cut the rice, take it to the mill, and we do this cycle twice a year.... But it is different, different from how a person without land does it and another who has land and machines, although we all depend on rice and water, life is different for those who sow more or less hectares... But always the water, abundant water for the crop, but abundant water from the flood..."

As Mr. Aristóbulo mentions in his narrative, the ways in which medium and small rice farmers in Ayapel experience rice cultivation practices are different, so it is worth explaining in more detail the cultivation process and some of the differences between medium and small farmers.

To grow rice, the first step is to identify that the land is fertile. Generally, fertile land is found in the alluvial plains or lowlands of Ayapel. These plains are located between the Ayapel swamp and the left bank of the Cauca River. Ayapel's farmers grow crops in this area because the soil is humid due to a higher water table than in other areas of the municipality. Rice is an aquatic crop, say Ayapel farmers. The first harvest of the year begins in April, which is when the rainy season starts in this region. Most rice farmers in Ayapel grow "secano" rice, a type of non-mechanized rice cultivation (as they use rainwater and soil moisture to hydrate their crops). To prepare the land, farmers use machines such as tractors, rakes, polishers, and rice milling tractors. Rice seeds are purchased in bulk from stores in the region. A packet of seeds, which has 50 kilos, can cost US\$62, and to sow one hectare, 130 kilos are needed. The rice seeds are deposited in the volley machine and the machine spreads them, and then the seed is covered with a layer of soil. Rice cultivation lasts 90 to 95 days and needs constant monitoring as pests or weeds may emerge. In the lowlands, farmers harvest 1 ton per hectare, earning a total of US\$1,800 per hectare. However, renting tools, cutting the rice, transporting it to the mill, paying land rent and applying herbicides can cost up to US\$1,300. So, the final profit would be US\$500 per hectare.

In Ayapel there are approximately 400 rice growers. Of these 400, 80 can be considered medium-sized rice growers. The remaining 320 people belong to the group of small rice growers. Small rice farmers plant between 5 and 20 hectares per semester. Of the small rice farmers in Ayapel, very few own their land; most must lease a portion of land for their rice crops. The medium-sized rice farmers plant between 20 and 150 hectares, and most of them own land. Most of the rice farmers in Ayapel (both medium and small) do not have their own machinery to prepare the land and cut the germinated rice, so they must rent machines to do this work. Once the germinated rice is cut, the farmers sell it to one of the three mills in the area. The owner of the mill is in charge of drying and cleaning the rice, weighing it, classifying it, packaging it and distributing it to stores and supermarkets in Ayapel and some of the municipalities in the La Mojana region.

In the lowlands, farmers harvest 1 ton per hectare, earning a total of US\$1,800 per hectare. However, renting tools, cutting the rice, transporting it to the mill, paying land rent and applying herbicides can cost up to US\$1,300. So, the final profit would be US\$500 per hectare. As a result of the Caregato flood, about 4,500 hectares of rice were lost.

As several of the growers pointed out, after the flood everything changes. Flooding, disproportionate rainfall, and climate change have been factors that have harmed rice farmers in the La Mojana region and changed their relationship with land, water, and rice. Aristóbulo describes it as follows:

Aristóbulo: "The flood is transforming everything; I am not only talking about the Caregato flood but also about the other floods we have suffered here. In 2010, there was also a very strong flood that swept away everything. The flood affects us growers a lot because we depend on water, but we also depend on water in its right measure, that is to say, that the wet mud allows us to plant, but we depend on the embankment to contain the river waters... Not all of us are affected in the same way by the flood. I am going to tell you why. Here in Ayapel, not all of us plant the same amount of rice. Here many of us do not have land, and that is the saddest thing. Those who have land also lose their rice, but they have their land, even though it is flooded. But those of us who don't have land, who are the majority, are indebted to everyone, because to grow rice you have to borrow money from everyone... In my case, I lost 14 hectares that I had cultivated with a lot of effort. Before I cultivated more, but with time, the floods took away the crops, so I harvested and lost, and I borrowed money to sow again, and another flood came, like the one in Caregato which was a tragedy, and I lost everything... There are other people... other farmers... but let's say that those who have land cultivate more hectares, 50, 80 to 200 hectares, those people also suffer, but they suffer less. Because when you have more rice, you can also buy other animals or you can invest your money in something else, but here in Ayapel, most of us are people who cultivate less than 20 hectares and that is nothing, because of the production, of the profit, you have to pay everybody, the one who cuts, the owner of the land, the one who fumigates, the one who takes the rice to the mill... In the end those embankments are useless, they are useless because here the people in Ayapel cannot plant. It is like an illusion when they say they are going to build the embankment, if in the end the water from the river breaks it again, it is of no use to us".

It is important to mention that as a consequence of the Caregato flood, about 4,500 hectares of rice were lost, affecting both medium and small rice farmers.

In this section I showed how the medium and small rice farmers of Ayapel perceive and narrate the water surplus and the rupture of the embankments as unfortunate and catastrophic events. After the water comes crashing down on their crops, the rice is drowned and submerged under a mixture of water, mud, logs, sediments, dead animals, etc. I also described the cultivation process and the socio-economic differences between medium and small rice farmers in Ayapel.



Photographs taken during field work.

4.3 Cauca River

As I mentioned at the beginning of the document, my relationship with flood lands and water was born during several field works in which, as a Colombian government official, I had to support a team of public officials in the identification of the boundaries of the properties of peasants living in the region of La Mojana. The stories of the peasants and the observation of the hydro-social dynamics of land, water, and floodable lands led me to question my professional role in that team. Above all, they awakened my curiosity and concern about how the Colombian government could guarantee arable land for small farmers while at the same time guaranteeing that rivers and other bodies of water occupy their space to inhabit, flow, move and coexist with the land.

I encountered this concern again when I conducted my fieldwork in Ayapel. It was certainly not a new concern for some of the rice farmers in this municipality. Many of them had already reflected on whether the best way to guarantee rice cultivation was through flood control with infrastructure such as the caregato embankment. However, not all of them shared this reflection. Many of the growers argued that the national government should do everything possible to rebuild this embankment and control the waters of the river, so that the crops would prosper. Now, as I mentioned at the beginning of this section, my interest is to show the ecology of the flood. To show this ecology, I will describe the geomorphological and hydrological conditions of the Cauca River in the area where the Caregato embankment was built.

The Cauca River is the main river artery of the western region of Colombia. The Cauca has a length of 1,360 kilometers, crosses from south to north nine departments and is the socio-economic base for many of the inhabitants living around it (Instituto Humboldt, 2023). The Cauca River, in the La Mojana region, has been characterized by periods of constant and natural flooding and drainage due to its hydrological, geomorphological, and geological conditions (Vargas, 2023). These floods have been exacerbated by climatic conditions that have been associated with global warming and environmental phenomena such as La Niña (Vargas, 2023). A clear example of this was the flooding that occurred in 2010, which was caused by the collapse of the levee channel, causing significant material, economic and social damage (Vargas, 2023; Camargo, 2013).

According to several studies, the area where the Caregato embankment was built is part of the lower Cauca River basins. Large rivers, such as the Cauca River, have extensive plains in their lower basins with conditions conducive to natural flooding (Vargas, 2023). In addition to the low basins, a fundamental aspect of the geomorphology of this river, in these plains, is that the riverbed is higher or higher than one or both of its banks. Therefore, the Cauca River presents a particular geomorphological condition because in the area where the Caregato embankment was built, the active riverbed is higher than 39 meters above sea level, compared to its western banks and slopes (where the Ayapel floodplains are located), which are 20 meters above sea level. This geomorphologic condition of the Cauca River makes it highly susceptible to breaking embankments or dikes, generating large streams of water towards these lower parts (Vargas, 2023).

The following two figures show the overflow areas of the Cauca River. The first figure (figure number 2), shows in red the points where the Cauca River has broken embankments in the period between 1976 and 2021. In pink, the water flows of the river are shown when it broke the embankments in the periods 2010 to 2011. In dark blue, the bed of the Cauca River is shown, and in light blue the main bed of the Cauca River is shown.

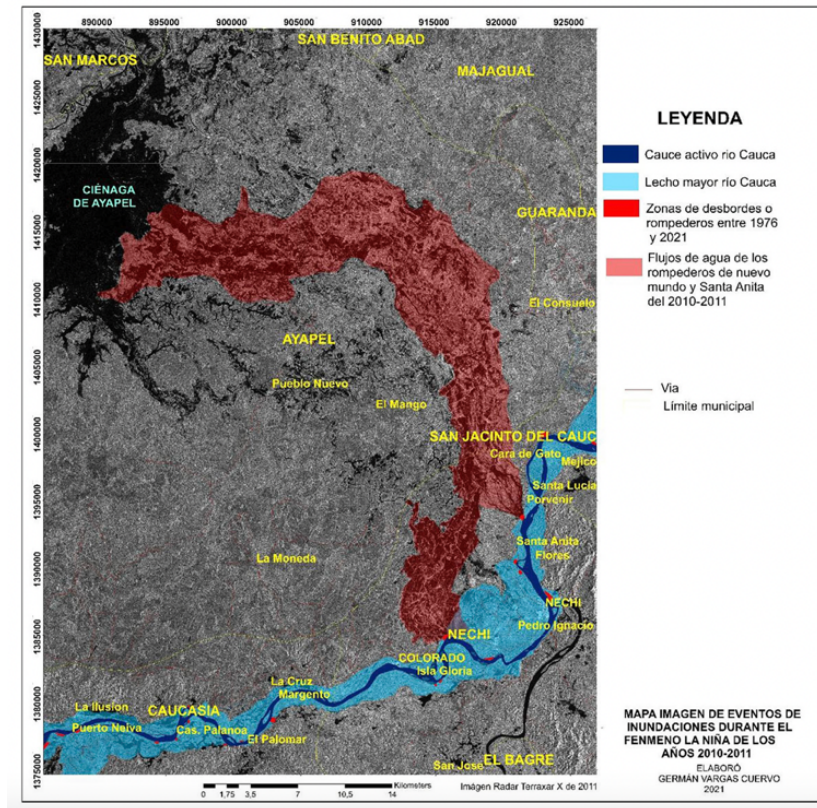


Figure number 2. Image map of floods period 2010 – 2011.
Germán Vargas Cuervo

The following figure (figure number 3) shows in red the points where the Cauca River has broken embankments in the period between 1976 and 2021. In dark blue, the Cauca River bed is shown, and in light blue The main bed of the same river is shown. In pink, the flood flow is shown during the year 2021, after the Caregato embankment rupture.

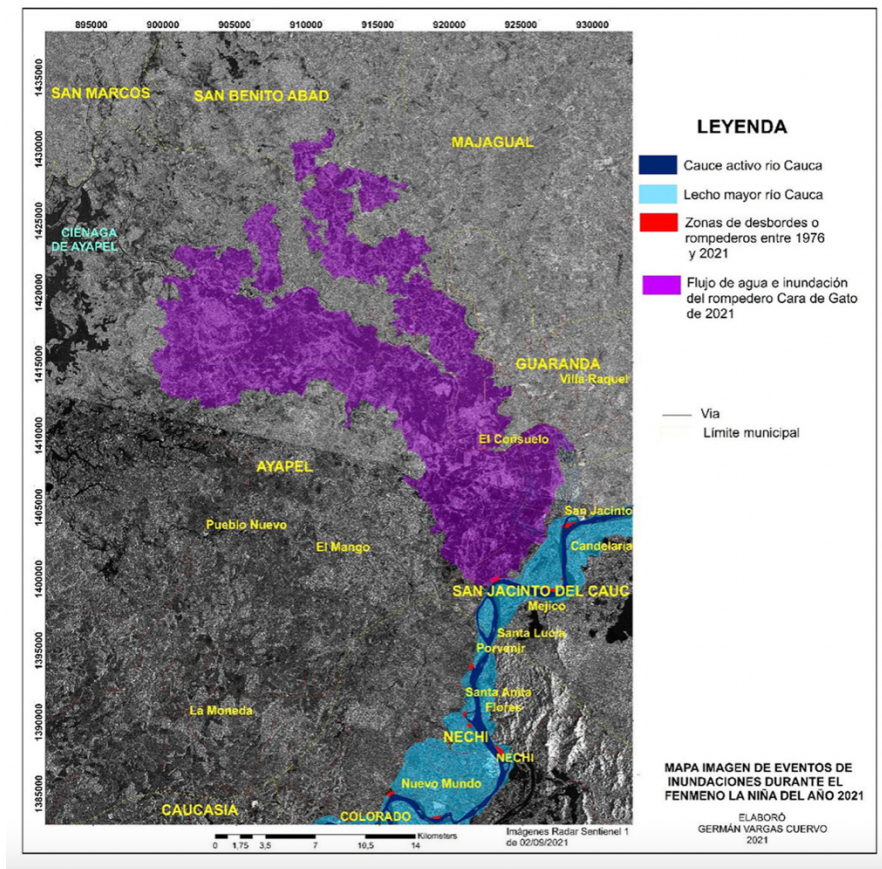


Figure number 3. Map image of floods period 2021. Germán Vargas Cuervo

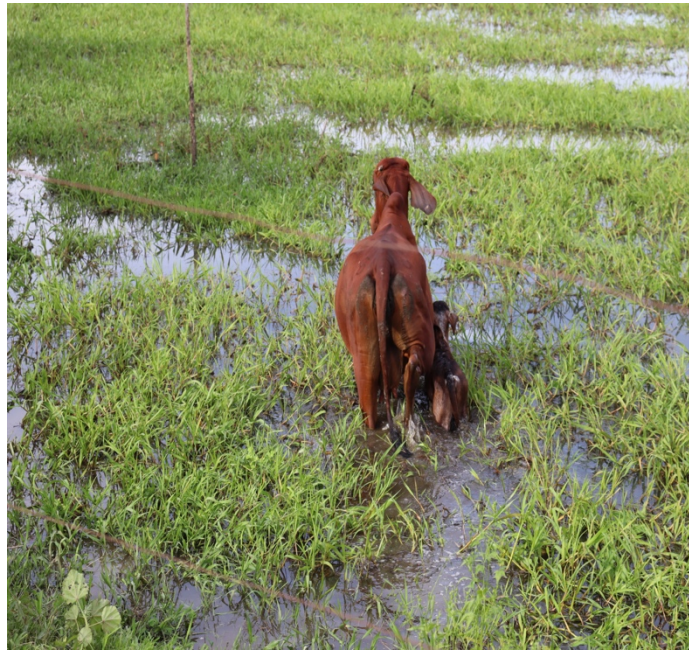
The geomorphological and hydrological conditions of the Cauca River also appeared during one of the walks I took in a field full of rice crops on the edge of the Ayapel swamp. As we walked through the crop, one of the farm workers explained to me about the water flows, the furrows in the land, and the swampy water that were part of the life of the rice farmers. For him, the water of the Cauca River was not only in the river, but also in the crop areas, he relates it in the following way:

Worker on a farm with rice crops: “those furrows that you see here in the crops are where the water runs. People believe that water comes and goes, but no, that is the way of the river. It's like that with the Cauca River, people believe that if they cover it with an embankment, with lumps of sand or earth, the water is not going to come here to the Ciénaga de Ayapel and it is not going to flood them, but no, it is like that. The river there in Caregato is higher than here in Ayapel, and that is why the water will always want to come to these areas.”

In this section, I showed how the hydrological, geomorphological and environmental conditions of the Cauca River have caused, for several years, floods and excess water in the La Mojana region. Through this explanation, I tried to contrast how before excess water became disastrous, excess water existed in this region as part of the dynamics of the river. However, as I also mentioned, some environmental phenomena (for example, the La Niña phenomenon) that have been exacerbated by climate change cause floods to be stronger and more recurrent.

5. Stagnant waters, agreements and political disputes in the flood.

In this section I will describe the scenario after the flood. For this I will show the experiences of rice farmers facing stagnant water and the political demonstrations that arose to demand that the Colombian government rebuild the Caregato embankment. In this last section, I will show how the Caregato flood became a scene of dispute between the current government of Colombia and the rice growers, because while a sector of rice growers considers that the best solution to guarantee their means of subsistence is the control of floods through embankments, the government led by President Gustavo Petro has promoted a narrative in which it is necessary to allow the Cauca River to recover its space and its channel and not intervene in it.



Photograph taken during field work.

5.1 Stagnant Waters.

In all the interviews I conducted in Ayapel, concern about stagnant water was a crucial issue. As many growers explained to me, the problem with the floods in Ayapel, and especially with the Caregato flood, is that the flood is not just a disastrous event that happens in a couple of hours and then disappears. On the contrary, floods remain for months and even years in crops, in houses, on farms, and in people's social relationships. This is how Antonio, a rice farmer, tells it that he lost all of his crops during the Caregato flood and had to be displaced from his farm to the municipal seat of the municipality of Ayapel:

Antonio: “The Caregato flood was very serious, but the most serious thing is what happens afterwards. The government believes that the water comes and takes away everything and then you go back to the farm and grow rice and that's it, as if nothing had happened. But no, that's not how it is. I'm going to tell you how my case was. You ask me, what happened after the flood? We are still in the flood. Two years have passed, but there are still many properties that are flooded. That water, that dirty water, with dead animals, water that is full of... they say it even has mercury from mining, that water is there on the farms. It is water that has been there for two years, still, stagnant. And that is very harmful, for health, but also for everything else. For two

years I have not been able to return to my farm and I have not been able to grow any rice again, nor have I been able to take my animals back. This stagnant water also damages everything, for example, it knocks down fences and damages them, although some fences remain after the flood. But the land remains bad, that flood water damages it. So, since one cannot cultivate again, that disrupts everything, families, people's children, crops, the river itself.”

Antonio's story is very similar to that of other growers whom I interviewed. After the Caregato flood in 2021, flood water has remained stagnant for almost two years on rice farmers' farms. This has not allowed them to take back their crops or return to their daily activities. It is important to mention that the stagnant waters left after the flood do not affect medium and small rice growers in the same way. Although the floods affect all farmers in Ayapel, some of the medium-sized rice farmers manage to grow crops in different sectors of the municipality, not only in the lowlands or floodplains, which gives them a greater probability of not losing all their crops. On the other hand, medium-sized rice farmers have been able to diversify their livelihoods through other activities, such as livestock raising, land rental, among others. For small rice farmers, the situation is more difficult because they depend exclusively on renting floodplain land and cultivating it. Once the flood arrives and the waters become stagnant, the small rice farmers are left without any alternative for subsistence. At first, they lose the crop, but they also lose the economic investment they made to be able to rent the land. Many pawn their belongings in purchases and sales in Ayapel to be able to get the money with which they make the initial investment in the crop, but since they do not make a profit from the rice, they do not get money to claim the belongings left in the pawn shops. Likewise, small rice growers have no other sources of income, so when the water remains stagnant, they must travel to the town to work in informal jobs, as vendors or transporting people on motorcycles.

5.2 The Pact for La Mojana and the water governance of the Colombian government.

During my fieldwork in Ayapel, I asked on several occasions if the rice farmers had consolidated any type of organization or political grouping. Some of them told me about rice growers associations that had been founded several decades ago, but that had not been maintained over time. However, in Ayapel, floods have been contexts in which rice farmers have exercised their political agency in different ways. When the waters of the Cauca River overflowed, breaking the Caregato embankment, the hydro-social relations of Ayapel were shaped differently. The flood became a scene of dispute in which a sector of medium and small rice growers spontaneously demonstrated on the country's roads. For a few days, they held blockades and demonstrations to ask local and national governments for solutions. The solutions that the rice farmers and other farmers demanded ranged from financial and in-kind aid to the reconstruction of the Caregato embankment. But these were not the only political demands that emerged from the Caregato flood. In the year 2023, The Pact for Mojana gained strength. According to the testimonies of several of the people I interviewed, The Pact for La Mojana was consolidated as a group in which businessmen, medium and small rice growers and other farmers from the La Mojana region were associated. One of the most important objectives of this pact was to pressure the Colombian government to rebuild the Caregato embankment, and in general, secure the left bank of the Cauca River with embankments that would guarantee the cultivation of rice.

Now, during the year 2021, which was the year in which the Caregato flood occurred, the Colombian government was led by President Iván Duque who responded to the demands of the rice farmers by promising the reconstruction of the Caregato embankment and allocating money public for this work. However, the reconstruction never happened. By 2022, a new government arrived in Colombia. As president, Gustavo Petro, instead of promising to rebuild the Caregato embankment, proposed a new approach to flood management and control. The Petro government has argued that the embankments that have been built on the banks of the Cauca River in the La Mojana region have not been the best tools for flood management. On the contrary, says the Petro government, continuing to build embankments in this sector is believing that confining the Cauca River is a solution, when these embankments have always failed and have condemned the families who live in this area to flooding as has happened since the 1980s (Adaptation Fund, 2023).

Following this argument, during a given statement, Gustavo Petro argued that the Caregato embankment, built during the years 2010 – 2012, was thought to be the best tool for flood control in the La Mojana region,

however, ten years Afterwards, it is evident that this tool did not work. Petro continued by pointing out that in La Mojana the distribution of land ownership is very inequitable, since the largest amount of land is in the hands of very few people. 10% of the owners own 80% of the land. That is to say, of the 450,000 hectares of land in La Mojana, 320,000 hectares belong to only 10% of the owners. According to the president, the construction of embankments increases the value of the land, but only for its owners. So, flood control could not be an excuse for landowners' land to be valued with public money. Likewise, during his speech, Petro pointed out that one of the solutions to water overflows is permanent relocations. According to the government of President Gustavo Petro, water has its space and when humans take away water's space, nature takes revenge (Petro, 2023).

For the current Colombian government, the best way to address the flooding problem is through permanent relocations. According to several speeches delivered by President Petro, there is no engineering that is capable of dominating water. Human beings, says Petro, “have to live with water. And so, here we must study the history of the region from the point of view of water as the indigenous people did before the arrival of the Spanish. Being able to live with water means, perhaps, that certain people have to live somewhere else. Because where it lives, it is the place of water” (Petro, 2023).

While the position of the current Colombian government focuses on a form of government that wants to recover the space through which the waters of the Cauca River previously flowed, the members of the Pact for La Mojana do not agree with this position. The government of President Petro is committed to a water governance in which the excess waters of the Cauca River are not perceived as a catastrophe that breaks embankments and floods the crops of small farmers, but rather that these waters are recognized as part of the of the normal flows of this river. On the contrary, for the members of the Pact for La Mojana the best way to govern water is through infrastructure that stops the river waters, establishing limits between flood waters and arable lands.

Conclusions and recommendations

- As evidenced throughout this document, the municipality of Ayapel is part of La Mojana, a region entangled between agrarian productive relations and water relations. Analyzing the Caregato flood, reconstructing its social life, was an exercise that allowed us to identify how the concepts and ideas about floods and the ways in which they are addressed account for the time and culture that generated them.

- The social life of Caregato, understood through the lenses of political ecology and water studies, showed how the management of water and the construction of boundaries between water and land were a tool for expanding agrarian borders. during the 20th century. This expansion was framed within the conceptual framework that divides and opposes society from nature, promoting the dominance of the former over the latter.

- Analyzing the historical, social, economic and political nature of the construction of embankments in Colombia was an exercise that allowed us to understand that the effectiveness of this infrastructure depends on many factors and, above all, it does not benefit everyone equally. Its effectiveness is linked to the agrarian relations of ownership and production of medium and small rice growers in Ayapel and throughout the La Mojana region.

- The social life of the Caregato flood shows us, in a general way, that attempts to control nature and understand it as something that can be totally separated from human beings are fruitless. In particular, it allows us to see that the agrarian security of medium and small rice growers cannot be subject to projects to expand the agrarian border in floodplain areas such as Ayapel, since in these areas the separation of water and land is not viable. As many of the rice farmers pointed out, the lowlands of Ayapel are fertile and productive precisely because for many years they have been flooded by the waters of the Cauca River. In such a way that it is contradictory to promote agrarian prosperity by preventing water from flowing through a place, when it is precisely this flow that allows the fertility of the land.

- My fieldwork research with small farmers, municipal authorities, and community leaders gave me firsthand insight into the complexities of rice food systems in settings shaped by drastic changes between the rainy and dry seasons—changes exacerbated by the climate crisis. Rice crops in Ayapel need to be considered as informed by Río Cauca history and hydrological and geomorphological components. These shifting elements link producers, harvesters, machine renters, people involved in food processing and distribution, authorities, and families who consume the food. Any program or initiative designed to address food insecurity scenarios stemming from severe floods must consider these complex human and natural connections.

- As part of the public policy recommendations, I suggest that small farmers, and municipal authorities face four main post-flood challenges. The first is ensuring adequate rice harvests when the boundaries between water and farmable land are changing quickly due to increased precipitation and more severe droughts, both of which are difficult to anticipate. Second, how to ensure that the capital and labor invested by small farmers are protected in case of severe floods, thereby guaranteeing a certain degree of profitability and food security for them and the region. Third, how to implement adaptation programs that take into account the specific ecological and sociocultural configurations of the region.

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Annexes

Annex 1. Interview table.

The following table shows the profile of the people with whom I spoke, interviewed and walked during my fieldwork. The last names of these people are anonymous at the request of the participants, due to conditions of political tensions and conflicts in Ayapel.

Name	Range of age	Country	Occupation	Month of interview, walking and conversations
Manuel	70 - 80	Colombia	fisherman	July 2023
Luís	50 - 60	Colombia	professor	July 2023
Luís	40 - 50	Colombia	small rice cultivator	July 2023
José	35- 35	Colombia	civil servant	July 2023
Flor Marina	50 - 60	Colombia	indigenous community leader	July 2023
Luís	50- 60	Colombia	small rice cultivator	July 2023
Yoneli	30- 40	Colombia	workers in rice fields, but not rice farmers.	July 2023
Aníbal	50- 60	Colombia	medium rice farmer	July 2023 (two interviews)
Isidro	50 - 60	Colombia	medium rice farmer	July 2023 (two interviews)
Aristobulo	50 - 60	Colombia	small rice cultivator	July 2023
Johnny	60 - 70	Colombia	historian and community leader	July 2023
Cesar	50 - 60	Colombia	small rice cultivator	July 2023
Carlos	40 - 50	Colombia	hotel owner	July 2023
Adalberto	70 - 80	Colombia	fisherman	July 2023
Elicer	50 - 60	Colombia	small rice cultivator	July 2023
Diego	40 - 50	Colombia	private foundation official	July 2023
Anonymous	40 – 50	Colombia	workers in rice fields, but not rice farmers.	July 2023
Antonio	40 - 50		small rice cultivator	July 2023

