Peace in the peaks?

Changes in water and land distribution in Colombia's southern highlands during the Post-Peace Agreement phase

Laura Betancur Alarcón

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Submitted May 14, 2019

Supervisor: Torsten Krause LUCSUS, Lund University

Abstract

Governance of environmental resources plays a key role in enhancing or hindering progress towards peace in post-conflict societies. Two years after the signing of the Peace Agreement between the Revolutionary Armed Forces of Colombia (FARC) and the government of Colombia, new dynamics on natural resource and land-use are leading to environmental harm in some regions. Highlands and *páramo (*high-elevation tropical alpine area) ecosystems, which supply 70% of the country's freshwater, are undergoing socio-environmental changes during this period. Yet, there is little understanding on how this transition occurs. I investigate the experiences of local actors in relation to the access and control of environmental resources in a once guerilla-controlled area in the village of Combia, located in the buffer zone of the Las Hermosas páramo complex in the southwest of the country. Drawing on a political ecology perspective, I develop the case study by combining ethnographic methods with a revision of local policy documents in order to describe the current socio-environmental changes. I found that the transition from the social order under FARC control to a State-regulated phase led to an interplay of new actors and new authority figures which reconfigured local land distribution and water control. In the case of Combia, this shift of power reinforces unequal access to land and water for people without land ownership, which has been the core issue in Colombia's protracted armed conflict. I discuss the uneven consequences for local actors when the State legal water concessions clash with the slow pace of rural land property rights reforms. Consequently, I explain how water institutions for highland regions can benefit from a more community-based governance approach in societies that transition towards peace.

Keywords: Colombia, highlands, peace agreement, armed conflict, water, political ecology.

Word count: 13.990

Resumen

La gobernanza de los recursos naturales juega un papel crucial en promover o limitar el avance hacia la construcción de paz después de un conflicto armado. Dos años tras la firma del Acuerdo de Paz entre las Fuerzas Armadas Revolucionarias de Colombia (FARC) y el gobierno de Colombia, nuevas dinámicas de transformación ambiental están derivando en la degradación de algunos ecosistemas. La Alta Montaña y los páramos, responsables de la regulación hídrica del 70% del agua del país, también enfrentan estos cambios. Sin embargo, hay poca evidencia científica sobre cómo se está dando esta transición. A través de un estudio cualitativo, yo investigué las variaciones en acceso y control de la tierra y el agua en un área por varias décadas controlada por las FARC. Se trata del corregimiento de Combia, en el área rural de Palmira en Valle del Cauca, que hace parte del sistema montañoso de Las Hermosas en el suroeste del país. Con una perspectiva desde la ecología política, usé métodos etnográficos y recolección de información oficial, para contextualizar los cambios experimentados por actores locales. Los hallazgos demuestran que, en la transición entre un orden social impuesto por las FARC hacia una fase donde el Estado es la autoridad, nuevos actores y regímenes legales generan una reconfiguración de distribución de la tierra y control del agua. En el caso estudiado, esta recomposición desfavorece a los actores sin títulos legales de propiedad manteniendo así el acceso inequitativo a la tierra, hecho que históricamente ha estado en el corazón de la confrontación armada en Colombia. En este contexto, discuto cómo la transición hacia la paz puede conllevar a distribuciones inequitativas del agua cuando aún otras reformas propuestas en el Acuerdo de Paz no se están materializando en el nivel local. A la luz de un debate más amplio sobre la construcción de paz y el medio ambiente, también analizo cómo la gobernanza del agua puede beneficiarse de esquemas comunitarios para reducir la conflictividad en el ámbito local.

Palabras clave: Colombia, alta montaña, sustentabilidad, Acuerdo de Paz, conflicto armado, ecología política.

Acknowledgements

Several people made this learning process possible. I am deeply thankful to the people of Combia in Palmira (Valle del Cauca, Colombia) for sharing with me in such a generous manner their memories. Special thanks to Francisco Gómez, from Fundación Ambiente Colombia, who introduced me to the village; and to Carlos Sarmiento, from International Conservation, for the insightful conversations in Colombia. Moreover, I thank the Swedish International Center for Local Democracy for funding my fieldwork.

I benefited a lot from the insights and mentoring of my advisor Torsten Krause. I appreciate his detailed, intelligent and challenging feedback in each part of this process. I also received insightful comments from Asger Mindegaard, Luciana Mascarenhas, Alice Kasznar, María Camila Gómez and Lucia Di Paola. I very much appreciate the proof-reading of Megan Richold, Sarah Batool Haider and Jens Schubert. Overall, I am especially grateful to Kathrin Hegger, for being my first reader and my steadfast supporter.

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List of Abbreviations

CINEP - Centro de Investigación y Educación Popular

CERAC - Conflict Analysis Resource Center

FARC - Revolutionary Armed Forces of Colombia

CVC - Regional Autonomous Environmental Corporation of Valle del Cauca

IAVH - Alexander von Humboldt Biological Resources Research Institute

IRR - Integral Rural Reform

FAO - Food and Agricultural Organization of the United Nations

DANE - Departamento Administrativo Nacional de Estadística

TFDP - Territorial Focused Development Plans

FDO - Fieldwork Diary Observations

LHNP - Las Hermosas National Park

LA - Local Actor

LEE - Local Environmental Expert

LEA - Local Environmental Authority

Foreword

For around four years, I had the opportunity to travel around my country (Colombia) searching for stories around biodiversity, environment and climate change. As a journalist, I have always been interested in narrating “places” as spaces where nature and people interact and recreate culture. My focus are the clashes and conflicts around these interactions. What changes for a community when a river is diverted to create a dam? What happens when a natural resource is not available anymore and livelihoods used to depend on it? Who are the new actors in a territory when an eco-tourism boom starts to be promoted by the government? Who can rule our places of living and what can we do about it?

Two years ago, I started the LUMES programme with the interest of bringing more scientific background to my work, but also to start an academic path that could benefit from my experience as a reporter. I found very exciting the linkages between those stories that I used to write and a more academic approach to understand them. That interrelation is what I wanted to pursue in the following research thesis. It is an initial academic learning that seeks to comprehend the changes in the highlands of my country after the rebel group (FARC) signed the Peace Agreement with the Colombian government in 2016. La Alta Montaña (highlands) are plural and contested territories where freshwater originates. These mountainous areas are profoundly shaped by history, peasants’ traditions and violence.

While doing this research exercise, I went back to the field not just looking for a story to publish in the front page of a newspaper, but with the time and the lenses to think about the sustainability of these territories. In the years of reporting I learned to be the external observer. In this case, as a researcher, it was not different. However, in both roles, I do believe in the possibility of establishing an honest, respectful and kind conversation with the people I interacted. I do not neglect the limitations of being the outsider, but I want to start from that difference to build a dialogue.

In the following pages, I present the outcome of that dialogue in the light of a conceptual framework which seeks to bring in the political side underlying water governance. Considering the uncertain implementation of the Peace Agreement, I want to give a voice to the local actors dealing with the changes between wartime to and a -hopefully- more peaceful situation in my country.

1. Introduction

There are multiple ways in which environment and armed conflicts are linked (Lee, 2018). Governance of natural resources plays different roles in conflicts. They can be the reasons for the armed dispute-, or maintain and finance military groups, but can also promote peace in post-conflict stages or obstruct peace efforts (Weinthal & Johnson, 2018; Bruch, Muffett, & Nichols, 2016). In the aftermath of a conflict, ensuring a more sustainable distribution and use of environmental assets can support improving social welfare and the restoration of livelihoods (Weinthal & Johnson, 2018). One of the most crucial natural resources for human well-being and local livelihoods is access to clean water for consumption and agricultural production. Without water, social benefits are hard to come by and further internal conflicts are likely (Weinthal, Troell & Nakayama, 2014).

After the signing of the peace accord between the guerrilla group Revolutionary Armed Forces of Colombia (FARC) and the government of Colombia, the rate of deforestation in Colombia has doubled in the last three years (Ideam, 2018) and disputes over the control of other natural resources, for instance land and minerals, are frequent (Ortega-Guerrero, 2018; Rojas-Robles, 2018). Although it remains uncertain as to how the post-agreement phase and the related socio-political changes are impacting Colombia's ecosystems, there is a persistent concern that new disputes lead to further environmental degradation (Sierra et al., 2017).

At the same time, there is little progress in the implementation of the Peace Agreements. The progress in the Integral Rural Reform (IRR) –which includes land distribution and water management aspects— is slow and only some legal instruments have been created, but not implemented (Cinep & Cerac, 2019; Kroc Institute, 2019). Control, access, and legal ownership of land has been a core issue in Colombia's internal armed conflict over the last six decades (FAO, 2017; McKay, 2018; Oxfam, 2017; Sánchez León, 2017; Uprimny-Yepes & Sánchez, 2010). The Peace Agreement aims to tackle victim reparation, foster more sustainable natural resource governance and rural development in the country.

Colombia's mountain highlands[1] and *páramo* ecosystems, which supply 70% of the country's water including Bogotá and other 20 mid-sized cities (Sarmiento, Osejo, Ungar & Zapata, 2017), have been

[1] I employ the term *highlands* (Alta montaña in Spanish literature) to refer to the socio-ecological systems located in the highest areas of the Andean mountain range. *Páramo* is a high-elevation tropical alpine area within the whole system of Alta Montaña (Cortés-Duque & Sarmiento, 2013).

affected and shaped by war. The large mountainous terrains provided guerrillas and military actors with the opportunity to form hideouts and occupy land (Alexander von Humboldt Research Institute [IAHV], 2016). The highlands have also been the scene of military fighting, growing of poppy crops, threatening of leaders, displacement of local populations and other violent manifestations between different armed actors (Buitrago, 2016; Ospina, 2013). The strategic geographical location of the highlands was used to place ten battalions, so-called "Batallones de Alta Montaña," from the National Army Forces to combat guerrilla structures that controlled remote mountainous areas (Ospina, 2013).

The continuous presence of armed actors, together with the issue of internal displacement and violence against communities influenced the possession and occupation of land in these mountainous regions (Duarte-Abadia & Boelens, 2016), especially in the southern part of the country as well as in the eastern mountain range[2] (Buitrago, 2016). The disputes over power between the state and armed groups determined the state of conservation, land uses, property rights, the governance and the political participation of communities in these territories for several decades (Sarmiento et al., 2017; Ungar & Osejo, 2015; Ospina, 2013, 2017; Buitrago, 2016).

Currently, there is no consolidated evidence at the national level as to how the post-agreement phase is impacting the key water-supply landscapes (C. Sarmiento, personal communication, 2018). However, it is assumed that a reconfiguration of power dynamics impacts the use, control, and appropriation of environmental resources (Sarmiento et al., 2017). Furthermore, researchers stress that the exclusion of legitimate community actors in the design of territorial planning instruments are common when national and regional authorities impose their development projects in these regions (IAVH, 2016).

In this context, there are multiple challenges for more sustainable governance of socio-ecological systems in the post-agreement phase. For instance, the emergence of new land uses, the provision of economic alternatives in former FARC controlled areas, the improvement of institutional functioning, and the enhancement of local people's participation and environmental democracy (Rodríguez Garavito, Rodríguez Franco & Durán Crane, 2017). In the case of highlands, the political transition emerges as a prominent challenge for their governance and sustainability and, at the same time, as an opportunity for peacebuilding.

[2] In particular in the area of Guanacas-Puracé-Coconucos, Nevado del Huila-Moras, y Las Hermosas páramo systems (Buitrago, 2016).

1.1 Relevance and contribution

Although highlands have been a central research interest in Colombia, relating mountain ecosystems to the armed conflict has not been a dominant research topic (Buitrago, 2016; Gallini, de la Rosa, & Abello, 2015). While fifty years ago, the scientific focus laid mainly on the description of páramos as natural systems (Cleef, 1981; Guhl, 1982). The perspective shifted only more recently to a more societal and cultural comprehension of highlands as social-ecological systems that started to be regulated by national laws as the General Environmental Law in Colombia (Ley 99 of 1993) and other policies regarding basin management and norms around saving water (Sarmiento, Cadena, Sarmiento, & Zapata, 2013; Ungar & Osejo, 2015).

Despite the recognition of highlands as an important source of water, there is a dearth of information about the rural families inhabiting the vast mountain areas and how they have been affected by the conflict (Ospina, 2013). In the context of war-peace transitions, I attempt to fill the need of on-ground information and field-based evidence regarding the challenges of sustainability after fifty years of armed conflict (Baptiste et al., 2017).

Based on a sustainability science perspective, I present a problem-driven but also solution-oriented research (Clark & Dickson, 2003; Miller et al., 2013), where I intend to contribute to the dialogue about water governance and territorial ordering in the Colombian highlands. Furthermore, I attempt to provide insights into the role of water governance in a broader environmental peacebuilding debate.

1.2 Research aim and questions

Considering the knowledge gap and the relevance of emerging peace and sustainability agendas, my aim is to describe how local actors experience the transformations in terms of land access[3] and control over water through a case-based study in Combia, a rural village in Las Hermosas páramo complex, where FARC units were the main ruling actor for two decades.

[3] I understand access to land as the different strategies employed by individuals to obtain physical land areas such as land purchases, occupation, rent, illegal invasion, and sharecropping (FAO, 2003). In regards of land tenure, I use the definition of group of legal norms which regulate the land-people relation and set the different type of property rights (FAO, 2003).

Research questions

Overarching question

- How do local actors experience the changes in the access and control of natural resources in the post-agreement phase in Combia village?

Subquestions

- How have these territorial transformations impacted land distribution and control over water[4] for the local inhabitants?
- What are the implications of the current socio-political transition for water and highlands governance?

2. Setting the scene

To understand the possible transformations in resource distribution for my case study, I provide some background information and context related to the history of Colombia's armed conflict and the linkage between the Peace Agreement and land and water resources. Additionally, I present a brief overview of the ongoing social-ecological tensions around the highland territories in the country.

2.1 Armed conflict in Colombia: a protracted land tension

Historically, land use and ownership have led to conflictive tensions in Colombia. The national elites have led the colonization and agricultural land appropriation by implementing a model of larger estates (*latifundios*). In response to this displacement, peasant communities started expanding the agricultural frontier at expenses of forest in the highlands. Once established there, new tensions emerged when big landowners started to increase their land-acquisitions in remote areas (Reyes (2016) as cited by Sánchez León, 2017). During the first half of the 20th century, this land-dispute cycle became a pattern for inhabiting and transforming the highlands (Gallini, de la Rosa, & Abello, 2015).

As an outcome of the political failure of the agrarian reforms in 1930 and 1964 to re-distribute the land, the first rebel groups appeared, such as the FARC. The armed conflict development has been related to

[4] I define control over water in the conceptual approach section based on the insights by Hoogesteger, Boelens & Baud, 2016.

natural resources in different ways. In one way, the exploitation of natural resources like coca, minerals, and oil have resulted in processes of violent grabbing and displacement of rural inhabitants (Rodríguez Garavito et al., 2017). The illicit drug traffic - of coca leaf and illegal mining - has also financed paramilitary and guerrilla groups while driving deforestation, water pollution and soil degradation in different regions (Rodríguez Garavito et al. 2017).This phenomenon has led to the degradation of specific regions and, at the same time, the conservation of others where armed groups hide (Sierra et al., 2017).

As part of these processes of exploitation and displacement, armed conflict in rural areas has intensified the land struggles. There are mainly four structural problems: unequal rural land ownership distribution, undefined land tenure, conflicts for land use and tenure, and, recently, armed land dispossession (Sanchez León 2016). Today only 36, 4% of rural households own their land, and in most cases, it is a land plot of half of the established Family Farming Unit[5] (Departamento Nacional de Planeación, 2015). This trend goes along with the high unequal distribution of land: 81% of land belongs to 1% of landholdings, and the remaining 19% is distributed among small farms (Oxfam, 2017).

Along with this unequal land tenure trend, land-use conflicts also arise. The 13% of the land for agricultural use is not utilized for its designated purpose, and in contrast, 15% of national land is overused (Instituto Geográfico Agustín Codazzi [IGAC], 2016). Livestock is the activity generating more land-use conflict. Although, livestock can be held on solely 15 million hectares, currently it is present in 34,8 million hectares (IGAC, 2017).

2.1.1 La Habana Peace Agreement and Integral Rural Reform

Negotiations between the FARC and the Colombian government to end the armed conflict started in 2012 in Havana, Cuba. In May 2013, the parties agreed on the first point of the agreement about the Integral Rural Reform (IRR). Broadly, the proposed reform sought to create: a “land fund” (3 million hectares) for people without property (subtractions of natural reserves are allowed), formalization of land ownership (7 million hectares), support for agricultural initiatives, promotion of participation regarding decisions on land use decisions, modernization of land registry, and other mechanisms (Oficina Alto Comisionado para la Paz [OACP], 2016). The Peace Agreement highlighted that the land reform should be implemented

[5] The size of the Family Farming Unit (Unidad Agrícola Familiar, UAF in Spanish) is a policy indicator of the minimum size of land required for a family to subsist. It varies according to the region. In the case of the area studied goes up to three- hectares.

considering the promotion of water access and protection, closing of the agricultural frontier, and sustainable development (OACP, 2016).

However, after more than two years since the agreement was signed, research institutes agree that the implementation of it is slow-paced and, in some cases, almost non-existent. In particular, progress related to land tenure and redistribution is minimal and only a few legal instruments have so far been created but not implemented (Cinep & Cerac, 2019; Kroc, 2019). For instance, the Land Fund, which was created by the national resolution Decreto Ley 902 de 2017, has not delivered any property to landless peasants (Kroc, 2019). Land allocations, from protected areas or land owned by the State, have not taken place yet as no environmental zoning plans have been initiated. I expound the implications of these non-compliances for the case of Combia in the discussion section.

2.2 Highlands: mountain refuges during war and "water factories"

I use the term highlands (Alta Montaña in Spanish) to refer to the geographical space of mountainous terrains located in the highest areas of the Colombian Andes. In ecological terms, the Andean forest, the High Andean Forest and all the adjacent ecosystems in the páramo area belong to this landscape (Figure 1) (Sarmiento et al.,2017. In Colombia, the highlands cover 3,6 % of the total national territory (4'125.500 ha) (Cortés-Duque & Sarmiento, 2013).

For several centuries, the highlands have acquired a deep-rooted social nature (Duarte-Abadia & Boelens, 2016) constituting *"zonas de vida*" with cultural, economic and social practices as an outcome of the socio-ecological interaction (Ospina, 2017). Therefore, I understand highlands beyond the physical characteristics and conceptualize them rather as socio-ecological systems.

During the mid-20th century, the highlands of Colombia were crucial for rural families who expanded their potato crops and livestock production in those areas as a result of colonization processes and Government agricultural policies for peasants without land (Duarte-Abadia & Boelens, 2016). In the last decades, a conservation view on highlands has become a dominant discourse because of the increase of environmental impacts associated to mining and livestock in the highlands and the creation of policies around water sources protection.

The government, international actors and scientific research have framed these territories as "water factories" due to their hydrological regulation function (Duarte-Abadia & Boelens, 2016; Sarmiento et al. 2017; Ungar & Osejo, 2015). Moreover, highlands in the Andes are rich, important biodiversity habitats with high rates of endemism (Rangel - Ch., 2015) and home to keystone species such as the *frailejón* (Díazgranados, 2013) and the Andean bear (Jorgenson & Sandoval, 2005).

Figure 1. Páramo landscape (left) and High Andean forest (right), as part of highlands areas, were historically used by armed actors as strategic military strongholds. Own photo taken in March 2019.

A controversy regarding the establishment of boundaries of the highland areas and restriction of land uses begun in 2011, when a new Mining Code forbade any mining activity in the páramo area (Ungar & Osejo, 2015). The National Development Plan of 2011 (Ley 1450) also banned agricultural activities and ordered new national cartography of these areas. From 2011 to 2017 the Alexander Von Humboldt Research Institute, together with regional universities and scientific research centers, studied and delimited an area of 2 906 137 ha distributed over 36 regional highlands systems, defined as páramo complex (Sarmiento et al., 2017; Ungar & Osejo, 2015) (Figure 2).

The delimitation process has caused a proliferation of conflicts due to different views on the territories and to disputes regarding unequal distribution of economic benefits from conservation or productive uses (Duarte- Abadia & Boelens, 2016). Beyond establishing boundaries on maps through a legal provision, the complexity of the highlands, as a socio-environmental system, requires more than a cartographic reference to be managed (Ungar & Osejo, 2015; Ospina, 2017, 2013).

2.3 Combia, buffer zone of Las Hermosas highlands complex

Las Hermosas páramo complex (LHPC), one of the 36 páramo systems classified in Colombia (Sarmiento et al., 2017), is the largest *páramo* complex in the central Andean mountain chain, connecting the central

páramos in the north of the country with the Colombia Massif, in the South (IAVH, 2017) (Figure 2). This region contributes to the hydrological regulation for the water supply of 1 229 315 people living in the southwest of Colombia (Universidad del Cauca [UC], 2015).

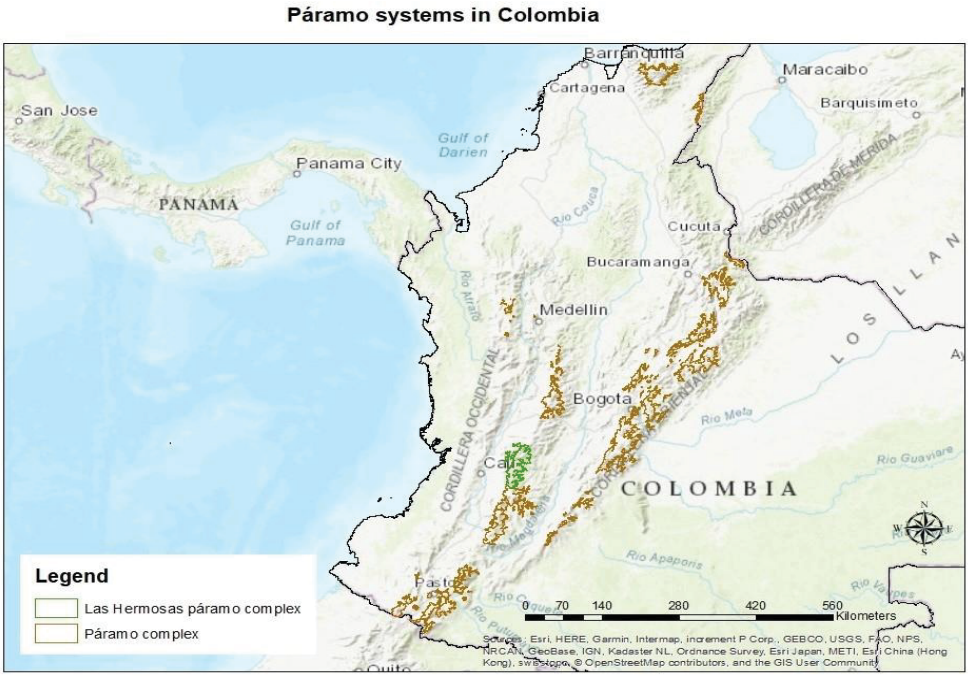


Figure 2. Páramo and High Andean forest ecosystems were delimited by a new cartography between 2011 and 2017. Own creation based on Corporación Autónoma Regional del Valle del Cauca [CVC] (2019).

My research took place in Combia, one of the rural settlements along Las Hermosas. The village is located in the hilly area of Palmira, a medium size city in Valle del Cauca (Figure 3). Most of the households and farms are settled on the east bank of the Amaime basin high zone, located in the western slope of the central Andean mountain chain.

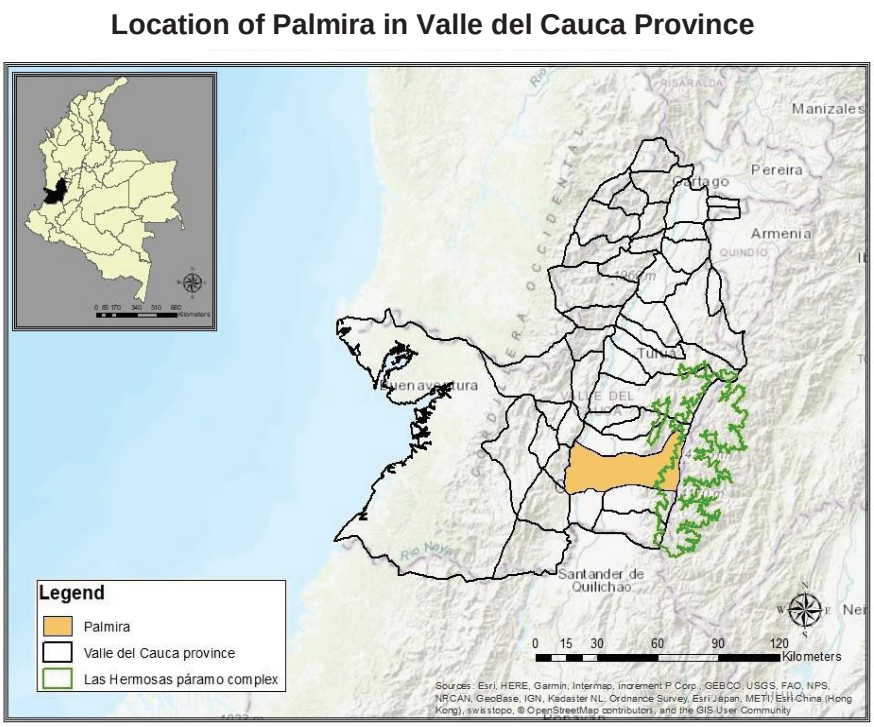


Figure 3 Location of Palmira and Valle del Cauca. Own creation based on cartographic information system CVC (2019).

Combia is a *corregimiento*[6] within two relevant conservation schemes: Las Hermosas National Park (LHNP) and the Amaime River National Forest Reserve (ARNFR) (Figure 4 and 5). The village area is 10.365 ha, 48 % of it belongs to the LHNP, and the remaining area is under the ARNFR (Universidad del Valle [UV], 2015) (Figure 3). The management plans of the protected areas restrict all human interventions in the village such as banning large scale factories and agroindustry or the prohibition of vegetation clearing in upper zones.

[6] A political division within municipalities in Colombia defined as an internal nuclear settlement within the area of the municipality. It is designated by the local municipal council (DANE, 2019).

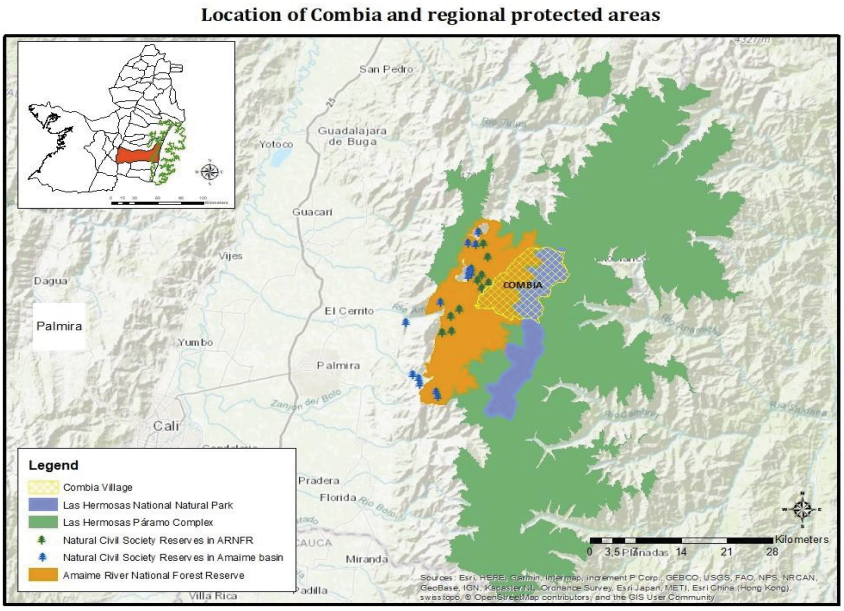


Figure 4. Combia, corregimiento of Palmira, is located in the northeast of the municipality. Own creation based on cartographic information system CVC (2019).

The national government established the ARNFR in 1938 to protect water for local municipalities. However, for several decades banning of extensive livestock or control of vegetation clearing remained only in paper causing a significant forest cover loss in the area (LEE 1 in Annex 6). Only until 2015, the regional authority started a scientific study to determine land-uses. This coincides with the arrival of the post-peace agreement period.

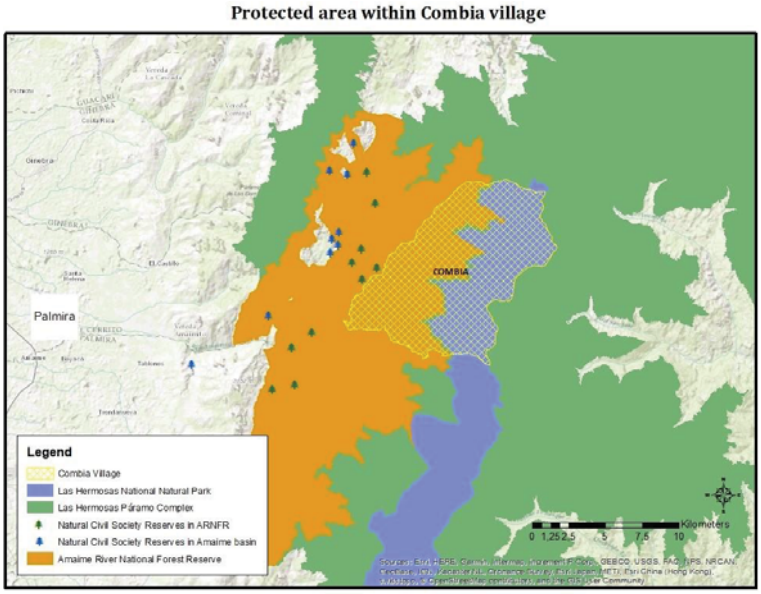


Figure 5 The area of the village overlays different conservation status schemes. Own creation based on cartographic information system CVC (2019).

The Amaime river is the most important water body in the region. It originates in the Laguna Negra, at an altitude of 4.000 MASL in Las Hermosas páramo, and flows 65.6 kilometers into the Cauca river. This basin provides water for Palmira (304.735 inhabitants) and maintains the underground water reserves for the agro-sugar cane industry, the most relevant economic activity of the providence.

Combia's legal division encompasses upper zones of sub-páramo and páramo areas, which are part of the national park, to the high Andean forest located in the ARNFR (Figure 6). Water and biological exchange between the transition from páramo and the Andean forest is crucial to maintain the ecological integrity of the zone and to avoid biodiversity loss, water scarcity and the related socio-economic impacts (IAVH, 2017; UC, 2015). In simple words, the village is an ecological *bridge* between the misty páramos and the lower areas of the watershed.

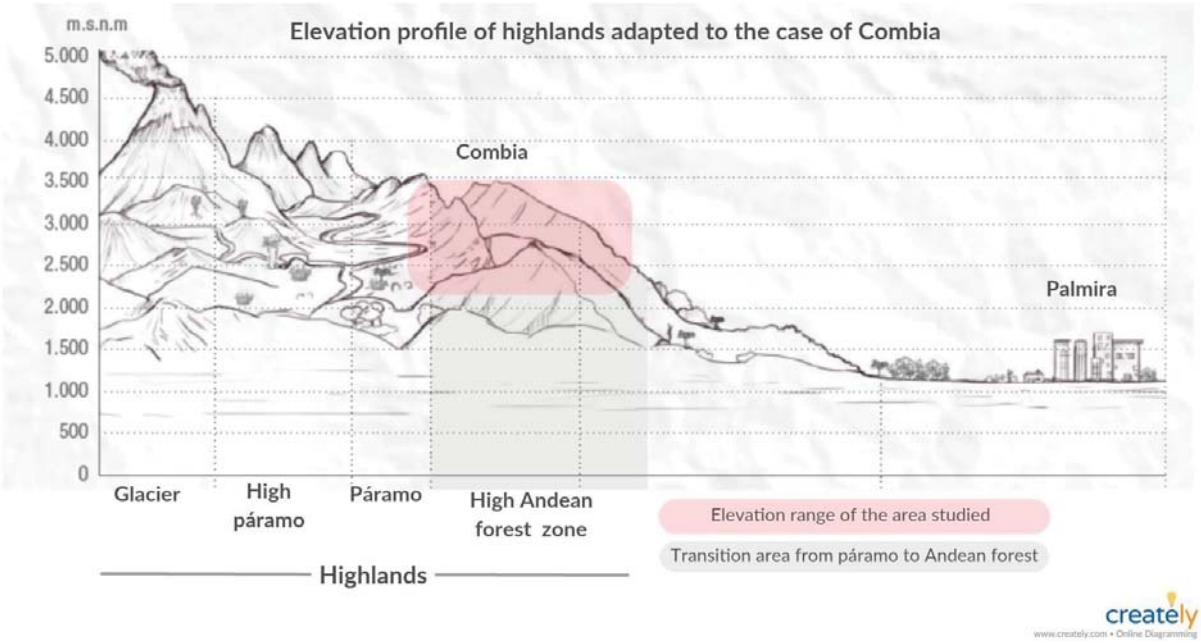


Figure 6 Elevation profile of the highlands in the Las Hermosas region. Adapted and modified from Osejo, Zapata, Sarmiento, and Ungar (2016).

3. Methodological process

I carried out a descriptive single case study (Yin, 2014) by examining the current local changes in the highland landscape (Combia village in Las Hermosas highland region) in the context of the larger problem

of socio-environmental impacts in post-conflict societies. I combined ethnographic methods with a revision of local policy and cartographic data.

3.1 Pre-field work preparation

For choosing the case study, I initially revised a geographical analysis made by Osejo et al. (2016) about highlands and the post-agreement period (Annex 1). I carried out interviews with two of the authors (Sarmiento and Osejo) to investigate further developments about environmental monitoring of impacts in páramo ecosystems. They agreed on the lack of knowledge in general for all regions, but especially for highlands in the South of the country. Then, I decided to limit my scope to Las Hermosas páramo, because it is located in the southwest of the country, and it is one out the 15-highlands systems within municipalities with post-conflict projects (Osejo et al., 2016).

I had informal conversations with local NGOs and officers of the Regional Autonomous Corporation of the Cauca Valley (CVC) to determine the potential fieldwork area. I established three criteria for selecting one specific settlement within Las Hermosas. First, the rural settlement needed to be located within or neighboring the highlands complex. Second, it should have been under prolonged occupation by FARC groups. Third, security conditions should allow me a stay in the area. This narrowed down the study area to Combia in Palmira.

I based my interview and observations guides on Ungar (2015). I created my semi-structured questionnaire (Annex 2) based on insights related to ecosystem services and hydrological assessment of páramo ecosystems as put forward by Nieto, Cardona, & Agudelo (2015) and the templates proposed by Palacios (2015) (Annex 3) to identify actors and networks in the highlands. I determined two additional pre-fieldwork criteria based on the aforementioned methodological guidelines. First, I decided to analyze Combia as a unit within the watershed level to understand the water dynamics in a larger range of actors influencing the upper mountainous zones. Second, I focus on “primary level actors,” i.e., actors with direct use and land appropriation in the highlands (Palacios, 2015). Within this category, the target groups were inhabitants and property owners.

3.2 Field-work development

During a four weeks fieldwork, I conducted 17 in-depth interviews with local actors and local environmental officers by combining purposeful and snowball sampling (Leavy, 2017). The interviews

considered ethical aspects as the consent of the participants and the confidentiality treatment for their testimonies. While doing fieldwork, I realized that actors experienced different changes in the post-agreement phase depending on land tenure status. Hence, I attempted to improve the representativeness of the study by including peasants without land titles, farmers with medium size land properties and large landowners.

I complemented the interview information with narrative walks (Jerneck & Olson, 2013). For this purpose, I undertook several milk collection rides[7] in the village in order to explore the area from the settlements in the lower zones to the farms higher up in the mountains. This exercise also allowed me to expand the number of community voices, due to the milk truck often being the only means of transportation in the village. I visualized the journeys and the places throughout the village, where I carried out the interviews (Annex 4). I had the opportunity to stay in several farmer houses, which also enriched my understanding of the local dynamics. I reported this participant observation in a field diary (See sample of observations in Annex 5). To contrast the information provided by the local actors, I included three interviews with environmental officers of the CVC. Considering the decentralized environmental structure in Colombia, the CVC is the state agency in charge of the enforcement of environmental norms in the local and regional level. Moreover, I searched news archives and reviewed grey literature to triangulate my data and support the local testimonies regarding the dates of specific violent events.

Furthermore, I requested cartographic data from the CVC Geographical Information System Office, which I analyzed together with three relevant policy documents[8] to compile biophysical, economic and social information about river management and land-use regulations. My aim with studying the cartographic information was to understand the boundaries between the different protected areas in order to contrast local testimonies and field-work observations. To comprehend the local information in a broader context, I carried out four further interviews with national and regional experts. Interviews will be referred in the text as Local Actor (LA), Local Environmental Expert (LEE) and Local Environmental Authority (LEA) with the respective numbers indicated in Annex 6.

[7] The milk collection rides are a typical activity in the area when a truck comes from Palmira to collect the milk stocks from one farm to another. The truck goes to the upper zones.

[8] In Spanish: Plan de Ordenamiento Territorial de la Cuenca del Río Amaime (CVC & UV, 2013), Caracterización de los actores sociales del páramo de Las Hermosas (UC, 2015), and Caracterización de la Reserva Nacional Protectora del Río Amaime (Universidad del Valle, 2015).

3.3 Post-data collection analysis

For the data analysis, I performed a thematic analysis (Silverman, 2015) to organize information related to primary actors' experiences (Leavy, 2017). These larger categories (i.e. control over water, mobility, access to páramo areas) were included in the questionnaire. I included the views of the local officers and experts, together with my own fieldwork observations on those themes in the analysis table (extra material in ZIP file). After data collection, I framed my results with an inductive approach by comparing the information collected with Arjona's (2014) conceptual framework about rebel groups' normative systems and the overall definitions by Boelens, Hoogesteger, Swyngedouw, Vos, & Wester (2016) about hydrosocial territories. This allowed me to triangulate the fieldwork data with the conceptual framework and to organize the findings (Leavy, 2017).

3.4 Limitations

Traveling in Las Hermosas is limited by available transportation and access to certain areas. Some journeys within the region can take several hours, or even days, by horse or walking on foot from the main roads. Due to the limited time-span of the master thesis research, I mainly interviewed local actors living in Palmira (medium and large landowners) or peasants occupying areas closer to the road. The local actor's area of influence - in terms of productivity activities, mobility or leisure - stretches from the 2.200 MASL to the 3.200 MASL in the mountain peaks. Owing to that, farmers living in more remote upper zones were not included in my sample. I also participated in some local activities in zones up to 3.400 MASL. However, more exploratory journeys in upper areas in forest-páramo transition zones, could have enhanced the findings.

In my analysis, I included data about water concessions (Annex 7) to contrast local voices with quantitative data. However, contrasting quantitative information about vegetation cover and land registers can also help in understanding which actors are causing major changes and how changes are taking place closer to water bodies geographically. Due to the cloudiness of the region this information is difficult to obtain, although an analysis of land cover changes using GIS would improve the study.

This case study responds to site-specific processes in a small village. Thus, the findings do not represent the general situation of other villages or municipalities in Las Hermosas or in other regions in the country because of two reasons. First, highland dynamics vary a lot from one context to another, according to the ecological features and land-use conflicts (Ungar, 2015). Second, the armed conflict repercussions and the controlled purposes of the guerrilla FARC greatly vary according to the goals of the rebel group in a respective region (Arjona, 2016). Nonetheless, the research design, as well as, the conceptualization of

highlands as hydro-social territories, might be replicable to understand water-land change dynamics in bordering areas of highlands where FARC or other guerrilla groups used to be present.

4. Theoretical and conceptual approach

I draw on a political ecology perspective to understand the highlands, considering the relevance of bringing political and power aspects into the discussion of natural resource governance in the current Colombian context. Indeed, political ecology is a critical research field that seeks "to unravel the political forces at work in environmental access, management, and transformation" (Robbins, 2012, p. 3). I seek to gain a broader comprehension of the armed conflict dynamics and the highland's ecosystem itself in contrast to other approaches as land change science, which would mainly focus on apolitical explanations on ecosystem transformation (Turner & Robbins, 2008).

Political ecology seeks to understand land-use change under the lenses "control, knowledge, and access themes" bringing in power and social justice aspects (Turner & Robbins, 2008 p. 300). This perspective serves me to comprehend the causal forces of sociopolitical processes (i.e. the transition to peace) on social and environmental systems (highlands landscape) (Turner & Robbins, 2008). Adding to these perspectives on land use, the political ecology view helps me to conceptualize the highlands as part of a larger hydrosocial cycle. This view calls for a repoliticization of conventional processes of water regulation and a more profound recognition of these territories from their political side (Boelens et al., 2016).

I attempt to embrace the perspective on nature-society interlink from Bruno Latour's work as interpreted by Swyngedouw (1999) and Palacio (2015). I employ the concept of "hydrosocial territories," coined by Boelens et al. (2016), to understand highland transformations. Along with the overall concept of the analysis, I relate the political ecology realm with the peace and war studies through the use of the concept "wartime social order" (Arjona, 2014), aiming to analyze social-ecological transformations in the hydro-territory in the light of the institutional order created by rebel groups and their interactions with local communities.

4.1 Nature-Society dialectic: water as *socionature*

In light of Latour's (2003) reasoning about the limitations of constructivism, I acknowledge that there is not a dichotomy among the material and symbolic realms. In that sense, nominating everything as a social construction denies the complexity of processes that comprise the materiality of systems. On the other hand, it is equally relevant to embrace the symbolic side embedded in the relation between objects/subjects.

As stated by Robbins (2012), Latour's ideas constitute an innovative perspective to employ symmetrical explanations and to avoid neglecting the crucial role of the material world in the making of subject/object interactions. However, it is essential to recognize the limitation of this approach to understand the structural-historical processes (i.e. unequal land concentration by the Colombian elites) that shapes the interaction between the elements of the network (local inhabitants, water institutions, river flows, peasants cultural practices, FARC ideology, armed conflict events, water permits, etc.), using Latour´s analogy.

In that sense, I believe that there is a profound dialectic in the nature-society interaction. However, that hybrid condition is "full of contradictions, tensions, and conflicts" (Swyngedouw, 1999, p. 445) and it is "historical, contingent, and tractable to change" (Robbins, 2012, p. 76). Thus, I understand that the historical-geographical process of production of those hybrids notably matters. In other words, Swyngedouw (1999) highlights, using Lefebvre's notion of *socionature production*, that the flows and processes within the network are politicized.

In this research, I conceive water in the highlands as a *socionature* entity, rather than just a material one. This means that water has multiple faces and properties from its hydrological quality to its configuration and distribution as a social, political, cultural and economic outcome (Boelens et al., 2016; Linton & Budds, 2014; Swyngedouw, 2009).

To that effect, the hydrological cycle goes beyond the hydro-geological process and becomes a hydrosocial cycle with intricate socio-techno and political relationships. By analyzing these processes, it is also possible to understand that water, using Latour´s terminology, is an actant that also shapes territorial dynamics (Boelens et al., 2016). These water territories have a conflict-ridden nature due to social tensions and conflicts. As Swyngedouw (2009) notices, it is clear how socio-technical systems - for instance, the hydro-technical processes - are visible trends (and means of reinforcement) on how power is distributed within the social sphere.

4.2 Hydrosocial Territories

I conceptualize the highlands as "hydrosocial territories" (Boelens et al., 2016, p. 2), defined as:

> "the contested imaginary and socio-environmental materialization of a spatially bound multi-scalar network in which humans, water flows, ecological relations, hydraulic infrastructure, financial means, legal-administrative arrangements, and cultural institutions and practices are

> interactively defined, aligned and mobilized through epistemological belief systems, political hierarchies and naturalizing discourses"

Highlands are not only water production zones, but a territory with diverse meanings and imaginaries (Duarte-Abadia & Boelens, 2016). The territory is the outcome of discursive and material practices placed in a specific geographical and cultural network (Hoogesteger, Boelens, & Baud, 2016). I mainly use two main characteristics of hydrosocial territories: the multiscalar dimension of the "*hydrosocial networks*" and how water control process is framed into *territorialization projects* (Boelens et al., 2014; Hoogesteger et al., 2016). I briefly explain those features, but a deeper development is given in the case analysis section.

First, hydrosocial networks refer to the actors and elements that determine the territorial size and the boundary arrangements of the basin (Boelens et al., 2016; Hoogesteger et al., 2016). The authors highlight the need for taking into account different scales of spatial analysis as an outcome of the normative system that regulates the watershed.

Second, the *territorialization projects* are linked to the dynamics of water control. Water control goes beyond the material access and possession of the liquid or the territory in which water is emanated, without denying the relevance of the material flow of water (Hoogesteger et al., 2016). I use water control as both the mechanism and the outcome of the water order imposed in a given place in the territory. The flow regulation is based on "legitimate" water governance practices, which are by themselves enforced by technical, social and physical discourses that allow particular water control (Boelens, 2014). For instance, the decision to implement water-control infrastructure (such as small dams or irrigation infrastructure) determine the uses and functions of water, who can have access them and where. Thus, "to establish, demystify or transform frames of 'water order' is at the heart of water control" (Boelens, 2014 p. 236).

Those processes of spatial control of water also embody specific territorial arrangements promoted by specific actors within the network. The attempt to establish particular discursive and material ways of ordering and shaping the territory - so-called territorialisation processes - are embedded in power disputes and generate dynamics of inclusion, exclusion, appropriation or displacement (Boelens, 2016; Swyngedouw, 2014; Perramond, 2016).

4.3 Wartime social order and ecological links

Armed conflicts are embedded in historical transformations of nature-society interactions (Le Billon, 2001). Moreover, the spatial distribution of resources is crucial in shaping the networks and dynamics of the conflict. The proximity or distance of resources generates processes of peripheralization, and causes internal displacement and limitations in the use and control of the territory (Le Billon, 2001). In this context, the hydrosocial territory then is shaped by the armed conflict/post-conflict transition as one socio-political process, which influences cultural practices, legal-administrative frameworks, infrastructure, economic initiatives, and other aspects.

To conceptualize Colombia's armed conflict case, I employ Arjona's (2014) concept of *wartime social order*. The aim is to interpret the data on socio-ecological changes as a result of the shift from a particular *previous order* (*rebelocracy*) to a *state territorialization project* occurring in the post-peace agreement phase.

Far from conventional views of chaotic scenes in armed disputes, Arjona (2014; 2016) presents war zones[9] as places that are often characterized with a definite order established because of the interaction between civilians and non-state armed groups. She defines this normative system as *wartime social order:* "the particular set of institutions that underlie order in a war zone, giving place to distinct patterns of being and relating" (Arjona, 2016 p. 22).

When this "social contract" between the communities and the rebel group exist, Arjona (2016) distinguishes two types of rule systems. First, *rebelocracy*, in which the armed actor intervenes broadly in public and local private affairs while having profound repercussions in the community's way of living. Second, an *aliocracy*, where the rebel group has limited influence in the community by only intervening in taxation and security issues.

Considering the case study, a further look is cast on to the *institutions regulating the ways of living under a rebelocracy*, as a mode of order when the group aimed a long-term occupancy in the area. Arjona finds five particular realms influenced by illegal armed groups: mobility, taxation, dispute institutions, economic activities related to natural resources and political participation. I relate to the first four mentioned aspects in my own research.

[9] For the author, a *"territory where at least one non-state armed actor has a continuous presence" (Arjona, 2016 p. 22)*

5. Findings and Analysis

The case of Combia during the armed conflict is an example of how the social and political order shapes human-nature interactions, and specifically how those structures slowly start changing when the rebel group is no longer in power. To understand this transition, I develop my argument in two sections. First, I explain how that the social and geographical characteristics led to the establishment of a *rebelocracy* (Arjona, 2014) in Combia. In the second section, I analyze the changes experienced by local actors (main research question) and the transformations in land and water distribution (research sub questions) by describing the new actors, the new ruling institutions and how those two aspects causes changes in mobility, access to land, control over water and emerging economic activities.

5.1 Portraying a rebelocracy in the mountains

5.1.1 A valley belonging to few

Combia's landscape is mountainous valley with rugged and steep slopes between 50 and 75% inclination, through which the Amaime river flows. The landscape changes rapidly from low to high altitudes. In the lower areas, around the altitude of 2300 MASL, sub-xerophyte formations create an arid scenery where even cactuses can be seen. However, in the highest zones only 10 minutes away by car, there are cold, humid forests and distinctive ecosystems prior to the sub-páramo and páramo areas (Figure 7). The dense cloud cover and fog are constant in this mountainous panorama (UV, 2015; CVC & UV, 2013).

Figure 7 Combia´s geography varies according to the altitude. In the left side, there is a view on the areas around 2300 MASL and in the right the High Andean Forest found in upper areas. Own photo. February 2019.

From the road, one can observe extensive areas without any dense vegetation cover on either side of the river. Near to the peaks of the mountains, some native forest remnants are visible. These observations correspond to vegetation cover estimations: around 1.675 hectares account for pasturelands and 3.421 hectares for shrublands or dense scrub brushes out of 10.356 hectares, the total area of the village (UV, 2015; CVC & UV, 2013) (Figure 8).

Figure 8 Along the village it is common to find areas were tree clearing occured for livestock purposes. Own photo. February 2019.

Combia[10] has around 502 inhabitants who live in extensive and dispersed settlements along the mountains. There is no nuclear rural settlement; peasants houses are located rather close to the verge of the road, and medium and large landowners 'fincas' (basic rural household and production unit) are situated along the mountain chain. Demographic data indicates that around 260 people are classified as low socioeconomic strata according to households' conditions (UV, 2015).

People in Combia have historically used the mountain range, as they rely on it as a transportation corridor. They cross the Valle del Cauca and Tolima provinces to move, sell and buy products, find work, or visit relatives. This continuous movement back and forth from one region to another has been common practice since colonial times and produced, materially and culturally, "*caminos reales*" in Las Hermosas region (IAHV, 2017; Ospina, 2017; UC, 2015).

[10] Locally, despite Combia is a *corregimiento* by administrative, people recognize the area as divided into two small communities: Teatino and Combia. Considering the similarities of both communities and that they belong to the same administrative division, Combia is the overall administrative category referred to as the area of study.

In Combia there are various land uses and productive activities. Primarily, the highlands are used for an extensive range of livestock and other minor agricultural activities such as vegetable cropping, and rainbow trout aquaculture. The livestock model for cattle is characterized by a low density of animals per hectare, using larger areas for their maintenance. General trends in the region show that this livestock model causes high vegetation fragmentation visible through several disconnected shrubland patches (UV, 2015). Other geological characteristics such as the cold mountain soil types, wind flow from the Amaime valley, and the high elevation of the slopes, combined with the livestock model, has led to severe soil erosion (CVC & UV, 2013; UC, 2015; UV, 2015). In the highest areas of the mountains, mainly close to Las Hermosas National Park, some conservation schemes are in place, but livestock activities remain in the páramo (CVC & UV, 2013; UC, 2015; UV, 2015).

Who performs specific land uses mainly depends on who owns the land. Land tenure is an essential factor in the transformation of this area, as extensive grazing mainly occurs on large land plots. Just like the general trend in the whole Las Hermosas páramo complex, in Combia land is distributed in relatively large land plots (≥ 100 hectares) owned by few landowners (IAHV, 2017). Data for the whole basin indicates that 83.26% of land belongs to only 17, 05% of landowners (CVC & UV, 2013). Thus, a high concentration of land ownership occurs. In Combia (specifically in the forest reserve area outside the national park) there are 103 property plots (UV, 2015). However, data about plot size measurements and the process of land possession/occupation are missing or not registered in regional and/or municipality documents. The case is similar for land titles.

Peasant families combine agricultural and livestock activities in smaller plots of 3 to 12 hectares[11]. Meanwhile, the landowners focus on extensive cattle ranching to produce milk and beef in areas ranging from 100 hectares to over 1.000 hectares. Especially, in the lower zone of Combia (Teatino sector), one large landowner has a property of 2.500 hectares divided into different private titles.

Regarding water uses, there is insufficient data about the quality of water and the average flow in the Amaime river. Water demands highly vary from the high zone to lower areas. According to the CVC & UV (2013), the basin is mainly divided in two zones: “water production” and “water consumption”. Combia,

[11] These are considered as micro-fundio (less than 3 hectares) and minifundio (3 to 10 hectares) according to national standards (IGAC methodology).

as part of the highlands, is located in the "production" area where the water sources are located. In the downstream consumption zones, extensive sugarcane plantations are located[12], which consume up to 40% more water than agricultural activities upstream (CVC & UV, 2013).

The water access is unequal as well. In Combia, only 42% of the households have access to drinking water, the lowest value for the whole basin. In comparison, the coverage in urban areas is 95%. In the rural areas of Amaime basin, 15 % of the communities have direct water extractions through rudimentary tubes (individual systems), the remaining 75% have collective systems (CVC & UV, 2013). In Combia, the community of Teatino holds a communitarian aqueduct while in the upper zone each household has a tube system. Most of these connections do not have legal permits. Local officer´s estimations (LEA 2) state that 90 % of the water extractions (tubes or pipelines) do not count with water permits (so-called water concessions in Colombia) issued by the local authority (CVC, in this case). Currently only 32 water concessions are officially issued by CVC (Annex 7). As with land property titles, these water permits are solely allocated to larger farms in the village and not to peasants (Annex 3) since land titles have to be presented when applying for water permits.

5.1.3. A village ruled by the FARC

The people of Combia have endured a history of violence. The area suffered from violent clashes during bipartisan confrontations and, then, in the 1980's it became a corridor of transportation of the illegal poppy traffic (Ospina, 2013; LEE 2). The FARC guerilla moved into the region to exercise control and taxation.

Combia has a strategic location in the central mountain chain: it is situated on one of two main connecting paths between Valle del Cauca and Tolima. This corridor leads to the municipality of Rioblanco and Planadas, considered the foundational sites of the rebel group. Furthermore, it leads through the canyon of Las Hermosas to the Southeast and center of the country (Fundación Ideas para la Paz, 2013). According to local testimonies, FARC became continuously present in the village from around 1993 to 1995; during this time, they consolidated their power and control regime (Figure 9).

[12] In fact, the province of Valle del Cauca represents 10% of the total of national water demand, mainly because sugarcane industry water uses (Ideam, 2019).

According to Arjona (2016), a *rebelocracy* (understood as the social order imposed by rebel groups) emerges when the rebel group has long-term goals in the area and weak institutions are present in the community. In the case of Combia, these two factors are visible. On one hand, the goal of a permanent stay in the region is motivated by the strategic location, and by the characteristics of the zone for hiding purposes, such as the persistent dense cloudiness and the mountainous terrain. This made it an ideal military zone for the FARC to maintain its presence and plan illegal activities such as kidnapping (Fundación Ideas para la Paz, 2013; Garzón Roa, 2009; Redacción El País, 2009). On the other hand, according to data collected, there were weak pre-existing local institutions due to the marginal presence of state institutions and tensions between landowners and peasants.

Arjona (2016) stresses that the presence of high-level guerilla commanders in an area induces the creation of a dominant social order by the guerrilla for security reasons. The former high commander Pablo Catatumbo, who is a former rebel and today a congressman in Colombia, was present in Las Hermosas. Alias "Piernas", known in the village as "Arbey", was his right-hand man and the FARC leader with greater civilian interaction in Combia. *"Everything was under their control. If one had a problem, only needed to search for Arbey"* (LA 3). My interviews reveal how the rules introduced by FARC ranged from creating curfews to limiting movement at night, to food sovereignty workshops in the village school. All this was mediated through means of violence but also dialogue with the local community.

Combia as a "fariana"[13] zone was the target of paramilitary attempts to dispute the area from the FARC. Interviewees repeatedly mentioned the period between 2001 to 2005 as the most violent in the region (Figure 7). During this time, paramilitary groups penetrated Valle del Cauca in 2001 and the National Army reinforced its military incursion with the implementation of the Plan Patriota in 2003 (Fundación Ideas para la Paz, 2001). People especially recalled the massive peasant displacement in 2001, in which more than 700 inhabitants of Amaime river highlands had to flee to Palmira due to threats of continuous armed confrontations between illegal groups (Redacción El Tiempo Cali, 2001).

[13] Local term in Colombia to refer to guerrilla groups.

Arbey's death in 2009 (Redacción El País, 2009) meant a significant change in the territory, as he had been responsible for military and social control in Combia. Following his death, most of the armed members of FARC started to occupy the mountainous areas further away. Since the signature of the Peace Agreement (2016), however, no armed group or former rebel members known as dissidents remained in Combia, according to local actors.

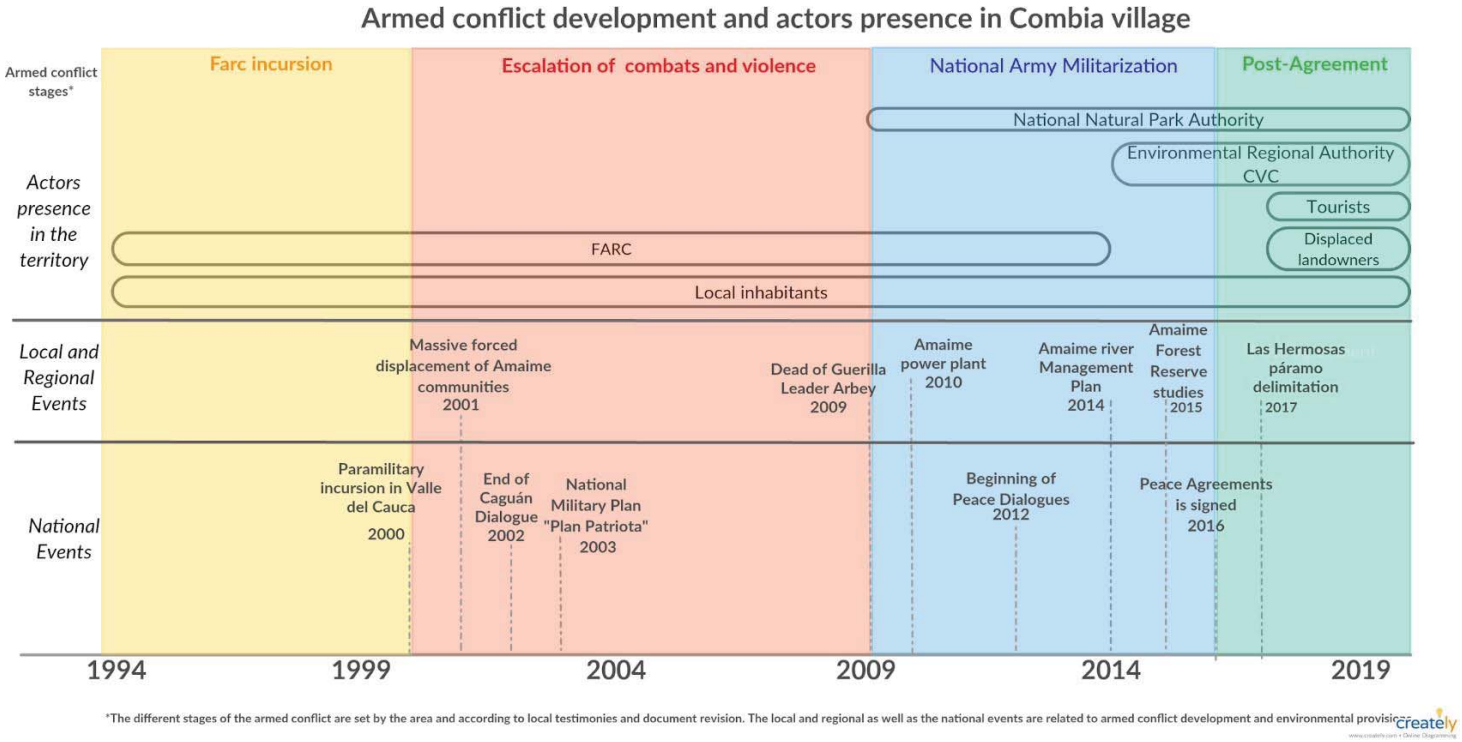


Figure 9 Armed conflict and major environmental events in the national, regional, and local level and their relation with actors' presence in the area. Own illustration.

5.2 Shifting powers: from FARC to regional environmental authorities

The *wartime social order* (Arjona, 2014), lasting for more than two decades, shaped several aspects in the social, economic and political sphere of Combia. From mediating couple fights to solving disputes around land boundaries, FARC - under the lead of "Arbey"- established codes of behavior and control institutions (Arjona 2014, 2016). This had concrete repercussions around the distribution and access to water and land resources in the village. Peasants without land were allowed to occupy privately owned areas. In other situations, the access to the páramo landmarks was restricted for all actors.

These dynamics of access and control are changing with the intervention of the environmental authorities who try to restore the state's legal-normative system (Figure 10)**.** I claim that this transition, from a rebelocracy to a predominantly state regulated situation, generates particular reconfigurations in the highlands, reinforcing historically unequal resource distribution for actors without land ownership. Furthermore, it generates tensions about water control and conservation purposes. I explain these aspects by first describing the new actors in the region, and second detailing the changes in terms of mobility, access to land, control over water and productive activities.

Naturally, these changes are not experienced in the same way for all community members. As presented in previous sections, the irregular land tenure is crucial in the local dynamics in Combia. I analyze how the peace transition affected different local inhabitants without legal land ownership in comparison to those landowners with clear legal titles. I distinguish these different actor´s points of view in the development of my argument.

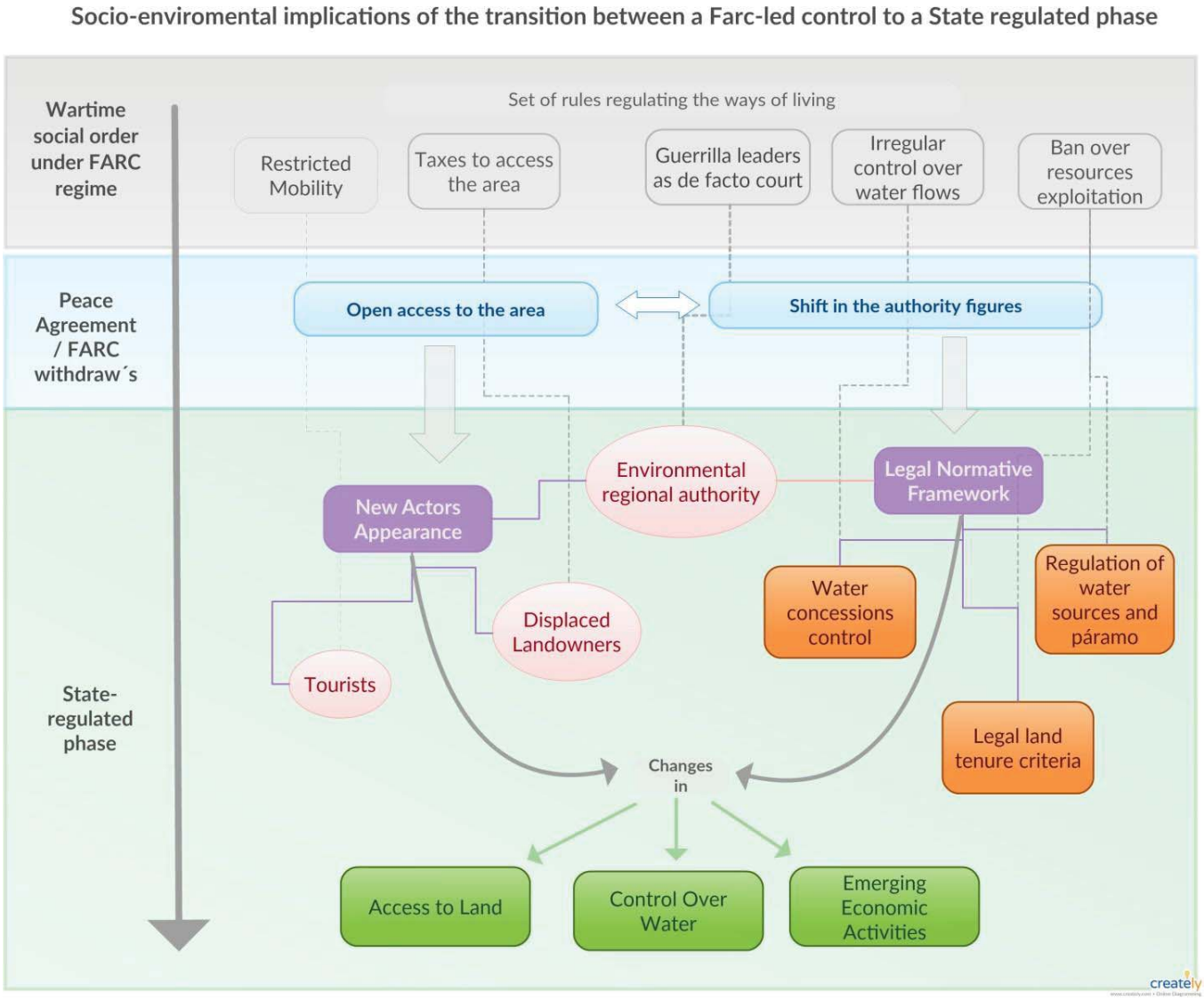


Figure 10. Process of transition between wartime order to a State regulated phase. Previous FARC institutions are related to new normativity in place with the dotted line. Own illustration.

5.2.1. The newcomers

On a Sunday morning, right in front of her house on the way to the entrance of Las Hermosas National Park, Martha Delgado sees a group of hikers with fluorescent green t-shirts, stretching and jumping to get ready for a three-hour hike. Their goal is to get to the highest peak of the mountain where the foggy and misty páramo is located. They warm up just in front of the house where the FARC used to have their 'operational center'. Since 2017, this scene is repeated every

weekend. For her, new visitors are the evidence that *"something"* definitely changed in the area: *"None came to visit, neither a tourist nor a cyclist, now they go up and down every weekend"* (LA 5-6).

Since the Peace Agreement was signed and the FARC left the village, local actors reported an emergent and slowly increasing interaction with actors previously not part of their daily life. There was a re-composition of participants involved in the activities in and management of the highlands. Primarily, three new actors started to influence the region: the regional environmental authority (CVC), regional tourists (from urban centers such as Palmira and Cali), and landowners once displaced from the region due to FARC intimidations (Figure 9).

Under the wartime order of the FARC, the network of interaction in Combia involved only the leaders of FARC, peasant families, and private landowners. Access to people from outside the community was possible through a system of "guarantee". Community members were "guarantors" of external visitors: *"One was kind of the guarantor of the person coming to the area; one was the responsible for their actions or behaviors to the FARC"* (Annex 5). Reaching the area was also possible through accepting the FARC imposed order and following the taxation rules in particular. A large landowner claims: *"If you wouldn't pay the tax, you were banned from your own farm"* (LA 7-8). This practice led to the displacement of the one large-landowner in the Teatino sector for almost two decades as well as short-term displacements of other landowners and peasants who were against FARC rules.

The return of some displaced landowners occurred around 2017, some months after the Peace Agreement was signed. In the same vein, new visitors for recreational purposes have become frequent during the last two years, to visit lakes, waterfalls, and other recreational sites. In some cases, groups are guided by local people.

The environmental regional authority (CVC) had an ambiguous presence in the area. Large landowners and small-farmers agree that during FARC occupation the CVC was almost never in the village. Only a single local officer worked in a control and surveillance function for more than 15 years, under the permission of FARC. This minimal presence in Combia meant no role of authority was presented by CVC, with the local officer stating security reasons as a predominant factor. *"CVC was not welcome, in fact, the FARC burned one of our cars. Neither the community nor them wanted us there. We did not have any access"* (LEA 1). In the last three years, CVC has become more present, mainly through conservation initiatives, water concession permits, environmental education projects, and the control and surveillance exerted by a new local officer. The conservation initiatives are embedded in larger international cooperation projects supported by the European Union regarding highlands protection.

As a result of the absence of FARC, the network that influences water governance (the hydrosocial network as Boelens et al. (2016) calls it) went from a two-dimensioned interaction between FARC leaders and community members to a broader scheme that involves urban citizens, local environmental authorities and state-related agencies, private landowners, and even international financial flows. The *span* of the network, which refers to the discursive and material elements within the territory (Boelens et al. 2016), currently situates Combia not only as a specific village, but rather as a forest buffer zone of the regional páramo complex and a key region for maintaining water supply for the entire Amaime basin.

These spatial dimensions are in a continuous process of reconfiguration according to actors' interests and established alliances to carry out technical, scientific, political and discursive projects in the territory (Swyngedouw, 2004). In the case of Combia, it is possible to see how the Peace Agreement phase, as both a political and discursive project, allowed the arrival of water conservation initiatives and discourses and practices to the region, where previously environmental authorities had no access. In the same way, through international cooperation funding, an international agenda for maintaining freshwater sources became a prominent issue in the village.

Another characteristic of the hydrosocial network is the *durability*, which refers to "how strong and stabilized the associations are amongst the heterogeneous elements forming the network" (Boelens, 2016 p.4). For the case of Combia, the data collected shows that links between the new actors and local inhabitants, both landowners, and peasants, are still incipient and weak. A conflicting dynamic exists regarding the re-configuration of authority roles, rules, and modes of practices around water and land, such as the acquisition of water permits or the norms about who can access the páramo landmarks. In the next section, I explain how by having a broader group of actors, there was an inquiry into the authority in charge of governing the territory and its resources.

5.2.2 New ruling institutions

"With FARC we already had a marriage with clear norms. With CVC, we do not know how the arrangement is" (LA 7)

The quote above captures local actor's views on the transition to the current situation in the village. Rebelocracy order of the FARC led to the setup of clear institutions to control the area. However, new rules now generate confusion about who will replace this ordering power and how it will be done. The post-agreement period, thus, is experienced by local actors as a phase where the CVC and other state agencies *should take control* of the area. The transition from a FARC controlled stage to a mainly state-lead regime implies a set of changes in informal and formal institutions. Those transformations must be seen within the power relations in which the hydrosocial territory is embedded (Swyngedouw, 2009).

I interpret this State intervention - visible through the new actions of the CVC - as a *territorial governmentalization project* in the post-agreement period. This project takes place when the State organizes the territory by means of formal mechanisms such as construction of infrastructure, water allocation permits, legal normativity to water-related conservation programs or social interventions and technical assistance (Wester et al., 2009). In Combia, the State reclaims the power of the region by issuing water and land regulations in the highlands, where water sources are located.

The political power shift is materialized in different discursive and physical practices and interventions (or lack of) by the State (Hoogesteger et al., 2016), as well as the divergence in practice from the previous FARC doctrine. In Combia, these changes are experienced by local actors in four main aspects: mobility, access to land, control of water and productive activities.

5.2.3 Mobility

-And the guerrilla members used to transit this path?
-Yes, they used to pass here while carrying heavy load. They walked 4 or 5 days without stopping until reaching Tolima. They bleed on the way when carrying on their shoulders kidnapped people. They ran away from the National Army and they slept under the rain.
(Annex 4)

The previous dialogue took place between Ramiro Ocampo, a local peasant, and Gloria Stella, a tourist from a near city while they advance in the *camino real* which connects Valle del Cauca with Tolima through Las Hermosas. The road is like a narrow ribbon wrapping the mountain. Ramiro is the local guide on the hike to the El Encanto waterfall, and Gloria is a curious participant asking about the former FARC presence.

Figure 11 Tourists hike through "caminos reales" in areas previously occupied by FARC. Own photo taken in February 2019.

The possibility to move around in Combia and access higher areas in the mountains was very limited during the FARC regime. As Arjona (2016) states, the guerrilla groups established rules to impede the communities from being outside the village or even their own houses.

Most local testimonies confirm the tightly controlled access within areas occupied by the FARC. For the peasants, the only permitted pathways were the *caminos reales*, used to travel to towns in Tolima. However, access to other páramo areas such as Laguna Negra and other water bodies was forbidden. Local farmers were obstructed from exploring other paths due to planted mines and threats of combat/violence. Additionally, overnight walks were not allowed.

Regarding landowners, their mobility was almost nonexistent and the páramo area was not accessible for them. They only visited their houses and properties sporadically and claimed these visits were the only way to prove their "permanence and property" over the decades while the FARC dominated the village.

According to the majority of testimonies collected in the area, the mobility conditions have changed in the last two years. Local farmers corroborate a broader scope of mobility by exploring points of interest such as lagoons and rivers, mainly with a recreational purpose or emergent tourism and fishing initiatives. They express that now mobility is calmer and less restricted. Similarly, landowners make more frequent visits and can access their properties in areas previously under the control of the rebel group.

New actors are present in the area and the possibilities for them to travel around are more flexible. Despite a more apparent free transportation in the village, other factors currently restrict the accessibility and usability of the territory due to private property disputes and conservation purposes.

5.2.4 Access to land

*Do you see that fence behind my house? Two years ago, it was not there, but further up. In that space, I graze my cows. But when they came, they fenced the whole plot (*Annex 5*).* The descriptive passage refers to the house of one of the peasants interviewed during fieldwork. The person narrates why, after FARC left the area, the large landowner with a property of 2.500 hectares built several fences to impose the boundaries of his plot, after the various years during which he could not access.

During the wartime order, FARC imposed a land distribution, which mainly benefited local inhabitants without land, as a strategy to gain civilian cooperation and support, while allowing the use of particular plots without the permission of the private owners. Additionally, this caused the displacement of one larger landowner from the area and limited the access of other private owners. The trend of providing land for peasants while displacing and neglecting private rights resulted in a land order that currently clashes with Colombian legal system in the peace-agreement period. The state-based principles of private property and legal land tenure collide with previous FARC political agenda against concentration of the land in few hands and the territorial control.

During FARC, mainly under the ruling period of "Arbey", around 35 peasant families from the sectors of Teatino and Combia used the landlord's large plot for cattle ranching, housing and crops. *"The people used to live very well, because the guerrilla did not say: do not pass your cows there. On the contrary: pass them there, this land is empty" (*LA 10). Additionally, if a conflict between landowners and small farmers occur, often FARC was in favor of helping the peasants regarding land limits between different plots.

Applying this territorial order was possible through violence and ideological mobilization. Arjona (2016) explains that this is a typical characteristic of areas under a rebelocracy. On one hand, private owners were victims of physical aggressions or death threats. On the other hand, FARC promoted an ideological discourse by discussing political goals while appealing to grievances about land tenure. As one inhabitant recalls: *"The promise of the FARC was that one day they would parcel up the large farm for the whole community"* (LA 13). Considering that a hydrosocial territory is influenced by a belief systems as well as naturalized discourses (Boelens et al., 2016), the FARC ideology and practices about land tenure allowed a particular land distribution creating "winners and losers" during the wartime.

When the political shift occurred, changes in boundaries and land size began. As the large landowner states: *"In the 20 years we could not go to the area, some people took advantage and moved the fences forward. In the last years, we practically rebuilt the whole farm from zero, putting in place the fences again"* (LA 9). In the case mentioned in the quote, the legal ownership of the land, which extends along the valley, allowed the landowner to build new boundaries, reconstruct fences and delimit which areas belong to him, and which areas other families occupy. By reordering land distribution, water flows became a source of conflicts, as I examine in the next section.

5.2.5 Control over water

"He dared to say that the river and the road belong to his family… The water was diverted, they built a wall to isolate it... we are more than 10 peasants without water" (LA 4). Camilo Ramírez, as other peasants, used to connect water tubes from a water stream to irrigate the crops in the other side of their plots. When the FARC left and the large landowners came back, most of those tubes were cut or retired.

This is one of the cases that illustrates the significant shift of water distribution, once the rebel group withdraw from the region and the CVC became the responsible authority around water permits. The transition between a rebelocracy to a State regulated situation in Combia affects the access to water mainly in terms of how new institutional and technical arrangements become the basis for this access. State-lead water ordering processes mainly rely on *rationalizing water control* by putting in place policy models, expert knowledge and efficient manners of water management (Hoogesteger, Boelens & Baud, 2016) while gaining territorial control, exercising authority roles and imposing taxation mechanisms.

Water dispute and contested views of how to govern water are rooted in power relationships. Legal frameworks generate particular benefits in terms of water rights. As Perramond (2016) explains, the regulation of water allocations are processes of formalization of previous local entities where the state aims at having control. In the case of Combia, landowners have the possibility of requesting water concessions since they hold property titles and have the economic means to invest in water infrastructure. Peasants, in the other hand, are not able to legalize their water access as they lack land titles and capital to invest in infrastructure.

During the FARC wartime order, access to water was not regulated in terms of quantity, quality or uses. The control was tacit in order to avoid conflicts. As one farmer describes it: *"Control over water was not an explicit rule. Rather, there was just fear, because you knew if anything went wrong, people demanded FARC´s intervention"* (LA 3). In that sense, an authority - most of the times Arbey -intervened only when conflicts happened in cases of scarcity or disputes between farmers. I commonly found local testimonies ratifying how the FARC stressed that access to water was not a private benefit, but a common good that must be shared in the village. Hence, landowners were not allowed to fence water sources.

Under the current political-administrative context, water distribution shifted in terms of bringing a more rational water control discourse supported in *legal and technical criteria and arrangements* around how much water is available to consume. Water concession procedures are the basic State tool to control water consumption and are issued by the regional environmental authority, in this case, the CVC. To request a water permission, it is necessary to provide the legal land title and the permission of neighbors. If water infrastructure, such as tubes or ditches, needs to go through their properties, so called "servidumbres" permits (right-of-way utilization permit) are mandatory. A judge decides over these if the mediation between the parties is not successful.

In the case of Combia, peasants used to connect tubes to extract water from the river and other streams. These individual systems of water access are the most common infrastructure in place and 90% of them do not have legal permits (LEA 2; CVC & UV, 2013). When the large landowner came back, he demanded legal permits, issued by the CVC, to access water: *"They are taking over all the water. We had to put the fences and ask the CVC to regulate water uses"* (LA 9). This tension has led to verbal confrontations and other formal complaints with the CVC as well as other lawsuits. Currently, some peasants keep using surface waters from the river, but the water connections from other sources – which go through the large landowner property- are not allowed anymore. Thus, they cannot carry out the same agricultural/livestock activities as when FARC used to make presence.

As an outcome of these new set of rules about the control over water, more conflicts have been arising regarding who can ***legally*** own the land and use the water coming from the páramo. In the light of the conceptual framework of hydrosocial territories (Boelens et al., 2016) and the wartime order (Arjona, 2014), some similarities with the case of Combia can be formulated. Firstly, as Arjona (2016) states, under a rebelocracy guerrilla leaders take over the role of the mediator of conflicts while becoming the "de-facto court". Consequently, they decide different conflicts like in the case around the access of water resources. When this dispute solving function is not present anymore, the CVC - as the State agency responsible for environmental regulations - emerges as the authority in charge of regulating water access.

However, when the *dispute institution* changes, so does the way in which the hydrosocial territory is understood. The *rationalizing of the water control* is key in the State project of controlling the territory. Through water concessions permits, as a *formal mechanism* of control (Hoogesteger, Boelens & Baud,

2016; Perramond, 2016), Combia is being reintegrated under government dominance in the post-agreement period. In that sense, notions of rational and efficient use of water based on expert knowledge or more technical measurements are the cornerstone of this new understanding. As the local officer explains: *"When FARC was there, there was no efficient resource management, I mean in a technical way. When I got to the area only 10 % of the properties had a water concession"* (LEA 2).

However, It must not be forgotten that State specific instruments of water control are based on socio-political and normative notions, which in turn are also embedded in power relations. As Perramond (2016, p.173) argues for the case of water rights adjudications in New Mexico, the state territorialization project of ordering water "is not about water itself, but about the water users". In the case of Combia, the actors with fewer advantages in getting legal permits are the ones without regularized land tenure.

The conflictive interaction between the inhabitants and environmental authorities originates from the nature of the bureaucratic apparatus of the State itself and from the fact that FARC exercised its power. For instance, because the State's structure is organized by specializations, CVC is competent for water permits but has no competency over land issues. Furthermore, the slow dynamic in granting water concessions generates mistrust in some actors (both landowner and farmers) that are used to the fast conflict resolution of the armed actors. As one peasant claims: *"The CVC seems to be the new owner of water. But the distribution is not equal"* (LA 4)). CVC's inability to deal with the problem holistically generates unconformity for landowners, as expressed by one of them: *"The CVC does not have the mechanism to guarantee my right to water"* (LA 3).

Precisely, most of the actors agree that the environmental authority and the other State institutions, such as the police or the army (which are not present in the village), lack the coercive power to enforce the permits and solve land issues. Landowners and peasants view this non-presence of executive power as State absence in comparison to the permanent authority of FARC. In this context, in which new actors are arriving in the village, the regulatory institutions are changing and the access to land and water are being restricted for some inhabitants, modifications in the productive activities are varying for both landowners as farmer families.

5.2.6 Emerging economic activities

"We could only fish one week before and one week after Easter. And you only went up to do so. Now you see many fishermen upstream" (LA 1 – LA 10)

"The state itself is the one inducing us to do tourism, but we are lacking infrastructure. It is still a fantasy for us" (LA 8)

These two quotes symbolize the emerging economic activities that local actors are performing or seeing in Combia in the last three years. More frequent fishing activities, incipient tourism initiatives and creation of conservation schemes are becoming more frequent. I analyze these three enterprises in the light of the substitution of the set of rules created by FARC with the new state order.

Under a rebelocracy, as described by Arjona (2016), FARC used to ban fishing activities, cutting trees and controlled forest burning based on data about more than 70 municipalities in Colombia. In the case of Combia, guerrilla leaders regulated fishing activities by banning this activity for the whole year, except some weeks before and after Easter. They also controlled fishing tools by forbidding throw nets use. The fishing ban is related to different ways of controlling the territory: in a way they kept the civilians away from their guerrilla base camps and they limited the access of external actors to the area. During the fieldwork, almost all actors mentioned a new fishing boom, especially in the upper zones of the river and in the area of Laguna Negra.

Regarding tourism, both peasants without land as well as landowners are starting to participate in different rural or tourism ventures. The emergence of this activity in Combia stands in close relationship with the more frequent presence of the CVC as an environmental authority. It has played an active role in promoting tourism courses for farmer communities, as, due to the lack of land tenure, some of them need to change their means of subsistence drastically. However, landowners have additionally been a key actor in tourism and conservation strategies for the CVC, as they are the ones with ownership of upper zones in the páramo and with economic capacity to do investments in future business.

Nonetheless, at the same time, tourism has generated some tensions between the community and the environmental authorities. As most of the area of Combia is located in the Las Hermosas National Park,

these areas cannot be used for touristic purposes. In that sense, some community projects have been limited in regards to its legal basis: it is not possible to access points of touristic interest, such as lakes or waterfalls inside the páramo. Nonetheless, the geography of the mountain terrain itself and the vast extension of the area, makes it almost impossible to regulate the entrance of tourists through the "*caminos reales*", which are well known by the community. This is fostered through the limited presence of the environmental authorities. In the case of CVC, only one officer is in charge of the control and surveillance of an area of at least 32.000 hectares.

From the landowners' perspective, there are some benefits from investing in conservation corridors that could be potentially used for bird watching and other touristic activities. Nonetheless, the land-use limitations of being under the Amaime River National Forest Reserve impedes the investment in infrastructure with touristic purposes.

In the same way as tourism, conservation schemes have been promoted by the environmental authority in the last five years as well. The aim was to constitute private nature reserves and implement sustainable livestock systems. Those conservation incentives are mainly focused on landowners and not small on farmers because legal land ownership is a requirement to participate in those projects.

With the promotion of tourism or conservation schemes, it is clear that the *territorial governmentalization project* (Hoogesteger, Boelens, & Baud, 2016) seeks to build a new view on water resources in the area. The páramo conservation discourse goes along with the authority projects that pushes for less land-intense activities, such as silvopastoral systems, and tries to order the water extractions in order to avoid an increase in water demand. In other words, the emerging economic activities are promoted within a new social order where *water users' ways of belonging and behaving* (Boelens et al., 2016 p. 6) are defined and delimited by the discourses of rationalization of water and conservation of highlands. The new perspective on these areas, as essential places for water supply, are introduced in the village while changing actors' perspectives on what activities can be developed (i.e., tourism or conservation). Other economic and social factors also influence the new attention for the tourism/environmental agenda. Landowners and peasants are interested in new economic activities because of the low prices of milk, the difficulties to find workers; and the migration to urban centers that causes a decline of the highland's population.

6. Discussion

The changes experienced by the local actors of Combia can be discussed in the light of broader debates around the implementation of the Peace Agreement in Colombia and the role of water governance in war-torn societies. I elaborate on these two aspects as well as how these are related to the conception of the sustainability of the highland's landscape.

6.1 Is the Peace Agreement making a difference at the local level?

The stories of local inhabitants and landowners of Combia are an example of hundreds of villages in Colombia where legal access to land has been at the core of violent conflicts during several decades. Aiming to change land concentration in Colombia, the country with the most unequal distribution of land in Latin America (Oxfam, 2017), the Peace Agreement between the FARC and the Colombian government included different covenants to reform the distribution of land.

More than two years since the signature of the Peace Agreement, the implementation is still marginal. Some of the principal legal instruments for land reforms are not executed or not even designed by the competent authorities (Cinep & Cerac, 2019; Kroc, 2019). Moreover, the lack of specific goals in the current National Development Plan as well as the non-allocation of financial resources are relevant threats for the future of land distribution in the country (Cinep & Cerac, 2019).

As a result of the inefficient implementation of the Peace Agreement, Combia's case demonstrates the intricate process of wartime order transitions to peace. While the agreements are far from being materialized, other forms of State-control are taking place in the rural regions. In other words, I show how an official set of rules regarding water and land access is being implemented in the village while the Peace Accord reforms do not occur.

For instance, the intervention of the CVC is crucial in the conservation of páramo and water sources especially now when new actors have easier access to the region. Nonetheless, without the compliance of the Peace Agreement around the formalization of rural land, the application of environmental norms (i.e., regularization of water or promotion of tourism) contribute to the exclusion of vulnerable communities and only benefit actors with legal land titles.

The legal framework is too inflexible to cope with the complex context of land tenure and violence. While the Peace Agreement is still only on paper; other normativity frameworks start to be imposed at the local level. The case of water permits in Combia illustrates this clash. On the one hand, 60% of the Peace Agreement dispositions related to water irrigation systems have not been initiated, the remaining 40% can solely report minimal progress and the development of water supply is slow as well (Kroc, 2019). Simultaneously to peace's delays, water control and legal use are beginning to be regulated by water concessions, which mainly depends on land ownership and right-to-way permits at the local level. Land tenure remains a bottleneck requirement for the landless peasants to access legal water concessions.

A similar case occurs with land use regulations, the promotion of conservation schemes and the question of who can access those. The Peace Agreement seeks to stop the advance of the agricultural frontier while providing means for rural families to develop a sustainable rural economy. However, so far, the current tools to implement this goal are merely dispositions about Payments for Ecosystems Services (Kroc, 2019). To be able to access these market-based conservation schemes it is necessary to obtain a legal land title. Once again, the legal land tenure is vital in regards to who can participate in the new economic activities promoted during the post-agreement phase.

Along with the delay in the implementation of environmental instruments to offer economical alternatives, the zoning schemes, such as Las Hermosas páramo delimitations, restrict local people from the use of natural resources, which might contribute to exacerbating tensions between conservation and rural economy development in the long run.

Dealing with this political-administrative context is a challenge for the local environmental authorities which are limited in their environmental-related functions and, therefore, do not interfere with land access titles. As one of the local officers of CVC highlighted: "*the norm is not flexible to guarantee water for landless farmers"* (LEA 2). Water governance in once-controlled FARC areas might require approaches that go beyond the centralized and top-down ones currently in place. In the next section, I discuss the challenges of water institutions from a broader perspective for post-conflict societies.

6.2 How to govern water for consolidating peace?

Water as a resource neither fosters cooperation nor restricts peace. However, its management can act as a multiplier for facilitating conflict resolution or increasing tensions between actors (Krampe, 2017; Swain, 2016). Considering this context of potential risks, the literature on war-torn societies insists on the relevance of building sound water institutions in the early post-conflict period (Burt & Keiru, 2011; Krampe, 2017; Swain, 2016). However, the question remains of how those water institutions should be conceived and implemented.

The analysis of the transformation from wartime order (Arjona, 2014) to a new social order can bring some insights about water institutions. Firstly, as Arjona (2014) highlights, not paying attention to wartime institutions can have a significant influence on post-conflict outcomes. Thus, ignoring FARC natural resource management and their powerful influence can complicate the institution building and interaction between environmental authorities and local inhabitants. In the case of Combia, it is essential to understand how ideological views, implanted by the rebel group, clashed with legal approaches on water conflict resolutions as well as with citizen expectations about the Peace Agreement.

Traditional integrated water management frameworks can have limitations in post-war cases. Krampe (2017) states that technical functionalist models of water management, based on strategies of modernization, operational efficiency, and marketization, face different challenges in post-conflict situations and might not contribute to enhance peace efforts. For instance, based on evidence from Kosovo, he argues that water management interfered in the dialogue of the local actors by preventing local participation with the arrive of external water control experts.

The rationalization of water control through formal state mechanisms (Hoogesteger, Boelens, & Baud, 2016; Perramond, 2016) can also fit into these functionalist approaches. Those are based solely in legal frameworks which do not address the complexity of post-conflict transitions. In the case study presented, the regular mechanism for acquiring water permissions in Colombia clashes with the extended irregularity of land occupation. This phenomenon is intensified by the armed conflict due to land abandonment, forced invasions, conflict-induced population displacement, land grabbing and other conflictive tensions. In the aftermath of the conflict, private landowners with access to legal systems or finances for investment can obtain more benefits from governmental projects than peasants.

By not recognizing the complexities of land tenure, water management only takes into account technocratic approaches that might not consider power relations behind the norms of water control. Depoliticizing water by avoiding debates on redistribution of water uses and benefits are frequent in post-conflict situations when technocratic approaches are preferred and portrayed as rational problem solutions (Aggestam, 2018). However, neglecting the asymmetrical relations about water access and management potentially endangers the peace itself (Aggestam, 2018).

The interest in controlling specific water bodies in the Amaime river basin, or calculating water demands of small farmers, respond to the necessity to guarantee water for downstream actors, especially agribusiness industries that have a strategic interest to support state-led conservation discourses and initiatives in the highlands. In the case of Combia, it is relevant to take the power relations that the armed conflict built over several years into account.

Another issue that might not be considered in too legal-laden views on water management is neglecting the value of local community water management. As shown by Burt & Keiru (2016), process of post-conflict peacebuilding can be strengthened by community water-resource management. Cases in the Democratic Republic of Congo, Afghanistan, and Liberia demonstrate that in the early post-conflict period, key community members can be essential to respond to immediate water conflicts or building water infrastructure. For the case of the specific highland considering more participatory exercises about water allocation and mediation between existing peasant associations and private owners might reduce regional conflicts and contribute to a more lasting peaceful community life in the highlands.

6.3 Highlands' sustainable peace

The transformations brought by the Peace Agreement with FARC add new tensions and opportunities to the debate about what entails the sustainability of these territories. The sustainability of the "Alta montaña," as a socio-ecological system with plural and contested views, mainly relies on how to solve the trade-offs between the different actors in the hydrosocial network. Furthermore, the question appears of how those participants respond to long-term challenges as impacts of climate change and water demands for urban settlements increase. The end of the Colombian armed conflict poses new tensions around land use, the role of environmental authorities and other actors in natural resource governance and the larger

issue of land inequality in the countryside. At the same time, security and access given by the new security conditions serve as an alternative to explore, investigate and re-signify the mountainous regions.

From a sustainability science perspective, it is relevant to ask 'what is to be sustained' in the highlands, as a core organizing principle under the development and sustainability debates (Faran, 2010), and for whom do these territories need to be sustained (Miller et. al, 2013) when new discourses and practices arrive with the peace process. One must ask what path or model of sustainability goes along with the peace agenda in the local level and how does it clash with previous wartime orders during which the State was not a key actor in environmental governance. Furthermore, it is relevant to inquire about the winners and losers in these socio-political processes that cannot be decoupled from ecological redistributions and its social inequality outcomes. In the end, it is crucial to ask to what extent the peace process generates equal and sustainable interrelations between communities and ecological systems which are both victims of the war.

In light of the findings of control over water and local governance in the case of Combia, further research questions are needed. On one hand, it would be interesting to extend this research to other páramo systems considering the biogeographical and socio-economic disparities of these landscapes in the Colombian geography. For instance, in other highlands such as the Sumapaz region, in the center of the country, the land tenure is characterized by small-holders rather than large landowners like in the case of Las Hermosas. Would this land tenure characteristic vary the outcomes of land and water access during the post-conflict phase? In the same sense, it would be interesting to test if under different FARC rules other types of socio-ecological changes are occurring in the mountains.

The results about water concessions from this case also call the attention for doing an extensive revision on changes of water demands in those river basins where the FARC used to exert control. These could be correlated with the implementation of other government initiatives such as water supply infrastructures or agricultural incentives consigned in the Peace Agreement.

On the other hand, the social change agenda of sustainability science, formulating solutions-oriented transdisciplinary research projects about possible community-based mechanisms to solve water conflicts can also enrich the number of possible alternatives for reconciling human needs with a more sustainable natural resources use in the Colombian highlands.

7. Conclusion

With this single case study, I described and analyzed the local actors' experiences around the changes in natural resources distributions during the post-agreement phase in a once FARC controlled area in the southwest highlands of Colombia. I focused on Combia's village, a rural area in Palmira which is a buffer zone of the Las Hermosas páramo system.

I showed how a new legal order in the post-agreement period can influence access to water and the distribution of land. The changes brought by the withdrawal of FARC allowed the appearance of new actors such as once-displaced large landowners and the environmental regional authority (CVC). Mobility, access to land, control over water and productive activities have been gradually changing, according to local testimonies.

The irregular land tenure is crucial for understanding those local changes. In this village, the return of landowners, the legal arrangements about ownership of the land, the procedures for obtaining legal water concessions and the governmental decisions on water resource conservation have generated tensions that reinforce the historically unequal resource distributions for actors without land, whose current legal access to water is being restricted. In the same way, those new frameworks have led to the emergence of productive activities such as tourism that clashes with conservation schemes and other traditional peasant livelihoods in the upper zones of the highlands.

Drawing on my case study, I showed how the State intervention in once-controlled FARC territories can result in detrimental impacts for the vulnerable communities, particularly since the dispositions of the peace agreement are not being implemented along with the changing environmental norms. The scope of my research does not allow to extend those results to other highland contexts. However, it contributes to the debate about water governance in Colombia in relation to the sustainability of the highlands, as hydrosocial territories, which is influenced by the post-agreement phase in Colombia.

References

Agencia Presidencial de Cooperación Internacional. (2018). Fondo Colombia Sostenible. Retrieved from https://www.apccolombia.gov.co/etiquetas/fondo-colombia-sostenible

Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In A. Swain & J. Öjendal (Eds.), *Routledge Handbook of Environmental Conflict and Peacebuilding*.

Arjona, A. (2014). Wartime Institutions: A Research Agenda. *The Journal of Conflict Resolution, 58*(8), 1360.

Arjona, A. (2016). *Rebelocracy: Social Order in the Colombian Civil War*. Cambridge: Cambridge University Press.

Baptiste, B., Pinedo-Vasquez, M., H. Gutierrez-Velez, V., Andrade, G., Vieira, P., Estupiñán Suárez, L., . . . Ming Lee, T. (2017). *Greening peace in Colombia* (Vol. 1).

Boelens, R. (2014). Cultural politics and the hydrosocial cycle: Water, power and identity in the Andean highlands. *Geoforum, 57*, 234.

Boelens, R., Hoogesteger, J., Swyngedouw, E., Vos, J., & Wester, P. (2016). Hydrosocial territories: a political ecology perspective. In (Vol. 41, pp. 1-14).

Bruch, C., Muffett, C., & Nichols, S. S. (2016). Natural resources and post-conflict governance: Building a sustainable peace. In C. Bruch, C. Muffett, & S. S. Nichols (Eds.), *Governance, Natural Resources, and Post-Conflict Peacebuilding*. London: Earthscan.

Buitrago, E. A. (2016). Limitaciones y delimitaciones de los páramos en una Colombia posacuerdo. In A. Ulloa & S. Coronado (Eds.), *Extractivismos y posconflicto en Colombia : retos para la paz territorial* (pp. 465). Bogotá: Universidad Nacional de Colombia (Sede Bogotá).

Burt, M., & Keiru, B. J. (2011). Strengthening post-conflict peacebuilding through community water-resource management: Case studies from Democratic Republic of Congo, Afghanistan and Liberia. *Water International, 36*(2), 232-241. doi:10.1080/02508060.2011.558885

Centro Nacional de Memoria Histórica. (2014). *Guerrilla y población civil. Trayectoria de las FARC 1949-2013* (Vol. Tercera Edición). Bogotá: CNMH.

Cinep, & Cerac. (2019). *Quinto informe de verificación de la implementación del Acuerdo Final de Paz para los Verificadores Internacionales Feliz González y José Mujica*. Retrieved from Bogotá:

Clark, W. C., & Dickson, N. M. (2003). Sustainability science: The emerging research program. *Proceedings of the National Academy of Sciences, 100*(14), 8059-8061. doi:10.1073/pnas.1231333100

Cleef, A. M. (1981). The Vegetation of the Páramos of the Colombian Cordillera Oriental A. M. Cleef. In (Vol. 11, pp. 416): Botanischer Garten und Botanisches Museum Berlin-Dahlem.

Corporación Autónoma Regional del Valle del Cauca. (2019). *Sistema de Información Geográfico*.

Corporación Autónoma Regional del Valle del Cauca, & Universidad del Valle. (2013). *Plan de ordenación y manejo de la cuenca hidrográfica del río Amaime*. Cali: Corporación Autónoma Regional del Valle del Cauca.

Cortés-Duque, J., & Sarmiento, C. (2013). *Visión socioecosistémica de los páramos y la alta montaña colombiana: memorias del proceso de definición de criterios para la delimitación de páramos.* Bogotá: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.

DANE. (2019). Conceptos básicos. Retrieved from https://www.dane.gov.co/files/inf_geo/4Ge_ConceptosBasicos.pdf

Departamento Nacional de Planeación. (2015). *El campo colombiano: un camino hacia el bienestar y la paz*. Bogotá: Departamento Nacional de Planeación.

Díazgranados, M. (2013). Aportes a la delimitación de los páramos desde el estudio de los frailejones. In J. Cortés-Duque & C. Sarmiento (Eds.), *Visión socioecosistémica de los páramos y la alta montaña*

colombiana: memorias de definición de criterios para la delimitación de páramos. Bogotá: Instituto Alexander von Humboldt.
Duarte-Abadia, B., & Boelens, R. (2016). Disputes over territorial boundaries and diverging valuation languages: the Santurban hydrosocial highlands territory in Colombia. In (Vol. 41, pp. 15-36).
FAO. (2003). Tenencia de la tierra y desarrollo rural Retrieved from http://www.fao.org/3/y4307s/y4307s00.htm#Contents
FAO. (2017). América Latina y el Caribe es la región con la mayor desigualdad en la distribución de la tierra. Retrieved from http://www.fao.org/americas/noticias/ver/es/c/879000/
Faran, T. (2010). Sustainable Development: A Typology of Perspectives. *Globalisation Informed by Sustainable Development*.
Fundación Ideas para la Paz. (2013). *Dináicas del conflicto armado en el sur del valle y norte del Cauca y su impacto humanitario*. Retrieved from Bogotá:
Fundación Paz y Reconciliación. (2018). Los datos de la violencia en la Colombia del postconflicto. *El Espectador*. Retrieved from https://www.elespectador.com/noticias/paz/los-datos-de-la-violencia-en-la-colombia-del-postconflicto-articulo-826375
Gallini, S., de la Rosa, S., & Abello, R. (2015). *Historia ambiental*. Bogotá.
Garzón Roa, O. L. (2009). Duro golpe a seguridad de 'Pablo Catatumbo'. *El Espectador*. Retrieved from https://www.elespectador.com/noticias/judicial/articulo143359-duro-golpe-seguridad-de-pablo-catatumbo
Guhl, E. (1982). *Los páramos circundantes de la Sabana de Bogotá*: Jardín Botánico "José Celestino Mutis".
Hoogesteger, J., Boelens, R., & Baud, M. (2016). Territorial pluralism: water users' multi-scalar struggles against state ordering in Ecuador's highlands. *Water International, 41*(1), 91-106. doi:10.1080/02508060.2016.1130910
Ideam. (2018). Alertas Tempranas de Deforestación. Retrieved from http://smbyc.ideam.gov.co/MonitoreoBC-WEB/pub/alertasDeforestacion.jsp?0.2675508080912369
Ideam. (2019). *Reporte de avance del Estudio Nacional del Agua ENA 2018*. Retrieved from http://www.andi.com.co/Uploads/Cartilla_ENA_%202018.pdf
Instituto Alexander von Humboldt (Producer). (2016). No será fácil: páramos colombianos en el posconflicto y posacuerdo. Retrieved from http://www.humboldt.org.co/es/boletines-y-comunicados/item/946-paramos-en-el-posconflicto
Instituto Alexander von Humboldt. (2017). *Recomendación para la delimitación, por parte del Ministerio de Ambiente y Desarrollo Sostenible, del Complejo de Páramos Las Hermosas a escala 1:25.000*. Bogotá.
Instituto Geográfico Agustín Codazzi. (2016). De las 53 millones de hectáreas intervenidas en Colombia, el 61% presenta un uso inadecuado del suelo [Press release]. Retrieved from https://noticias.igac.gov.co/es/contenido/de-las-53-millones-de-hectareas-intervenidas-en-colombia-el-61-presenta-un-uso-inadecuado
Instituto Geográfico Agustín Codazzi. (2017). Colombia, un país con una diversidad de suelos ignorada y desperdiciada. Retrieved from https://noticias.igac.gov.co/en/contenido/colombia-un-pais-con-una-diversidad-de-suelos-ignorada-y-desperdiciada
Jerneck, A., & Olsson, L. (2013). More than trees! Understanding the agroforestry adoption gap in subsistence agriculture: Insights from narrative walks in Kenya. *Journal of Rural Studies, 32*, 114-125. doi:10.1016/j.jrurstud.2013.04.004
Jorgenson, J. P., & Sandoval, S. A. (2005). Andean Bear Management Needs and Interactions with Humans in Colombia. *Ursus, 16*(1), 108.

Krampe, F. (2017). Water for peace? Post-conflict water resource management in Kosovo. In (Vol. 52, pp. 147-165).
Kroc Institute for International Peace Studies. (2019). *Tercer informe sobre el Estado de Implementación del Acuerdo de Paz de Colombia* Retrieved from https://kroc.nd.edu/assets/316231/190410_informe_3.pdf
Latour, B. (2003). The promises of constructivism. In D. Idhe (Ed.), *Chasing Technology : Matrix of Materiality* (Vol. Indiana Series for the Philosophy of Science, pp. 27-46): Indiana University Press.
Le Billon, P. (2001). The political ecology of war: natural resources and armed conflicts. *Political Geography, 20*, 561-584. doi:10.1016/S0962-6298(01)00015-4
Leavy, P. (2017). *Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches*: Guilford Press.
Lee, J. R. (2018). Environment and Conflict. In A. Swain & J. Öjendal (Eds.), *Routledge Handbook of Environmental Conflict and Peacebuilding*. London: Routledge.
Linton, J., & Budds, J. (2014). The hydrosocial cycle: Defining and mobilizing a relational-dialectical approach to water. *Geoforum, 57*, 170-180. doi:10.1016/j.geoforum.2013.10.008
McKay, B. M. (2018). Democratising land control: towards rights, reform and restitution in post-conflict Colombia. *Canadian Journal of Development Studies, 39*(2), 163.
Miller, T., Wiek, A., Sarewitz, D., Robinson, J., Olsson, L., Kriebel, D., & Loorbach, D. (2013). *The future of sustainability science: A solutions-oriented research agenda* (Vol. 9).
Nieto, M., Cardona, L. F., & Agudelo, C. (2015). *Análisis de servicios ecosistémicos. Provisión y regulación hídrica*. Bogotá: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.
ACUERDO FINAL PARA LA TERMINACIÓN DEL CONFLICTO Y LA CONSTRUCCIÓN DE UNA PAZ ESTABLE Y DURADERA, (2016).
Ortega-Guerrero, G. A. (2018). El reto de los conflictos ambientales en el escenario del postconflicto en Colombia: reflexiones para la construcción y discusión sobre las perspectivas de paz y derechos ambientales. *Gestión y Ambiente, 21*(Supl. 2), 162 -182
Osejo, A., Zapata, J., Sarmiento, C., & Ungar, P. (2016). Retos para la gobernanza en páramos en el postconflicto In. Bogotá.
Ospina, G. A. (2013). Criterios para no limitar la conservación y la diversidad cultural de los páramos en Colombia. In J. Cortés-Duque & C. Sarmiento (Eds.), *Visión socioecosistémica de los páramos y la alta montaña colombiana: memorias del proceso de definición de criterios para la delimitación de páramos*. Bogotá: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.
Ospina, G. A. (2017). *Declaratorias del Estado y regímenes de virtualidad en el páramo: cartografías para otra idea de 'conservación'.* (Doctorado en Antropología), Universidad del Cauca, Popayán.
Oxfam. (2017). *Radiografía de la desigualdad*. Retrieved from Bogotá:
Palacio, D. C. (2015). *Redes, actores y gobernanza desde un enfoque relacional*. Bogotá: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.
Perramond, E. P. (2016). Adjudicating hydrosocial territory in New Mexico. *Water International, 41*(1), 173-188. doi:10.1080/02508060.2016.1108442
Rangel - Ch., J. O. (2015). La biodiversidad de Colombia: significado y distribución regional. *2015, 39*(151), 25. doi:10.18257/raccefyn.136
Redacción El País. (2009). Cae mano derecha de alias Pablo Catatumbo. *El País*. Retrieved from http://historico.elpais.com.co/paisonline/notas/Junio012009/jud6.html
Redacción El Tiempo Cali. (2001). Desplazamiento campesino. *El Tiempo*. Retrieved from https://www.eltiempo.com/archivo/documento/MAM-485275

Robbins, P. (2012). *Political ecology. [Elektronisk resurs] : a critical introduction*: Chichester, U.K. ; Malden, Mass. : Wiley, 2012. 2nd ed.

Rodríguez Garavito, C., Rodríguez Franco, D., & Durán Crane, H. (2017). *La paz ambiental: retos y propuestas para el posacuerdo*. Retrieved from Bogotá: https://cdn.dejusticia.org/wp-content/uploads/2017/04/fi_name_recurso_924.pdf

Rojas-Robles, R. (2018). Ambiente y post-acuerdo en Colombia: la construcción de una paz integral y con la naturaleza no-humana. *Gestión y Ambiente, 21*(Supl. 2), 183-192.

Sánchez León, N. C. (2017). *Tierra en transición. Justicia transicional, restitución de tierras y política agraria en Colombia.* Bogotá.

Sarmiento, C. (2018). [Interview with Carlos Sarmiento about páramo ecosystems and post-conflict].

Sarmiento, C., Cadena, C. E., Sarmiento, M. V., & Zapata, J. (2013). *Aportes a la conservación estratégica de los páramos de Colombia: actualización de la cartografía de los complejos de páramo a escala 1:100.000*

Sarmiento, C., Osejo, A., Ungar, P., & Zapata, J. (2017). Páramos habitados: desafíos para la gobernanza de la alta montaña en Colombia. *Biodiversidad en la práctica, 2*(1), 122-145.

Sierra, C. A., Mahecha, M., Poveda, G., Álvarez-Dávila, E., Gutierrez-Velez, V. H., Reu, B., . . . Skowronek, S. (2017). Monitoring ecological change during rapid socio-economic and political transitions: Colombian ecosystems in the post-conflict era. *Environmental Science & Policy, 76*, 40-49. doi:https://doi.org/10.1016/j.envsci.2017.06.011

Silverman, D. (2015). *Interpreting qualitative data*: London : Sage, 2015 5. ed.

Swain, A. (2016). Water and post-conflict peacebuilding. *Hydrological Sciences Journal/Journal des Sciences Hydrologiques, 61*(7), 1313-1322. doi:10.1080/02626667.2015.1081390

Swyngedouw, E. (1999). Modernity and Hybridity: Nature, Regeneracionismo, and the Production of the Spanish Waterscape, 1890-1930. *Annals of the Association of American Geographers, 89*(3), 443.

Swyngedouw, E. (2004). Globalisation or 'glocalisation'? Networks, territories and rescaling. *Cambridge Review of International Affairs, 17*(1), 25-48. doi:10.1080/0955757042000203632

Swyngedouw, E. (2009). The Political Economy and Political Ecology of the Hydro-Social Cycle. *Journal of Contemporary Water Research & Education*. doi:https://doi.org/10.1111/j.1936-704X.2009.00054.x

Turner, B. L., & Robbins, P. (2008). Land-Change Science and Political Ecology: Similarities, Differences, and Implications for Sustainability Science. *Annual Review of Environment and Resources, 33*(1), 295-316. doi:10.1146/annurev.environ.33.022207.104943

Ungar, P. (2015). *Hojas de ruta. Guías para el estudio socioecológico de la alta montaña en Colombia*. Retrieved from Bogotá:

Ungar, P., & Osejo, A. (2015). *Tejiendo historias. Introducción a la colección.* Bogotá: Instituto de Investigación de Recursos Biológicos Alexander von Humboldt.

Universidad del Cauca. (2015). *Estudio socioeconómicmo y cultural del complejo de páramos Las Hermosas a escala 1:25.000*. Retrieved from

Universidad del Valle. (2015). *Componente diagnótico Reserva Forestal Protectora Nacional Río Amaime*. Retrieved from Cali:

Uprimny-Yepes, R., & Sánchez, N. C. (2010). Los dilemas de la restitución de tierras en Colombia. *Estudios Socio-Jurídicos, 12*(2), 38.

Weinthal, E., & Johnson, M. F. (2018). Post-war environmental peacebuilding: Navigating renewable and non-renewable resources. In A. Swain & J. Öjendal (Eds.), *Routledge Handbook of Environmental Conflict and Peacebuilding*: Taylor and Francis.

Weinthal, E., Troell, J., & Nakayama, M. (Eds.). (2011). *Water and post-conflict peacebuilding: introduction* (Vol. 36).

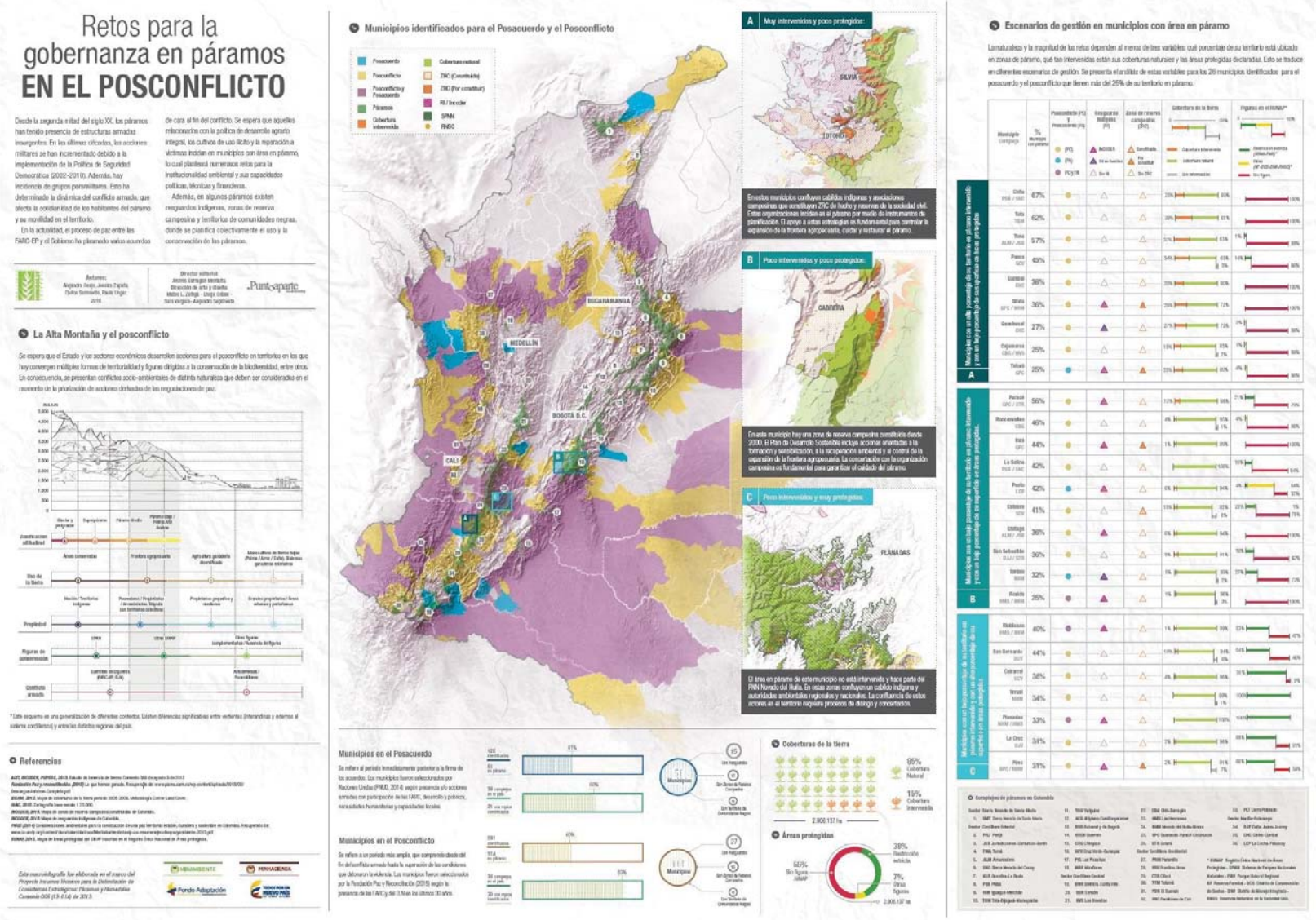
Wester, P., Rap, E., & Vargas-Velázquez, S. (2009). The Hydraulic Mission and the Mexican Hydrocracy: Regulating and Reforming the Flows of Water and Power. *Water Alternatives*(3), 395.

Yin, R. K. (2014). *Case study research : design and methods*: London : SAGE, cop. 2014

5. ed.

Annexes

Annex 1



Link: http://www.humboldt.org.co/images/pdf/macroinf/infografia-posconflicto-final-alta.pdf

Annex 2

Semistructured - Interview/ Narrative walk guide

Nota/ Leer para consentimiento informado de los participantes.

La entrevista a continuación hace parte del proyecto de investigación "páramos, ciudadanos y construcción de paz" que elabora Laura Betancur Alarcón como parte de su trabajo de tesis de maestría en Environmental Studies and Sustainability Science en Lund University. Al acceder a esta entrevista, usted me otorga el permiso de utilizar sus apreciaciones y comentarios para el análisis de mi trabajo investigativo y para piezas de divulgación periodística que se deriven de este. ¿Está de acuerdo?

1. **Caracterización**

Datos generales: persona natural

+Nombre
+Cargo
+Teléfonos de contacto
+Correo electrónico
+Dirección
+Edad
+Sexo
+Nivel educativo

Datos generales organización comunitaria

+ *Organización formal o informal*.
+ Si es formal: naturaleza jurídica de la organización (privada, pública mixta, sin ánimo de lucro, régimen solidario, cooperación internacional, régimen especial).
+ Fecha de creación de la organización.
+ Origen e historia de la organización/institución. ¿Cuál es el evento o situación que motivó la creación de la organización?
+ Objetivos de la organización.
+ Misión de la organización.

1.1 Apropiaciones y usos del ecosistema de páramo - Actores de primer nivel (Palacios, 2015)

¿Cuándo inicia su relación con el páramo (año, período, época)? (Clave para determinar si el entrevistado puede dar cuenta de los cambios en los últimos 8 años).

¿Actualmente qué acciones relacionadas con el páramo realiza?

¿Actualmente en qué sector del área de páramo realiza sus actividades o tiene sus predios? ¿Accede a áreas del parque nacional natural?

¿Mediante qué medios (vías de acceso, caminos...) usted se moviliza en el área de páramo?

¿Tiene acceso a los nacimientos de agua?

¿Realiza caminatas en el área de páramo? ¿Qué duración y extensión tienen estos recorridos? ¿Con qué fin los realiza?

¿Qué usa, disfruta o aprovecha del páramo? (agua, pastos, bosques, fauna,turismo, etc.)

¿Qué beneficios obtiene del páramo? ¿ Cómo los califica? ¿Con qué frecuencia? (Todos los días/semanas/meses/años)

¿Dónde lo usa/disfruta/aprovecha (marcar en el mapa)?

¿Qué actividades, que le generen ingresos, realiza en el páramo? ¿dónde se ubican? Por ejemplo: ¿dónde va a pescar? ¿Dónde siembra?

- ¿Cuál es la extensión de su predio? ¿Cuántas cabezas de ganado por hectárea administra?

¿Qué lo limita de obtener esos beneficios del páramo? ¿Qué obstáculos encuentra en hacer uso de esos servicios?

¿Existe alguna competencia o conflicto entre las personas por acceder o poseer estos recursos? ¿Desde cuándo?

1.2 Conflicto armado, usos y acceso

¿Qué tipo de actos violentos presenció o tuvo conocimiento de que ocurrieran en el área de páramo?

¿Qué sectores del páramo recuerda no eran posibles de acceder por la presencia de las guerrillas o el ejército? ¿Quiénes impedían ese acceso?

¿Qué tan lejos se encontraban de su vivienda?

¿Se sentía limitado en caminar o recorrer el área de páramo hace unos años? ¿Eso ha cambiado? Si es así, ¿desde cuándo? ¿Cómo nota el cambio? ¿En qué momento recuerda esto fue más difícil? ¿1998 - 2003? ¿2003- 2006?

¿Los grupos armados negaban el acceso a los nacimientos de agua o algunos cerros o sitios especiales dentro el área de páramo?

¿Los grupos armados le impedían aprovechar o usar de alguna manera el área de páramo? ¿Por su uso usted tenía que pagar algún tipo de extorsión?

¿Qué tipo de intimidaciones o acciones empleaban los grupos armados para no acceder al páramo?

¿Tuvo que desplazarse o dejar de ocupar su propiedad debido a intimidaciones violentas?

¿Ha variado la extensión del área en el que realiza su actividad por causas relacionadas con el conflicto? (Tuvo que abandonar alguna parte de su finca, modificar el área de pastoreo del ganado...)

¿Debido a razones motivadas por el conflicto armado actualmente su predio se encuentra en algún proceso restitución de tierras?

¿Conoce de los usos que hacían los actores armados del páramo? ¿Ellos ordenaban o impedían que se hicieran algunas acciones en el área de páramo? (Caza, tomas de agua, cultivos?) ¿Qué normas o restricciones ellos impedían en cuanto a la quema, pesca, caza u otra actividad en el páramo?

-¿Cómo los actores armados afectaron su actividad económica?

1.3 Cambios y transformaciones en el post-acuerdo

¿De alguna manera percibió que durante las negociaciones entre el Gobierno y las FARC, cambió el orden público en su sector? ¿Esto le permitió acceder a otras áreas?

¿Qué lugares del páramo considera que ya pueden ser habitados? ¿Qué lugares del páramo son especiales para usted?

- ¿Ha podido extender el área de uso para su actividad productiva? ¿O por el contrario la ha reducido?
- Si es así, ¿dónde? ¿con qué frecuencia accede a esta? ¿Visita con mayor frecuencia el parque nacional?

¿Ha notado la presencia de otros grupos de personas que antes de podían acceder al área de páramo?

¿Cómo han cambiado las normas de control en el área de páramo desde que las FARC salió?

¿Cómo fue el regreso a su predio? ¿Qué cambios ha hecho en este desde que las FARC salieron? ¿En qué estado se encontraba?

¿Ha cambiado el uso o beneficio a alguno de los servicios que obtenía en los últimos años? Si es así, ¿desde cuándo empieza a tener evidencia de esos cambio? ¿dónde y en qué tipo de acciones vio el cambio?

¿Ha visto aumento del hato ganadero, o mayor aparición de cultivos? ¿lo ha hecho en su predio? ¿En qué zonas ha percibido esto?

¿Ha iniciado otros negocios o emprendimientos en el área de páramo?

1.4 Preguntas específicas para RNSC

Propietarios de las reservas de la sociedad civil

- ¿Desde cuándo constituyó su reserva? ¿qué extensión tiene?
- ¿La salida de las FARC ha sido un motivo para modificar el área de protección de su predio?
- ¿Otros actores, como científicos o turistas, han tenido mayor acceso al área de páramo o específicamente a su predio?
- ¿Qué obstáculos encuentra para la constitución de la RNSC?
- ¿Qué compensaciones ha obtenido por constituirla legalmente?

1.5 Acciones locales ante cambios en el sistema socio-ecológico de los últimos años

Relación con la institucionalidad

¿Cuándo comienza a volver la autoridad ambiental en el territorio? ¿Cuándo sube la CVC a la vereda? ¿Tenían presencia en el territorio antes de la salida de las FARC? ¿Cómo ha sido su relación con las autoridades de control ambiental como la CVC? ¿Está involucrado en algún proyecto de conversión de actividades productivas en el área de páramo? ¿Cuál? ¿Desde cuándo?

Participación

- ¿Se ha organizado con vecinos o asociaciones de usuarios para utilizar áreas a las que antes no había acceso? Si es así, ¿qué tipo de proyectos o iniciativas se han discutido?
- ¿En cuáles instancias de planeación han participado en los últimos siete años? Marcar cuál (Pomcas, PGA, Planes de manejo AP, POT, Perfil Ambiental Municipal, otros). ¿Alguna de estas se ha relacionado con las acciones de los Planes de Desarrollo con Enfoque Territorial?

- ¿Desde la salida de las FARC cree que ha variado su participación en acciones colectivas relacionadas con el área de páramo? ¿Cómo?

Annex 3

ANEXO 1. PROPUESTA DE PREGUNTAS

Estos temas pueden ser parte de una guía de entrevista a profundidad o para desarrollar un instrumento sistemático de entrevista estructurada. Es una base para ser ajustada de acuerdo con las necesidades de cada investigación.

Preguntas sobre composición: los actores y sus atributos

I. Datos del entrevistado

Nombre
Cargo
Teléfonos de contacto
Correo electrónico
Dirección
Edad
Sexo
Nivel educativo

II. Datos de la organización/ institución a la que pertenece

+ Organización formal o informal.
+ Si es formal: naturaleza jurídica de la organización (privada, pública mixta, sin ánimo de lucro, régimen solidario, cooperación internacional, régimen especial).
+ Fecha de creación de la organización.
+ Origen e historia de la organización/institución. ¿Cuál es el evento o situación que motivó la creación de la organización?
+ Objetivos de la organización.
+ Misión de la organización.
+ Visión de la organización.
+ Jurisdicción o ámbito de acción de la organización: regional, local, nacional o internacional.

III. Preguntas sobre problematización y formas de construcción del discurso y sus narrativas por parte de los actores

Cuándo inicia su relación con el páramo (año, período, época). Narración abierta sobre el origen del vínculo o pregunta cerrada de cuándo y en qué circunstancias específicas.

IV. Significados sobre el páramo (problematizando)

+ ¿Qué es el páramo? (Recoger textualmente las respuestas).
+ ¿Cuál es su relación con el páramo? (Personal y en calidad de su función).
+ ¿Con qué elemento (s) del páramo (agua, paisaje, pasto, etc.) tiene relación?
+ Desde el punto de vista de su organización/institución:
  + ¿Cuáles son las principales problemáticas en relación con el páramo?
  + ¿Qué actores son los principales responsables de dicha situación? (Lista con nombres completos).

V. Preguntas sobre acción conjunta y participación

Actuación de la organización en el páramo

Qué tipo de acciones ha realizado para resolver estas situaciones en el páramo y con quién y en dónde (últimos 3 años).

Acción	Año	Actor	Lugar*

Realizó acciones de conservación del páramo X con	Cuántas veces en un período X de tiempo	Dónde*	Valoración de esta relación 1-5, donde 1 es bajo y 5, alto

*Ver lista de veredas para municipio o microcuencas (crearla para cada complejo).

VI. Participación en instancias de planeación, escenarios de diálogo y acción colectiva

+ ¿Cuáles instancias de planeación han participado en los últimos cinco años? (Pomcas, PGA, Planes de manejo AP, POT, Perfil Ambiental Municipal, otros).
+ ¿Participa en escenarios de diálogo (mesas, veedurías, comités, consejos, comisiones mesas temáticas de trabajo que coordinan las corporaciones regionales en los municipios, los comités municipales de educación ambiental, los comités locales de gestión y prevención del riesgo, de gestión territorial, de desarrollo sostenible, del cambio climático, de gestión de cuencas, etc.) activos en esta temática? ¿En cuáles? (Lista de escenarios en los que ha participado en los últimos cinco años). ¿Cuándo se reúnen? (fecha, lugar). Acceso a actas de estas reuniones.
+ Participación en acciones colectivas: huelgas, movilizaciones, protestas, acciones jurídicas. Ocupación de lugares públicos, otros. (Listar en las que haya participado en los últimos X tiempos).

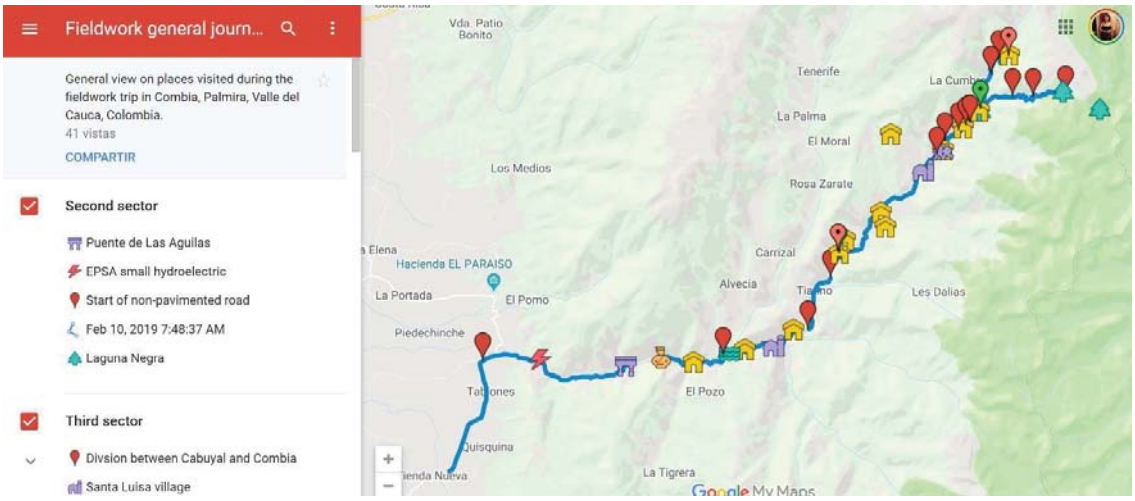
VII. Servicios ecosistémicos

+ Usos y beneficios que obtiene del páramo (agua, pastos, bosques, fauna, turismo, etc.). Enunciar uno a uno. Hacer valoración.
+ El acceso a dichos usos y beneficios tiene alguna limitación. Enunciar cada uno.

Annex 4.

Visualization of Fieldwork Journeys

Follow the link: **https://tinyurl.com/y2jevgyu**



Annex 5

Sample of fieldwork observations – Extracted from logbook, personal archive.

Febrero 17 / Combia Valle del Cauca

Acompañamiento de visita de turistas del grupo Nómadas Caminantes de Pradera a la chorrera "El Encanto" en áreas del Parques Nacional Natural Las Hermosas. La idea era entender cómo se están empezando a dar las dinámicas de turismo en la zona. También entrevista con Jaime Quintero sobre el turismo en el corregimiento.

Me quedé a dormir donde doña Olga Osorio, quien vive a lado de la Escuela Atanasio Girardot en Combia. Si se quiere acceder al páramo por este sector, es muy necesario dormir en la zona alta de Combia, porque el recorrido a pie es de cerca de 5 horas a pie o 3 si se hace a caballo. Salimos a eso de las 8:30 am de la entrada de la finca de Jaime Cano, donde se ve el aviso del Parque Nacional Natural Las Hermosas, aunque solo hasta una hora y media y después estamos en predios del Estado. La mayoría de los caminos son parte de dos fincas que acumulan la mayor parte de la montaña a esa altura. El grupo es de 14 personas, dirigido por Arnulfo XXX, quien se está formando como guía en el Sena. Desde hace dos años está coordinando recorridos con caminantes en las áreas altas de la montaña y páramo entre Pradera, Palmira y El Cerrito. Pero especialmente en Palmira. Es un negocio en el que ve potencial, a pesar de no contar actualmente con un certificado profesional. El tema del seguro médico tampoco es muy claro. Él asegura tener un seguro médico para quienes lo acompañan, pero afirma " qué más seguridad que tener un caballo y alguien que sepa de la zona" . **Llegan en un Jeep, algunos de ellos montados encima del capó del carro. Vienen de verde en actitud deportiva. Suelen hacer caminatas cada 15 y 20 días por las montañas del Valle del Cauca.**

Los guías son Leonel Osorio, hermano de Olga Osorio, y Diego Osorio, el sobrino de ambos de 12 años. Llevan con ellos dos caballos sin nombre. Don Leonel (ojos claros, brillantes y muy redondos, cejas tupidas y negras y muchas canas y pelos que le sale por las orejas) suele hacer este camino cada 15 días. En algunas ocasiones, incluso, para viajar al Tolima. **El camino real – que un día labraron los indios pijaos en esta región- sigue siendo utilizado por los campesinos de la zona para mantener en contacto con las fincas de Rioblanco. En un tiempo también fue la vía número uno para bajar la amapola en los 80's . En el camino nos encontraremos a dos campesinos, hombres de más de 50 años, uno viniendo de Rioblanco y el otro yendo hacia allá.**

La escena del comienzo es pintoresca o hasta graciosa. **Los caminantes hacen ejercicios de entrenamiento antes de comenzar mientras don Leonel se ríe de ellos. Yo los observo desde el otro lado, donde veo de fondo la casa de Jaime Cano, la casa que un día fue cárcel, calabozo, artillería y centro de operaciones de las FARC.** Los turistas incluso pasan el rejo de esta casa y orinan en el pasto. Los tiempos han cambiado. Aunque el chofer, no deja de preguntar: y por qué la gente por acá es tan seria? Si es seguro quedarme acá mientras los otros bajan? Es que yo he estado por Corinto… Leonel le responde que por acá todo es traquilísimo, que el problema de abajo es la coca.

De camino, se observan en principio los potreros de la finca de Los Cano. Y un par de vacas. De allí en adelante comienza la subida que durará hasta más de 2 horas in bajar la pendiente. El río Amaime, aunque diezmado por el verano, bajo con fuerza desde las montañas. En esta finca donde está el nacimiento de todo el río principal de la cuenca. Los caminantes no se detienen a observar la flora, e incluso ignorar qué río están atravesando.

Solo doña Cielo – profesora en Pradera- se queda con los guías locales: Leonel y Diego conversando sobre la trocha. Y ella no evita pregunta: y los señores del monte se pasaban por este camino? Don Leonel empieza a relatar: claro, y bien cargados que iban, de 2 roas cargadas al hombre sin importar sin eran hombres o mujeres. Caminaban 4 o 5 días sin parar hasta el Tolima. Sangraban en el camino, llevaban secuestrados, huían del ejército. Todo trascurría en esas trochas de menos de 40 centímetros de ancho, que con la lluvia se convierten en lodazales. La buena noticia para esta caminata: es que hace más de 3 semanas no llueve en la región. Pero no es tan buena, para algunos usuarios río abajo que empiezan a resentir no tener un acueducto para la vereda de Combia. Don Leonel, afirma que son Los Salas, que aún no han dejado pasar el agua por su finca. Y eso como muchas otras cosas – como el Vive Digital o la limpieza de la carretera- están "parados".

Al llegar a la cascada: Arnulfo, el guía, le dice a Leonel, evitá poner avisos o cosas así, para que esta ruta siempre sea tuya. La verdad, es que don Leonel siempre había visto la cascada, pero nunca se había acercado a ella. Era el guía, pero por primera vez la vía a conocer. Con muchos sitios del monte le ha ocurrido así: eran para él paisaje, que rápido pasaba al ritmo de sus caballos para ir al Tolima. Hoy, cuando son otros, los que se interesan: él también sonríe al ver caer el agua. Aunque no se mete. Está muy fría porque viene de la laguna negra, esa que tanto le gusta y a la que lleva a la mayoría de turistas que le piden su servicio de guianza. "Tengo que llevar las bestias, porque algunos no pueden con la altura y toca remolcarlos a mitad de camino", me cuenta mientras sigue jalando mi caballo. Yo soy una de esas remolcadas y ni siquiera vamos hoy para la laguna.

A cerca de 3300 msnm encontramos un potrero extenso pero sin vacas que sigue siendo utilizado para el pastoreo de una de las fincas. Los actores locales – expertos y funcionarios de la CVC- sostienen que aún en el páramo una que otra pastorea cerca de los frailejones. Eso lo confirma don Leonel, quien incluso ha trabajado en fincas a 3 horas en caballo de La Albania, el punto donde termina la carretera del corregimiento. Al frente del potrero se observa un bosque de árboles de laurel, un verde oscuro tupido se pone de fondo y en las copas un color rojizo tienen las hojas del árbol. Diego dice que esto ya es territorio del oso, pero que él todavía no ha visto alguno. Que su tío sí.

Lo que acontece en la cascada, luego lo sabrá Instagram. Es solo una sesión de fotos de lso 14 turistas, que saltan y abren los brazos delante de una go pro o una cámara normal. La sesión de fotos puede durar cerca de 1 una hora. Entretanto, don Leonel y Diego se quedan debajo de unos árboles a lado de los turistas. No hablan de nada. Sólo con doña Cielo, que ya les pidió una foto.

El regreso muestra el encanto del bosque altoandino: las nubes se arrastran pasmosamente-densamente con su gris hasta acobijar por completo la cumbre de las montañas. Las hojas de los árboles empiezan a palidecer mientras son rozadas por esa agua gaseosa que mantiene el ciclo del agua para toda la cuenca. El movimiento es lento, pero la fuerza que llevan las nubes es algo que aún desconocemos los caminantes mientras que avanzamos por el potrero verde claro, que forma el parche en toda la montaña.

Lo que se percibe de los turistas: es que es un grupo más inclinado a la actividad deportiva que a conocer qué territorio están habitando. No saben de la historia, no conocen el nombre del río, no le piden la palabra a don Leonel. El tema va más de kilómetros, pendientes y elevación alcanzada. Es válido. También son cuidadosos en no dejar una basura, pero en llevarse en sus teléfonos todos los paisajes.

Don Leonel me baja en caballo hasta la casa de su hermana. Ahí me cuenta la falta del agua de su vereda, la opción de una entrada económica con estos turistas aunque poco conversen, me describe el hombre de algunos árboles mientras nos adentramos al paisaje que ya empieza a dominar la palma de cera…. Pero por sobre todo me dice, que aún sin acueducto, sin la escuela funcionando bien o sin el punto de Vive Digital… aún con la carretera maltrecha… ahora lo que importa es que hay tranquilidad, que pueden subir las personas, que se pueden mover por las montañas.

Annex 6 Participants of individuals interviews Combia - Palmira - Valle del Cau

	CODE	Date	Corregimiento	Property area extension (Ha hectares)	Type of land tenure	Legalized property right	Legal status of water access
Local Actor Inhabitant (LAI)	LA 1	8/02/2019	Combia	100	Private owner	Yes	Yes
	LA 2	##########	Teatino	0	Unformal Land Holder*	No	No.
	LA 3	##########	Combia	107	Private owner	Yes	Yes
	LA 4	##########	Combia	3	Unformal Land Holder*	No	No
	LA 5 -6	##########	Combia	12	Private owner	No	No
	LA 7	7/02/2019	Combia, Toche y La Nevera	400	Private owner	Yes	No
	LA 8	7/02/2019	Combia, Toche y La Nevera	230	Private owner	Yes	Yes
	LA 9	##########	Combia	2500	Private owner	Yes	Yes
	LA 10	##########	Teatino	4	Tenant/Landless	No	No
	LA 11	##########	Combia	0	Tenant	X	X
	LA 12	##########	Toche	71	Private owner	Yes	Yes
	LA 13	##########	Toche	0	Tenant/ Landless	X	X
	LA 14	7/02/2019	Tenerife -El Cerrito	280	Private owner	Yes	Yes

X = Not applicable

*The legal ownership in some cases is not clear. Some land holders are "ocupantes" or "poseedores" according to the colombian legal system. In both cases I classified them in "Unformal Land Holder"

	Code	Date	Time in the area	Institution	Functions/ Role
Local Environmental Authority	LEA 1	##########	14 years	Corporación Autónoma Regional del Valle del Cauca (CVC)	Project coordinator - Páramos Andes Norte - European Union
	LEA 2	##########	4 years in the area	Corporación Autónoma Regional del Valle del Cauca (CVC)	Sub-division DAR - Southeast region (Palmira, parte de El Cerrito, Florida, Pradera, Candelaria). He was in charge of the highlands of Palmira. (Combia, Teatino,Cabuyal y Tablones, también Santa Luisa, Tenerife). Middle man between the CVC administrative body and the community in several topics: forest, water, permits.
	LEA3	7/02/2019	20 years	Corporación Autónoma Regional del Valle del Cauca (CVC)	DAR - Región Suroriente (Palmira, parte de El Cerrito, Florida, Pradera, Candelaria). He is in charge of promoting the creation of protected areas and educational projects regarding community conservation and private reserves.

	Code	Date	Time in the area	Profile
Local Environmental Expert	**LEE 5**	5/02/2019	20 years	Antrophologist. Researcher especialized in Las Hermosas páramo complex. Ecoturism Enterprenuer.
	LEE 6	6/02/2019	15 years	Director of Fundación Ambiente Colombia. Working in conservation strategies (protected areas, agroecology and landscape studies) in the Amaime basin river.

Annex 7 Water concessions register. Source: CVC February 2019

Nombre Usuario	Nombre Servicio	Nombre Estado técnico	Nombre Predio	Nombre Fuente	Fecha Creación	Fecha Vencimiento	Días Vencimiento	Aforo (LPS)
DE MONTEALEGRE MARÍA EDITH ROJAS	AGUAS SUPERFICIALES	NORMAL ACTIVA	PREDIO NO DEFINIDO CUENTA 70238 PROD 702382	ZONA ALTA RIO AMAIME	09/01/08	28/06/17	VENCIDA HACE: 532 DIAS	,5
ASOC DE ACUED EL VEGON LOS ROBLESASOACUVEROS	AGUAS SUPERFICIALES	NORMAL ACTIVA	ACUD EL VEGON LOS ROBLES	FUENTE LA PEÑA	23/02/05	23/09/14	VENCIDA HACE: 1541 DIAS	5,5
CARLOS ARTURO DUQUE MEJIA	AGUAS SUPERFICIALES	NORMAL ACTIVA	PREDIO NO DEFINIDO CUENTA 89514 PROD 895142	CORAZON	15/04/11	16/06/21	FALTAN: 917 DIAS PARA VENCER	1,77
AGROPECUARIA LA MESA SA	AGUAS SUPERFICIALES	NORMAL ACTIVA	SAN LUIS	CORAZON	12/02/09	0	0	6,05
LUIS FERNANDO CARMONA RAMIREZ	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL EDEN	ZONA ALTA RIO AMAIME	31/05/18	30/05/28	FALTAN: 3457 DIAS PARA VENCER	1
DIDIER ARNULFO ZULUAGA HURTADO	AGUAS SUPERFICIALES	NORMAL ACTIVA	LA MESETAEL REPOSO	TEATINO	12/09/13	10/09/23	FALTAN: 1733 DIAS PARA VENCER	11,77
GUSTAVO ALBERTO VILLEGAS IBANEZ	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL FUERTE	CORAZON	17/08/00	14/10/21	FALTAN: 1037 DIAS PARA VENCER	3
JOSE GOMEZ VELASQUEZ	AGUAS SUPERFICIALES	NORMAL ACTIVA	ALTA CLARA	CORONADO	18/04/06	19/05/15	VENCIDA HACE: 1303 DIAS	1
RICARDO LEON QUINTERO VALDERRAMA	AGUAS SUPERFICIALES	NORMAL ACTIVA	RANCHO LA MAGDALENA	CORONADO	25/08/18	18/05/28	FALTAN: 3445 DIAS PARA VENCER	1,25
ANDRÉS MAURICIO CORDERO CORTES	AGUAS SUPERFICIALES	NORMAL ACTIVA	VILLA MONTICELLO	CORONADO	23/09/16	16/09/26	FALTAN: 2835 DIAS PARA VENCER	,5
ISABEL CRISTINA AGUDELO ESPINAL	AGUAS SUPERFICIALES	NORMAL ACTIVA	LAS CAMELIAS	CORONADO	12/04/18	10/04/23	FALTAN: 1580 DIAS PARA VENCER	2
ELADIO ESCOBAR ARANGO	AGUAS SUPERFICIALES	NORMAL ACTIVA	LA PALMA	LAS VEGAS	23/06/17	01/06/27	FALTAN: 3093 DIAS PARA VENCER	2,35
GERMAN ARANGO BOTERO	AGUAS SUPERFICIALES	NORMAL ACTIVA	LOTE 2PINARES	LA TIGRERA	08/05/15	22/12/24	FALTAN: 2202 DIAS PARA VENCER	,65
ISABEL CRISTINA AGUDELO ESPINAL	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL MIRADOR	CORONADO	12/04/18	10/04/20	FALTAN: 485 DIAS PARA VENCER	,5
LUIS EDUARDO ZAPATA MARTINEZ	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL REFUGIO	ZONA ALTA RIO AMAIME	02/01/08	10/10/17	VENCIDA HACE: 428 DIAS	,05
ANDRÉS MAURICIO CORDERO CORTES	AGUAS SUPERFICIALES	NORMAL ACTIVA	VILLA MONTICELLO	CORONADO	22/09/16	16/09/26	FALTAN: 2835 DIAS PARA VENCER	2
ORLANDO QUINTERO VALENCIA	AGUAS SUPERFICIALES	NORMAL ACTIVA	VILLA SILVANA	LAS VEGAS	24/08/17	24/08/20	FALTAN: 621 DIAS PARA VENCER	1
GLORIA AMPARO PELÁEZ ESCOBAR	AGUAS SUPERFICIALES	NORMAL ACTIVA	LOS SAUCES LOTE C	LAS VEGAS	25/09/17	21/09/27	FALTAN: 3205 DIAS PARA VENCER	1
OSCAR VILLADA OSPINA	AGUAS SUPERFICIALES	NORMAL ACTIVA	PLANADAS	CORONADO	22/01/18	26/12/19	FALTAN: 379 DIAS PARA VENCER	3,03
ROJAS NELLY PATRICIA PARAMO	AGUAS SUPERFICIALES	NORMAL ACTIVA	GETSEMANI	ZONA ALTA RIO AMAIME	03/08/10	10/04/16	VENCIDA HACE: 976 DIAS	,2
ALFREDO ESCOBAR ESCOBAR	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL VESUBIO	CORONADO	28/08/18	09/08/28	FALTAN: 3528 DIAS PARA VENCER	2,246
OMELIO NICOMEDES LÓPEZ ZAMBRANO	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL LLANITO	TEATINO	17/08/00	08/10/18	VENCIDA HACE: 65 DIAS	,4
ODELIO SOTO MARTINEZ	AGUAS SUPERFICIALES	NORMAL ACTIVA	CASITA BUENA	CORONADO	12/02/18	22/01/28	FALTAN: 3328 DIAS PARA VENCER	,5
CARLOS ALFONSO DURAN SAENZ	AGUAS SUPERFICIALES	NORMAL ACTIVA	LA REGINA	CORONADO	24/04/18	24/04/28	FALTAN: 3421 DIAS PARA VENCER	1,54
AGROPECUARIA LA MESA SA	AGUAS SUPERFICIALES	NORMAL ACTIVA	LA MESA	NAPOLES	07/06/12	28/09/25	FALTAN: 2482 DIAS PARA VENCER	22
JULIANA LONDOÑO HOLGUIN	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL TESORITO	CORONADO	17/06/11	30/05/21	FALTAN: 900 DIAS PARA VENCER	2,87
PROTERRA COLOMBIA SA	AGUAS SUPERFICIALES	NORMAL ACTIVA	La Italia	FUENTE LA PEÑA	17/08/00	27/12/05	VENCIDA HACE: 4733 DIAS	68
ESCOBAR NARANJO DORIS	AGUAS SUPERFICIALES	NORMAL ACTIVA	PREDIO NO DEFINIDO CUENTA 91615 PROD 916152	ZONA ALTA RIO AMAIME	29/08/11	22/08/21	FALTAN: 984 DIAS PARA VENCER	,5
GERMÁN HERNANDEZ CHAPUEL	AGUAS SUPERFICIALES	NORMAL ACTIVA	MARIA LUISA	CORAZON	12/09/18	07/09/28	FALTAN: 3557 DIAS PARA VENCER	1,8
GERMÁN HERNANDEZ CHAPUEL	AGUAS SUPERFICIALES	NORMAL ACTIVA	MARIA LUISA	CUCUANA	12/09/18	07/09/28	FALTAN: 3557 DIAS PARA VENCER	4,2
JAIRO ALBERTO DORADO ZUIGA	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL CAMBIAZO	LAS AURAS	17/08/00	30/11/27	FALTAN: 3275 DIAS PARA VENCER	8
HERNÁNDEZ JORGE ALBEIRO PATIÑO	AGUAS SUPERFICIALES	NORMAL ACTIVA	EL REFUGIO DEL PROFE	TEATINO	31/08/11	01/03/23	FALTAN: 1540 DIAS PARA VENCER	1,5