Gender Assessment

FP323: Building Water Resilience in Bogotá and the Region

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SECTION I: Executive Summary and Methodology

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WHERE GAAP WAS DISCLOSED:	*E.g. via the project's website, at the inception meeting with stakeholders, printed and posted on notice board in community centre, etc.*		

[1] The GAAP is to be disclosed to stakeholders at least 30 days before the GCF Board meeting. This should be done in a manner and form that is culturally appropriate and may require translation of the document into local languages.

a) Executive Summary

The “Building a Water Resilient Bogotá Region Landscape” project aims to trigger a paradigm shift in consolidating water resilience across the Bogotá region. Facing high watershed vulnerability due to climate-induced shifts in temperature and precipitation patterns, the strategy proposes an innovative model to mobilize public and private finance at scale. The approach is grounded in generating verifiable Volumetric Water Benefits (VWBs), starting at the plot level and scaling up to the watershed level. This will be achieved through high-Andean ecosystem restoration and the transition to climate-resilient production practices—such as agroecology in traditional potato farming and silvopastoral systems in dairy production—in prioritized areas, including Guandoque, Villapinzón, Tominé and Tunjuelo. These direct actions are designed to mitigate runoff peaks, sustain baseflows, and optimize rural livelihoods in the face of extreme climate scenarios.

To meet the GCF’s strict investment criteria and "exit strategy" requirements, the project’s scalability will not rely on long-term grant funding. Instead, it will deploy financial solutions enabled by current Colombian regulations. The project entails operationalizing an environmental fee within Bogotá's water tariff to recover investment costs, alongside establishing a long-term mechanism for the private sector to finance VWBs in alignment with their corporate sustainability and compensation goals. In this way, the initial GCF investment will serve as a proof of concept that catalyzes an autonomous, self-sustaining model where water utilities, municipalities, and private entities assume the ongoing financing of the territory’s water resilience.

In strict alignment with the GCF’s Gender Policy—which mandates that climate finance must actively promote equity rather than merely avoid exacerbating inequalities—the project design is deeply rooted in the findings of a rigorous Gender Analysis. The territorial assessment, with a specific focus on prioritized municipalities such as Villapinzón and the surrounding upper watershed areas, revealed structural barriers that severely limit these communities' adaptive capacity. Key findings demonstrated profound gender gaps characterized by stark inequalities in formal land tenure, which directly restrict women's access to credit, technical assistance, and conservation incentive programs. Furthermore, the analysis identified highly asymmetrical participation in technical and leadership roles: rural women hold minimal representation in formal decision-making spaces, such as producer associations and community-run water supply boards, despite bearing a disproportionate burden of unpaid care and agricultural labor.

Given this reality, implementing a mainstreamed Gender Action Plan is a non-negotiable pillar for ensuring the project's success. Because plot-level interventions directly impact the labor dynamics of rural households, the project will integrate structured, participatory methodologies to deconstruct these historical asymmetries from the ground up. This approach will ensure that women overcome the identified barriers and take on a leading role as central agents of change in the adoption of climate adaptation measures and efficient water management. Finally, the social viability of the resource mobilization model requires integrating clear social safeguards to prevent rural producers and female community leaders from being excluded from new business models or from the commercialization of products that favor water regulation. Ultimately, this guarantees that the capital flow catalyzed by the GCF will not only restore the watershed's hydrology but also act as a decisive engine for women's economic empowerment and the definitive closing of inequality gaps in the territory.

b) Methodology Summary

The gender analysis followed a participatory, mixed-methods approach designed to capture structural disparities and the territorial realities of communities in the upper Bogotá River basin. This methodology integrated desktop research with an exhaustive review of secondary sources from the National Administrative Department of Statistics (DANE) and the Colombian Women's Observatory (OCM) to establish a baseline for gaps in education, health, and economic autonomy. Community participatory workshops were held with Community Action Boards (JAC), productive and environmental associations, and women's groups to identify gender roles in water and land management. These workshops utilized social cartography and qualitative dialogues to map local perceptions of natural resource use and livelihoods through a gender lens. Additionally, field surveys were administered to landowners and key stakeholders to identify technical needs and climate adaptation barriers. The importance of this specific methodology from a gender perspective lies in its capacity to transform invisible social dynamics into actionable technical data. By prioritizing qualitative tools such as social cartography and direct dialogues, the assessment moved beyond generic statistics to uncover how power structures and traditional roles shape access to resources in rural households.

This approach is vital for identifying "time poverty"—the disproportionate burden of unpaid care and domestic work—and how it limits women's ability to participate in formal conservation activities or technical training. Furthermore, triangulating official data with on-the-ground perceptions ensured that the identified gaps in land tenure and leadership were not merely theoretical but reflected the lived obstacles women faced in the territory. This depth of analysis is essential to ensure that the project's climate interventions do not inadvertently reinforce existing inequalities but rather provide a tailored platform for women's agency and economic inclusion.

Primary data collection focused on four priority areas, engaging diverse social actors, civil society organizations, and local public entities. Workshop attendance was disaggregated by gender as follows: Intervention landscape 1 (Guandoque) reached 41 attendees, including 23 women and 18 men; Intervention landscape 2 (Villapinzón) had 18 attendees, consisting of 6 women and 12 men; Intervention landscape 3 (Tominé) involved 66 attendees, with 17 women and 49 men; and Intervention landscape 4 (Tunjuelo) 54 attendees with 34 women and 20 men.

Furthermore, complementary surveys on adaptation and needs were conducted, involving 29 respondents in Intervention landscape 2 (13 women and 16 men), 48 respondents in Intervention landscape 3 (10 women and 38 men), and 34 respondents (11 women, 23 men) in Intervention landscape 4. In conclusion, this methodological framework ensures that the gender diagnosis serves as the fundamental technical basis for project interventions landscapes.

By using disaggregated data and direct community perceptions, the project has the evidence needed to design a Gender Action Plan that mitigates risks of exclusion and enhances women's role in managing Volumetric Water Benefits (VWBs). This methodological rigor ensures that the GCF investment fulfills its mandate to promote equity, enabling climate finance to drive women's economic empowerment and narrow social gaps in the region.

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SECTION II. Gender Analysis/Assessment

A. Context of the gender situation

1. Main Gender Gaps

According to the 2025 Global Gender Gap Index, the world will take 123 years at the current rate to achieve gender parity. The report, which analyzes 148 countries, reveals that the global gap has narrowed by 68.8%, representing a 0.3% improvement over the 2024 assessment[2]. In this context, Colombia ranks 41st worldwide and 7th in Latin America and the Caribbean.

Figure 1. Colombia's position in the Global Gender Gap Index 2024

The country shows outstanding performance in the educational achievement pillar; however, this advantage does not translate into equality in the labor market or in political leadership. Colombia's most significant weaknesses lie in low female political participation and limited economic opportunities for women.

Source: World Economic Forum, 2025



At the national level, data from the OCM (Colombian Observatory for Women) and DANE (National Administrative Department of Statistics), show progress in education and health. Still, gaps persist in women's economic and political participation, as well as in gender-based violence.
Analyzing gender gaps in Colombia requires a multidimensional approach that goes beyond national averages. Intersectionality guides this analysis, recognizing that gender barriers are exacerbated by age and geographic location, where the lack of land titles in rural areas limits women's access to credit for resilient technologies. While the country shows significant progress in closing educational gaps, territorial realities reveal critical disparities in economic autonomy and the right to a life free from violence. In this context, Gender-Based Violence (GBV) represents a systematic and persistent violation of human rights in Colombia. Despite robust regulatory frameworks, such as Law 1257 of 2008, the alarming rates of femicide, sexual violence, and domestic violence evidence a profound gap between legislative intent and its effective implementation on the ground.

At the national level, an analysis of domestic violence crimes between 2016 and 2023 reflects an upward trend in records from the National Police. This trajectory peaked in 2021 at 250.9 cases per 100,000 inhabitants, then stabilized at 228.8 cases per 100,000 inhabitants in 2023, a figure that remains substantially higher than the 207.4 cases reported at the start of the period in 2016. Within this context, women remain the primary victims, accounting for 70% to 77% of all cases recorded during this seven-year period. For a detailed territorial analysis, the following table presents data, including the domestic violence rate per 100,000 inhabitants, for Cundinamarca, where the project's intervention landscapes are located[3].

[2]https://www.weforum.org/publications/global-gender-gap-report-2025/

[3] The Ministry of Justice presents a relevant report on the phenomenon of domestic violence in Colombia (2016-2023), accessed: September 10, 2025, https://www.minjusticia.gov.co/Sala-de-prensa/Paginas/MinJusticia-presenta-relevante-informe-sobre-fenomeno-de-violencia-intrafamiliar-en-Colombia-(2016-2023).aspx

Table 1. Gender gaps and sociodemographic status of women in Cundinamarca

Dimension	Indicator	National	Cundinamarca	Description	Source
Population	Female population (%)	**51.2**	50.6	*The percentage of the female population in Cundinamarca (50.6%) is slightly lower than the national average (51.2%), indicating a marginally higher proportion of males in the department.*	DANE - Census and Demography 2018
Health	Adolescent fertility (births per 1,000 women aged 15–19)	**66**	61	*The adolescent fertility rate in Cundinamarca (61 per 1,000) is lower than the national rate. This suggests better control or a lower incidence of pregnancies among young women aged 15–19 in the department.*	DANE – Vital Statistics
	Maternal mortality (deaths per 100,000 newborns)	**66.7**	2.8	*The maternal mortality ratio in Cundinamarca (2.8) is significantly lower than the national average (66.7 per 100,000 newborns). This indicates the department has a notably superior performance in the care, monitoring, and prevention of maternal deaths.*	
Economic autonomy	Unemployment rate gap. *The difference between the unemployment rate for men and the unemployment rate for women.*	**7.2**	8.7	*The gender gap in unemployment is wider in Cundinamarca (8.7 p.p.) compared to the national average (7.2 p.p.). This indicates that women in the department face greater disparities and structural barriers to accessing the labor market relative to men than in the rest of the country.*	OCM 2020
	Average daily time spent on Unpaid Domestic and Care Work (hours)	**National** **M: 1.8** **F: 3.8**	Cundinamarca M:1.7 F: 3.6	*Although the absolute time spent is slightly lower than the national average, gender disparity persists. Women in Cundinamarca spend more than twice as much time (3.6 hours) on unpaid domestic and care work as men (1.7 hours), reflecting the continued unequal distribution of care responsibilities.*	OCM 2020-2021
Poverty	Multidimensional Poverty Index 2019. *% of the female population living with multiple simultaneous deprivations across education, health, housing, and work.*	**18.1**	12.0	*The percentage of women living in multidimensional poverty in Cundinamarca is significantly lower than the national average. This suggests that women in Cundinamarca experience fewer simultaneous deprivations across key areas (education, health, housing, etc.) compared to women in the rest of the country.*	(GEIH), DANE (2018)

	Femininity index of poverty. *Shows the disparities in the incidence of monetary poverty between women and men. A value greater than 100 indicates that monetary poverty affects women more intensely than men.*	**113.8**	115.4	*The index in Cundinamarca is slightly higher than the national average. This implies that monetary poverty affects women in Cundinamarca more severely than in the rest of Colombia.*	OCM 2020
Gender-based violence	Domestic violence rate per 100,000 inhabitants	**228.8**	205.96	*The reported rate of domestic violence in Cundinamarca (205.96) is lower than the national average (228.8). However, the figure remains substantial, indicating that despite performing better than the national aggregate, intrafamily violence continues to be a critical issue affecting the safety of women in the department.*	DNP-Territata
	Total of Femicides (2021)	210	4	*Cundinamarca accounts for approximately 1.9% of the total femicides reported nationally (4 out of 210). While the absolute number is lower compared to other regions with higher critical rates, the presence of these cases highlights the persistence of the most extreme form of gender-based violence in the territory.*	OCM (2021)

The analysis for Cundinamarca reveals a persistent 8.7 percentage-point unemployment gap, even though women's educational attainment is comparable to that of other regions. This lack of economic autonomy is driven by structural barriers, including an unpaid care burden of over 3.5 hours per day. This 'time poverty' severely restricts women's participation in water and agricultural governance, confirming that inequality in the territory is a structural issue linked to time constraints and a lack of physical security rather than just income levels.

2. Legal and Regulatory Framework on Gender Equality.

Colombia has a robust legal framework that guarantees equality and non-discrimination, serving as a "legal floor" for the project.

1991 Constitution. Its articles establish the prohibition of sex discrimination (Article 13), equal rights within the family (Article 42), and the obligation to provide women with special protection during pregnancy and maternity (Article 43). It also recognizes the effective participation of women in public bodies (Article 40).

Legislative development. Among the most relevant regulations are:

- Law 82 of 1993: Support for female heads of household in accessing credit, housing, education, and employment.
- Law 100 of 1993, which creates the General Social Security System, which guarantees health and social security without discrimination, with special attention to pregnant women, prenatal care, childbirth, postpartum, and breastfeeding.
- Law 248 of 1995: through which the Inter-American Convention on the Prevention, Punishment and Eradication of Violence against Women is ratified.
- Law 294 of 1996: by which domestic violence is punished.
- Law 581 of 2000 ("Quota Law"): minimum participation of 30% of women in decision-making positions in the public sector.
- Law 731 of 2002: special measures for rural women in access to land, credit, and technical assistance.
- Law 823 of 2003: regulations on equal opportunities for women.
- Law 1009 of 2006: The gender issues observatory is created permanently
- Law 1257 of 2008: prevention and punishment of violence against women.
- Law 1413 of 2010: inclusion of the care economy in national accounts.
- Law 1761 of 2015: classification of femicide as an autonomous crime.
- Law 1900 of 2018: incorporation of equity criteria in the allocation of rural lands.
- Law 2137 of 2021: The objective of which is to create the National Early Warning System to prevent sexual violence against minors, amend Law 1146 of 2007, and establish measures for the identification, care, and reduction of risk factors.
- Law 2281 of 2023 elevated the institution to the rank of Vice Ministry of Women, within the ministerial cabinet.

Rights of the LGBTI population

The rights of the LGBTI population in Colombia have been principally and overwhelmingly achieved through judicial rulings (vía jurisprudencial). This means that the Constitutional Court has been the primary actor in guaranteeing these rights, surpassing Congress in this role.

Key rulings and decrees that transformed these rights include:

- Partnership recognition (Ruling C-075 of 2007): The Court granted patrimonial (property) and social security rights to same-sex couples.
- Marriage equality (Ruling SU-214 of 2016): The Court fully legalized civil marriage.
- Adoption (Ruling C-683 of 2015): The Court permitted adoption by homoparental couples.
- Gender identity (Decree 1227 of 2015): A decree that allows trans individuals to correct their name and the "sex" component on their identity documents through a simple notarial process.
- Anti-discrimination law (Law 1482 of 2011): A key law from Congress that criminally penalizes acts of discrimination based on sexual orientation or gender identity.

At the program level, the most relevant instruments are:

- Decree 762 of 2018: Adopts the National LGBTI Public Policy, establishing the State's objectives and responsibilities.
- NDP 2022-2026: The current National Development Plan (PND) includes the LGBTIQ+ population as "differentiated actors" to reduce gaps.
- Territorial Programs: Actions at the local level, where cities like Bogotá have pioneered their own policies and support centers.

a. Legislative development and institutional response to Gender-Based Violence (GBV)

Complementing the general framework of equality and non-discrimination, Colombia has experienced a significant evolution in the typification and addressing of Gender-Based Violence (GBV). This evolution is backed by institutional strengthening, with the Ministry of Equality and Equity serving as the new central governing body. This synergy between legislative development and lead agencies integrates international standards that position the eradication of violence as a prerequisite for sustainable development and community resilience. This dynamism has enabled a transition toward a coordinated response model through mechanisms such as the National System for Registration, Attention, Follow-up, and Monitoring (SINARASMO-VBG), which is fundamental for operationalizing the social safeguards and comprehensive protection protocols that this project seeks to implement on the ground.

Key recent regulatory advances and response mechanisms include:

- **Law 1719 of 2014:** Establishes measures to guarantee access to justice for victims of sexual violence, with a special emphasis on the context of the internal armed conflict.
- **Law 2326 of 2023:** Provides guidelines for the prevention and punishment of sexual harassment and other forms of violence in the workplace and educational settings.
- **Decree 1476 of 2024:** Regulates the operation of the SINARASMO-VBG system for data centralization and inter-institutional response to violence cases.
- **Law 2453 of 2025:** Defines specific measures to prevent, attend to, and punish violence against women in political life, ensuring their safe participation in leadership spaces.
- **Resolution 362 of 2026:** Adopts the new Femicide Risk Assessment Guide, which is mandatory for Family Commissariats and interdisciplinary teams in the territory.

Altogether, this robust legal and institutional architecture, reinforced by the creation of unified monitoring systems and comprehensive care pathways—including the **SALVIA Line** and updated forensic protocols—provides the necessary legal foundation to shield project activities against risks of revictimization or exclusion. Effective coordination with these pathways and justice authorities will be the guiding principle to ensure that the transition toward resilient water management is, above all, just and safe for all women, in their diversity. This ensures that economic empowerment and participation in water governance are not hindered by structural violence, fulfilling the state's mandate of protection and equity.

b. Framework for rural women and access to land

Colombia's current public policy framework (2022-2026) integrates a gender perspective not as an add-on component, but as a structural axis of rural development. This strategic architecture is based on the National Development Plan (PND), operationalized through CONPES documents, and quantified in the specific sectoral plan.

National Development Plan (NDP) 2022-2026

The National Development Plan (PND) 2022-2026[4] and its agricultural component, the Strategic Agricultural Sector Plan (PESA)[5], establish the vision of an "inclusive rural society with social and economic justice." Its central gender mechanism is the adoption of the cross-cutting theme of "differential actors

[4] National Development Plan 2022-2026, https://www.dnp.gov.co/plan-nacional-desarrollo/pnd-2022-2026
[5] Sectoral Plan for Agriculture, Fisheries and Rural Development 2022 https://www.minagricultura.gov.co/planeacion-control-gestion/Gestin/PLANEACION/Planes_Estrategicos_Sectoriales_Institucionales/Planes%20Estrategicos%202022%20-%202026/20231030_PlanEstrat%C3%A9gicoSectorial_consolidado_cambios_ajustes_%20pagfinal.pdf

for change," which explicitly includes "women." This conceptual framework represents a significant break with previous paradigms that categorized rural women as a "vulnerable population" and, therefore, passive "beneficiaries." By redefining them as "differential actors," the PND recognizes their active agency and their essential role in driving economic transformation. This necessitates a shift in public policy from a "protection" model to one that guarantees participation and economic autonomy.

CONPES 4080

CONPES 4080[6] serves as the inter-institutional action plan that implements the vision of the National Development Plan (PND). Its objective is to "Increase opportunities for women's economic autonomy," with an "emphasis on rural women[7]," and it translates this vision into concrete goals with a 2030 horizon. It assigns specific responsibilities to sector entities, such as mandating the National Land Agency (ANT) to promote access to land, the Rural Development Agency (ADR) to guarantee 30% female participation in development services, and the Agricultural Bank and FINAGRO to increase credit (up to 44% in memorable credit lines). A fundamental mandate is assigned to the Colombian Agricultural Institute (ICA): "to implement... the variables that allow for the disaggregation of gender data," to overcome statistical invisibility and build the information infrastructure necessary for an evidence-based gender policy[8].

Strategic Sectoral Plan for Agriculture (PESA)

The 2022-2026 National Rural Development Program (PESA) formally adopts a "Gender Approach" to identify gender gaps and promote the "economic autonomy of rural women."[9] The most concrete manifestation of this approach is found in its outcome indicators, which establish key metrics for women's autonomy. The leading indicator is: "Hectares granted to rural women through the Land Fund (individual title)," with the National Land Agency (ANT) responsible, and targets that reflect a significant increase (e.g., from 3,850 in 2022 to 19,250 in 2023). The specificity of the "individual title" is crucial, as it seeks to correct the historical flaw of "household" land titling[10] (which benefited men). This ensures that the property is a legal and personal asset of the woman, enabling her to use it as collateral for credit[11] and guaranteeing her economic autonomy.

This current strategic architecture (PND, CONPES, PESA) does not exist in a vacuum. It is the result of a legal evolution spanning almost three decades and is based on three foundational laws that recognized rural women as subjects of rights.

Law 160 of 1994 (Agrarian Reform)

Law 160 of 1994, which established the National Agrarian Reform System[12], was foundational. Although progressive for its time in explicitly naming women as beneficiaries[13], its overall approach, when analyzed

[6]National Planning Department [DNP]. (2025). *Public Policies for Women and Gender Equity* . https://www.dnp.gov.co/LaEntidad_/subdireccion-general-prospectiva-desarrollo-nacional/direccion-desarrollo-social/Paginas/politicas-publicas-mujeres.aspx
[7]Ideas for Peace Foundation [FIP]. (2022). *Booklet. Multi-Year Plan for the Eradication of the Causes of Violence against Women 2022–2030: Generating Equity* . https://multimedia.ideaspaz.org/especiales/generando-equidad/docs/Cartilla-ppeg-mujeres-2022-2030.pdf
[8]National Council for Economic and Social Policy (CONPES). (2022). *CONPES Document 4080: Gender Equity Policy for Women* . National Planning Department (DNP). https://colaboracion.dnp.gov.co/cdt/Conpes/Econ%C3%B3micos/4080.pdf
[9]Ministry of Agriculture and Rural Development. (2023). *Sectoral Strategic Plan 2022-2026: A Shared Vision for Rural Transformation* . https://www.minagricultura.gov.co/planeacion-control-gestion/Gestin/PLANEACION/Planes_Estrategicos_Sectoriales_Institucionales/Planes%20Estrategicos%202022%20-%202026/20231030_PlanEstrat%C3%A9gicoSectorial_consolidado_cambios_ajustes_%20pagfinal.pdf
[10]Congress of the Republic of Colombia. (August 5, 1994). *Law 160 of 1994.* United Nations High Commissioner for Refugees (UNHCR). https://www.acnur.org/fileadmin/Documentos/Pueblos_indigenas/ley_160_1994_col.pdf
[11]National Council for Economic and Social Policy (CONPES). (2022). *CONPES Document 4080: Gender Equity Policy for Women* . National Planning Department (DNP) https://colaboracion.dnp.gov.co/cdt/Conpes/Econ%C3%B3micos/4080.pdf
[12]Congress of the Republic of Colombia. (2018, January 15). *Law 1882 of 2018.* Public Service. https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=66789
[13]Congress of the Republic of Colombia. (August 5, 1994). *Law 160 of 1994.* United Nations High Commissioner for Refugees (UNHCR). https://www.acnur.org/fileadmin/Documentos/Pueblos_indigenas/ley_160_1994_col.pdf

in detail[14], was based on a paternalistic concept of vulnerability. Its mechanisms focused on providing land to "female peasant heads of household" (Art. 1) and those in a "state of vulnerability" (Art. 17). The conceptual framework[15] did not recognize rural women as independent economic agents, but rather as subjects who required protection only in the absence of men (widows, abandoned women). This perspective ignored household inequalities and failed to address structural problems in land tenure.[16]

Law 731 of 2002 (Rural Women)
Promulgated as "establishing regulations to benefit rural women[17]," this law was a direct response to the shortcomings of prior policies and to the demands of women's organizations. It is considered the cornerstone of the current rural gender framework. Its most significant contribution was the legal definition (Art. 2) of "rural woman," which explicitly recognizes "unpaid work" (the care economy).[18] This legalized invisible labor and enabled millions of women engaged in domestic work or subsistence gardening to be recognized as subjects of public policy. Furthermore, it established the Rural Women's Development Fund (FOMMUR) (Art. 10) and a 30% quota for women in reforestation projects (Art. 28).[19]

Law 1900 of 2018 (Implementation of Affirmative Action). This law functions as a corrective and affirmative action mechanism, amending Law 160[20] to establish "gender equity criteria in land allocation." It abandons the idea of "equal conditions" and adopts preferential treatment to correct historical discrimination. It implements precise administrative mechanisms: it mandates that the National Land Agency (ANT) grant "double the score" (Art. 2) in the classification for land access[21] and the "maximum rating value" (Art. 6) in rural housing subsidies[22] to female-headed households. It also requires a training program (Art. 3).[23] Its effectiveness, however, depends on the regulations defining "poverty and marginalization" issued by the Ministry of Agriculture[24]. Additionally, the Colombian forestry sector stands in stark contrast to the agricultural sector, as its foundational legal framework remains gender-blind. The sector's legal cornerstone is Decree-Law 2811 of 1974, the National Natural Resources Code. An analysis of this law confirms its complete absence of provisions on gender equity or differential approaches, as it was drafted within a technical-scientific paradigm centered on biophysical resources that ignores social

[14]Congress of the Republic of Colombia. (2018, January 15). *Law 1882 of 2018.* Public Service. https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=66789
[15]Congress of the Republic of Colombia. (2018, January 15). *Law 1882 of 2018.* Public Service. https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=66789
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[23]University of Rosario. (2018). *Summary: Law No. 1900 of June 18, 2018.* https://urosario.edu.co/sites/default/files/2022-10/resumen-ley-1900.pdf
[24]Ministry of Agriculture and Rural Development. (2019). *Gender equity criteria in the allocation of vacant lands, rural housing and productive projects* https://www.minagricultura.gov.co/Normatividad/Proyectos%20Normativos/Criterios%20de%20Equidad%20de%20G%C3%A9nero%20en%20la%20Adjudicaci%C3%B3n%20de%20las%20Tierras%20Bald%C3%ADas,%20Vivienda%20Rural%20y%20Proyectos%20Productivos.pdf

dimensions.[25] The attempt to modernize this regime through Law 1021 of 2006 [26]failed when it was declared unconstitutional[27], leaving the sector mired in a fundamental legal vacuum regarding gender. The incorporation of a gender perspective in this sector has not stemmed from internal legal reform, but rather from two external sources. The first is a legal framework established by the Agrarian Law (Article 28 of Law 731 of 2002), which mandates that reforestation projects employ at least 30% female rural workers. [28]The second, and primary, driving force is the programmatic impetus of the National REDD+ Strategy, which, to comply with the social and gender safeguards required by international climate finance, has adopted a gender approach as a guiding principle. This has led to programs like Community Forestry becoming catalysts for creating practical tools (guides, checklists) that the 1974 law did not include.[29]

c. Regulatory framework on gender and climate change

In less than a decade, Colombia transformed its climate policy, moving from a legal omission of the gender perspective to mandatory integration and a proactive international stance. This progress is reflected in its commitments and reports to the United Nations Framework Convention on Climate Change (UNFCCC). Evolution becomes evident when contrasting two key laws:

1. **Law 1931 of 2018** created the country's climate governance architecture, establishing the National Climate Change System (SISCLIMA) and the planning plans (PIGCCS and PIGCCT).[30] However, the law omitted a "gender perspective" from its principles, defining climate management solely as a technical and economic challenge rather than a social or human rights issue.[31] This "neutrality" generated a public policy gap, allowing for plans that could ignore or exacerbate gender inequalities[32],[33].
2. **Law 2169 of 2021,** known as the "Climate Action Law[34]," established goals (such as carbon neutrality by 2050)[35] and, crucially, explicitly incorporated a gender perspective.[36] The law recognizes the "central role played by women" and the "differentiated impacts" (Art. 3). Furthermore, Article 6 mandates the integration of "human rights and gender approaches" in the implementation of sectoral goals. This mandate is now obligatory in key areas, including water management, education, and, fundamentally, the design and implementation of all planning schemes (PIGCCT and PIGCCS). This gives the Ministry of Environment an explicit legal mandate

[25]Presidency of the Republic of Colombia. (December 18, 1974). National Environmental Licensing Authority (ANLA). https://www.anla.gov.co/07rediseureka2024/normativa/leyes/decreto-ley-2811-de-1974-codigo-nacional-de-recursos-naturales-renovables-y-de-proteccion-al-medio-ambiente
[26]Congress of the Republic of Colombia. (2006, April 20). *Law 1021 of 2006. By which the General Forestry Law is issued* . Public Function. https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=20126
[27]Congress of the Republic of Colombia. (August 5, 1994). *Law 160 of 1994* National Environmental Licensing Authority (ANLA). https://www.anla.gov.co/07rediseureka2024/normativa/leyes/ley-160-de-1994-sistema-nacional-de-reforma-agraria-y-desarrollo-rural-campesino-ley-de-reforma-agraria
[28]Congress of the Republic of Colombia. (January 14, 2002). *Law 731 of 2002.* National Environmental Licensing Authority (ANLA). https://www.anla.gov.co/07rediseureka2024/normativa/leyes/ley-731-de-2002-ruralidad-mujeres-rurales-calidad-de-vida-de-las-mujeres-rurales
[29]Food and Agriculture Organization of the United Nations [FAO]. (2020). *Women and forests: mainstreaming gender in community forestry in Colombia.* https://www.fao.org/colombia/noticias/detail-events/zh/c/1364452/
[30]Congress of the Republic of Colombia. (2018, July 27). *Law 1931 of 2018.* National Environmental Licensing Authority (ANLA). https://www.anla.gov.co/07rediseureka2024/normativa/leyes/ley-1931-de-2018-directrices-para-la-gestion-del-cambio-climatico
[31]Congress of the Republic of Colombia. (2018, July 27). *Law 1931 of 2018.* Public Service. https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=87765
[32]Clima Posible. (2021). *Gender gaps and climate change: inequality as a vulnerability factor* . https://climaposible.org/wp-content/uploads/2021/12/211130-2-Brechas-de-genero.pdf
[33]Congress of the Republic of Colombia. (December 22, 2021). *Law 2169 of 2021.* SUIN-JURISCOL https://www.suin-juriscol.gov.co/viewDocument.asp?id=30043747
[34]Ministry of Environment and Sustainable Development, National Planning Department [DNP], and German Agency for International Cooperation [GIZ]. (2024, June). National Association of Businessmen of Colombia (ANDI). https://www.andi.com.co/Uploads/guia_638614736385242950.pdf
[35]United Nations Office for Disaster Risk Reduction. (2021). Presentation of Colombia's Nationally Determined Contributions under Law 2169 of 2021. https://www.undrr.org/media/98994/download
[36]Congress of the Republic of Colombia. (December 22, 2021). *Law 2169 of 2021.* SUIN-JURISCOL. https://www.suin-juriscol.gov.co/viewDocument.asp?id=30043747

to require and monitor gender mainstreaming, creating a new basis for accountability.

The Gender and Climate Change Action Plan (PAGCC-CO)

To implement Law 2169 and comply with international commitments, such as the UNFCCC Lima Programme of Work, Colombia developed the Gender and Climate Change Action Plan (PAGCC-CO).[37] This plan is described as a "pioneering instrument" that links gender equality and climate change, recognizing that the latter "is not gender-neutral" and disproportionately affects women and girls. [38]Its objective is to "promote progress towards gender equality" in climate management and "recognize the actions developed by women's organizations... as vital agents of change." To operate, the plan is structured around priority lines of action, including capacity building, knowledge management, and communication (with a focus on rural women's organizations), as well as women's participation and leadership (to ensure their influence on the formulation and monitoring of climate action). The plan's language is notably progressive: by adopting the term "climate justice," it moves beyond mere vulnerability towards redress. By focusing on "women's organizations" as "vital agents of change", it adopts an empowerment approach. Functionally, the PAGCC-CO serves as the "instruction manual" that links the abstract legal mandate of Law 2169 to its concrete implementation, indicating to entities how they should apply the gender approach in their PIGCCS (sectoral) and PIGCCT (territorial). The effectiveness of the PAGCC-CO and Law 2169 depends on their integration into the national climate architecture, such as the long-term strategy (E2050) and adaptation plans.

Long-Term Climate Strategy (E2050)

The E2050 is Colombia's roadmap to fulfill the Paris Agreement and achieve carbon neutrality.[39] This strategy was developed in conjunction with the PAGCC. The E2050 was constructed with a "territorial approach" that includes PDET municipalities (areas affected by poverty and violence) [18]. This contextualized appropriation is consistent with the PAGCC's principle of "Climate Justice." Thus, the PAGCC establishes a gender-justice framework to ensure that "carbon neutrality" is achieved through a "just transition."

National Adaptation Plan (PNACC)

The Ministry of Environment integrates its "Gender and Climate Change Tools" (including the PAGCC) with the National Adaptation Plan (PNACC).[40] Law 2169 had already established this link by requiring a gender perspective in the PIGCCS and PIGCCT.[41] However, this is where the central tension arises: although the legal framework (de jure) is advanced, implementation (de facto) faces barriers. A 2024 report, while welcoming the formulation of the PAGCC, warns of "challenges in terms of identifying financial resources, territorial management capacity, and coordination with the private sector."[42]

Reports from Colombia to the UNFCCC

The evolution of Colombia's domestic policy is reflected in its reports to the UNFCCC:

[37]Ministry of Environment and Sustainable Development. (2025). *Colombia's Gender and Climate Change Action Plan (PAGCC-CO): Actions for gender equality, sustainability, and justice* . https://www.minambiente.gov.co/wp-content/uploads/2025/02/PAGCC-DE-COLOMBIA.p

[38]Ministry of Environment and Sustainable Development. (2023). *Gender and Climate Change Tools* . https://www.minambiente.gov.co/cambio-climatico-y-gestion-del-riesgo/herramientas-de-genero-y-cambio-climatico/

[39]Government of Colombia. (2021). *Colombia's long-term climate strategy E2050 to comply with the Paris Agreement* . United Nations Network on Migration. https://www.minambiente.gov.co/cambio-climatico-y-gestion-del-riesgo/estrategia-2050/

[40]Ministry of Environment and Sustainable Development. (n.d.). *Gender and Climate Change Tools* https://www.minambiente.gov.co/cambio-climatico-y-gestion-del-riesgo/herramientas-de-genero-y-cambio-climatico/

[41]Congress of the Republic of Colombia. (December 22, 2021). *Law 2169 of 2021.* SUIN-JURISCOL https://www.suin-juriscol.gov.co/viewDocument.asp?id=30043747

[42]Ministry of Environment and Sustainable Development. (2025). *Monitoring Report on Environmental Public Policies* 2024. https://www.minambiente.gov.co/wp-content/uploads/2025/04/INFORME-DE-SEGUIMIENTO-A-POLITICAS-PUBLICAS-AMBIENTALES-2024-V1.pdf

- Initial Phase (Absence): Gender was absent from the first National Communications. A UNFCCC report confirms that NC2 and the first Biennial Report (BUR1) did not include gender considerations.[43]
- The first mentions: The turning point was BUR2 (December 2018). This is where the first official mention of the gender issue was made.[44]
- Consolidation: Consolidation materializes in BUR3 (January 2022)[45], the first major report after the adoption of Law 2169. This report reflects the new legal and institutional reality by explicitly referring to the "Gender and Climate Change Action Plan (GCCAP)"[46] as an official component of climate architecture.

Nationally Determined Contributions (NDCs)

Nationally Determined Contributions (NDCs), which establish future commitments, are a country's most important inputs. Colombia's 2020 NDC update[47] acted as the true catalyst for change; UNFCCC reports indicate that this revision was gender-sensitive.[48] In fact, the adaptation targets of this NDC served as the basis for what would be codified a year later in Law 2169.[49] This suggests that Colombia first adopted a gender-sensitive international commitment and then used Law 2169 to enshrine it at the national level legally.

The most recent and ambitious input is NDC 3.0 – Transformations for Life[50], which represents the culmination of this policy coherence. An analysis of this document reveals that the gender perspective has evolved from a component to a cross-cutting pillar, embraced as both an "analytical tool" and a "principle of legitimacy." This commitment reaffirms the "full and effective inclusion of women in all their diversity" (rural, Afro-Colombian, Indigenous, etc.) and of people with diverse gender identities and orientations. Crucially, it links gender equality with a "Just Transition" and "Climate Justice," promoting "decent work, with a special emphasis on women, youth, and ethnic communities." Furthermore, NDC 3.0 explicitly cites the Gender and Climate Change Action Plan (GACC-CO) as one of the frameworks for its implementation.

While the political and legal framework aligns with international standards, the critical challenge has shifted from design to implementation. Future success will no longer be measured by the elegance of the laws (Law 2169) or the ambition of the NDCs (NDC 3.0), but by the capacity to overcome implementation challenges. This urgently requires financial resources, territorial management capacity, and monitoring and evaluation systems.[51] In conclusion, success will depend on the State's capacity to finance and

[43]United Nations Framework Convention on Climate Change [UNFCCC]. (2020). *Informal compilation and high-level summary of the virtual regional workshops on gender integration into national climate actions.* https://unfccc.int/sites/default/files/resource/Informal%20Compilation%20Regional%20Workshops.pdf
[44]United Nations Framework Convention on Climate Change [UNFCCC]. (2019, November 27). *Technical analysis of the second biennial update report of Colombia submitted on 28 December 2018. Summary report by the team of technical experts* (FCCC/SBI/ICA/2019/TASR.2/COL). https://unfccc.int/sites/default/files/resource/tasr2_2019_COL.pdf
[45]United Nations Framework Convention on Climate Change [UNFCCC]. (n.d.). *Biennial Update Report submissions from Non-Annex I Parties* . Retrieved November 18, 2025, from https://unfccc.int/BURs
[46]Institute of Hydrology, Meteorology and Environmental Studies [IDEAM], United Nations Development Programme [UNDP], https://camacol.co/sites/default/files/2024-04/BUR3%2520-%2520COLOMBIA.pdf
[47]Ministry of Environment and Sustainable Development. (2020). *Update of the Nationally Determined Contribution (NDC)* . Retrieved November 18, 2025, from https://www.minambiente.gov.co/cambio-climatico-y-gestion-del-riesgo/actualizacion-de-la-contribucion-determinada-a-nivel-nacional-ndc/
[48]United Nations Framework Convention on Climate Change [UNFCCC]. (2020). *Informal compilation and high-level summary of the virtual regional workshops on gender integration into national climate actions* . https://unfccc.int/sites/default/files/resource/Informal%20Compilation%20Regional%20Workshops.pdf
[49]United Nations Office for Disaster Risk Reduction. (2021). *Presentation of Colombia's Nationally Determined Contributions under Law 2169 of 2021* https://www.undrr.org/media/98994/download
[50]Government of Colombia. (2025, September 25). *NDC 3.0 Declaration Colombia: Transformations for Life* . United Nations Framework Convention on Climate Change (UNFCCC). https://unfccc.int/sites/default/files/2025-09/NDC%203.0%20Declarativa%20Colombia%20Transformaciones%20para%20la%20Vida%20V.25.09.2025%20Gob.%20Nacional.pdf
[51] Hernández, LH (2020). *Gender and climate change* . Adaptation to the Impacts of Climate Change on Water Resources in the Andes Project (AICCA). https://biblioteca.olade.org/opac-tmpl/Documentos/cg00993.pdf

monitor the effective implementation of the PAGCC-CO at the territorial level, ensuring that the principles of climate justice and inclusion[52] translate into the real empowerment of rural, Indigenous, Afro-Colombian, and diverse women, whom Law 2169 and NDC 3.0 seek to position as central agents of climate action.

Relevance to the project

The current regulatory framework in Colombia constitutes the essential political and legal foundation for the project «Building a Resilient Water Landscape in the Bogotá Region», ensuring a socially just implementation. By integrating the mandates of Law 2169 of 2021, known as the Climate Action Law, and the NDC 3.0, the project formally links gender equity to the principles of climate justice and a just transition, providing legal support for strategies that empower women in their diversity.

This normative base, which includes instruments such as Law 731 of 2002 and the National Development Plan, ensures that activities oriented toward nature-positive economies are recognized as fulfilling a State mandate that positions rural women as proactive agents of change rather than merely passive beneficiaries. Nevertheless, the effectiveness of this framework faces a critical gap between de jure legislative design and de facto territorial execution, where robust laws like Law 1257 of 2008 have not managed to prevent women from continuing to represent between 70% and 77% of domestic violence victims nationwide.

This disparity proves that legal design alone does not guarantee physical safety or economic autonomy without territorial mechanisms for its effective implementation, a situation exacerbated by limited financial resources and fragmented management, which hinders the implementation of social safeguards. Administrative weakness is exacerbated by historical statistical invisibility; for instance, the gender component was absent from the first national communications to the UNFCCC and was only officially consolidated in the third biennial report of 2022.

At the territorial level, this institutional insufficiency translates into operational obstacles that exhaust rural women's time and limit their strategic participation, manifesting as structural time poverty, in which men dedicate 3 hours daily to unpaid care work, while women invest more than 8.6 hours. This burden intensifies amid ecosystem degradation, forcing women to walk more than 1,000 meters and spend more than 2 hours daily hauling water.

To overcome these implementation failures, the project acts as a catalyst for institutional capacity by generating sex-disaggregated technical evidence and directly supporting the mandates of entities such as DANE to address the data gaps that prevent the development of public policies grounded in local realities. By providing farm-to-farm technical assistance and administrative training to the Rural Aqueduct Boards, the project strengthens the grassroots organizations that the State often struggles to reach, transforming the abstract principles of the Gender and Climate Change Action Plan into tangible territorial actions. In the field of security, the initiative aligns with national priorities aimed at managing risks, such as the persistent permission culture, in which many women must still consult the men in the household to decide on land use or to participate in training.

This institutional synergy ensures that specialized protection guarantees the physical integrity of participants by relying on recent regulations against harassment and femicide risk assessment. The project addresses the gap in resource control through the creation of joint-signature agreements and the design of financing lines that eliminate the requirement of property titles, an asset held by only 26% of rural

[52]Ministry of Environment and Sustainable Development. (2025). *Colombia's Gender and Climate Change Action Plan (PAGCC-CO): Actions for gender equality, sustainability, and justice* . https://www.minambiente.gov.co/wp-content/uploads/2025/02/PAGCC-DE-COLOMBIA.pdf

women in the country. Finally, by implementing property planning methodologies that include all household members, the project ensures that ecosystem restoration and water security translate into tangible, quantifiable empowerment, thus fulfilling the national objectives of social justice and regional water resilience.

B. Climate change, water management, and gender

1. Climate vulnerability with gender focus.

The framework for water vulnerability in the project region is defined as a multidimensional phenomenon in which biophysical factors are intertwined with social realities. For example, according to scientific evidence from the IPCC, the Regional Autonomous Corporation of Cundinamarca (CAR), and the National University of Colombia, the climate regime of the Bogotá River basin is already experiencing significant changes. Projections for the 21st century suggest increases in average temperatures and greater intensity of extreme precipitation events, which accelerate evapotranspiration and reduce the net availability of water[53]. This reality constitutes a critical vulnerability, given that the region's sensitivity to climate change is "very high" and its adaptive capacity is "low[54]. "

Although regional climate models provide a technical view of the risks, rural communities' perceptions help gauge the true severity of these events in their daily lives. The findings collected during the field phase (essential for the construction of the project) not only validate the projections of environmental authorities, but also demonstrate critical pressure on the productive base and immediate water availability in the Bogotá-Region landscape, as detailed below:

[53] https://www.car.gov.co/uploads/files/6712bcc948a6c.pdf ; https://openknowledge.fao.org/bitstreams/4f7b1590-a679-47dd-8422-09d95fff50ac/download

[54] https://concejodebogota.gov.co/bogota-entre-las-ciudades-con-mayor-riesgo-por-el-cambio-climatico/cbogota/2019-02-21/143027.php

Table 2. Local perception of extreme weather events and their impact on rural production systems

	The perception of risk in the communities collected during the field data collection phase aligns with regional climate projections, indicating ongoing pressure on the productive systems and water supply. ❖ There is a unanimous consensus in the municipalities of Guatavita, Sesquilé, and Villapinzón that frosts and droughts are identified as the most impactful phenomena. This recurrence is critical to water availability, as drought reduces spring and reservoir flows, forcing households to rely on alternative sources. ❖ In Villapinzón and Guatavita, hailstorms are frequently reported as one of the main climate stressors. These events can quickly destroy subsistence gardens and affect small-scale livestock production, thereby compromising local food security. This territorial distribution of climatic events underscores that although drought is a widespread threat in the project area, specific risks vary across intervention landscapes and require differentiated adaptation strategies to ensure the stability of rural production systems.

Fieldwork, IDOM, 2025

This climate crisis affects men and women differently due to the gendered division of labour, unequal access to resources, and other inequalities. For men, who are generally involved in productive activities such as commercial agriculture, these changes pose financial and productivity risks. In contrast, for rural women, rising temperatures and irregular rainfall directly erode household stability by affecting their ability to secure basic water access, ensure food security, and provide community care[55]. Systemic barriers reinforce this vulnerability. Rural households headed by women experience higher levels of multidimensional poverty, which reduces their capacity to invest in adaptation measures[56]. In the face of droughts, hauling water increases their physical burden and exacerbates "time poverty," restricting their access to education or paid employment, while men typically have better coping mechanisms, such as credit or labour migration[57]. Furthermore, resource scarcity reveals a time-use gap, as caregiving responsibilities limit women's mobility, subjecting them to greater territorial vulnerability and a higher level of physical and emotional strain than men[58].

As can be seen, vulnerability is not a neutral phenomenon; it manifests itself differently according to gender roles and the division of labour in the home. While men face primarily financial risks, rural women see their families' water and food security compromised. The following table summarizes testimonies about how the climate crisis translates into a disproportionate burden of care and barriers to women's:

Table 3. Differentiated impacts of climate change on rural women in the intervention area.

	Women	Men
 **Field findings**	❖ In Sesquilé, and Villapinzón, women unanimously reported that droughts increase their physical workload. This	❖ Direct impact on the profitability of livestock and potato monocultures due to lack of irrigation in Villapinzón,

[55] In Colombia, rural women are the roots of change | UN Women, https://lac.unwomen.org/es/stories/noticia/2023/10/en-colombia-las-mujeres-rurales-son-raices-mujeres-sembradoras-del-cambio

[56] https://www.dane.gov.co/index.php/servicios-al-ciudadano/servicios-informacion/serie-notas-estadisticas ; https://fondoaccion.org/?sdm_process_download=1&download_id=7682

[57] Adaptation is a matter of gender | Fondo Acción, https://fondoaccion.org/wp-content/uploads/2021/12/211130-Adaptarse-es-cuestion-de-genero.pdf

[58] https://dag.revista.uab.cat/article/download/v70-n1-valderrama/854-pdf-es/9211

	phenomenon forces them to seek alternative water sources to ensure their families have access to drinking water and hygiene, further exacerbating time-use inequality. ❖ In the municipalities of Villapinzón and Guatavita, women reported that recurring hailstorms destroy home gardens and small-scale livestock production. These areas are traditionally managed by them for family sustenance, so their loss directly impacts food availability and the household's economic independence. ❖ In Villapinzón, and Guatavita, most women reported relying exclusively on traditional knowledge to cope with weather events. This indicates limited access to early warning systems or official meteorological information, which restricts their capacity to plan and respond effectively.	Tausa, and Cogua. A critical dependence on water for livestock over crop irrigation is reported. ❖ Loss of heavy infrastructure (fences, machinery, stables) and death of livestock in Sesquilé, Villapinzón, and Guatavita. In Villapinzón, frosts and droughts are the most impactful phenomena for production. ❖ Livelihood loss leads to frustration, identity crises, and the risk of abandoning the rural vocation in Tausa and Cogua. In Zipaquirá and Cogua, water degradation is linked to temporary male employment in mining. ❖ Exercise of traditional leadership and control of productive assets in Sesquilé, Cogua, and Villapinzón. They typically hold management positions, and their voice is considered more authoritative in the field.

Fieldwork, IDOM, 2025

This situation worsens in emergency contexts, where risks of gender violence, exploitation, and effects on sexual and reproductive health are documented[59], while for men, the loss of livelihoods can trigger identity crises and affect mental health[60].

Although the characterization of the intervention landscapes reveals a low representation of ethnic groups in the region, with Afro-descendant and Indigenous populations not exceeding 1% in most municipalities, intersectionality remains a critical analytical lens. This approach recognizes that for the Indigenous and Afro-descendant women present in the territory, gaps are intensified as gender inequality converges with ethnic discrimination and a vital dependence on fragile ecosystems. Despite these accumulated barriers, these women sustain community resilience by safeguarding native seeds and creating care networks that protect the countryside's genetic memory[61].

Furthermore, the Venezuelan migrant population in key municipalities is identified as a group with distinct vulnerabilities. Despite their low numerical representation, factors such as legal precariousness and social exclusion may hinder their access to project benefits or exacerbate their exposure during environmental contingencies. Consequently, the project will integrate targeted protection and communication strategies tailored to the specificities of their migratory context.

[59] Natural disasters: scenarios of gender-based violence | UNFPA, https://lac.unfpa.org/sites/default/files/pub-pdf/UNFPAversiones.pdf
[60] The Grancolombiano Polytechnic presents research on how climate change affects the mental health of farmers | ASCUN, https://ascun.org.co/noticias-ies/el-politecnico-grancolombiano-presenta-investigacion-sobre-como-el-cambio-climatico-afecta-la-salud-mental-de-los-campesinos
[61] https://repositorio.cepal.org/bitstream/handle/11362/48413/3/S2200847_es.pdf

Regarding structural barriers, the burden of unpaid domestic and care work severely restricts the time available for women to dedicate to training and decision-making[62]. This reality results in a critical underrepresentation on community action boards and watershed councils, rendering their priorities invisible and leading to "gender-blind" policies that ultimately undermine the effectiveness of collective action.[63] Finally, community resilience is intrinsically linked to representation within water resource decision-making spaces. In Cundinamarca, although women's political participation has advanced, exceeding 30% in certain territorial positions[64]—the gap persists in water management. In rural aqueducts, women are frequently relegated to operational or administrative roles, while strategic decisions regarding infrastructure and budgets remain predominantly under male control. This disparity was confirmed during fieldwork in Villapinzón, where it was reported that women hold only 15% of management positions in the water sector[65].

The main barriers identified with effective leadership are:

- Double work shift: The lack of childcare services in rural areas prevents women from consistently attending decision-making spaces.
- Gender stereotypes: The idea prevails that technical management (valves and pipes) is a male task, which makes women's empirical knowledge of the local water network invisible[66].
- Administrative limitations: The difficulty many aqueducts have in complying with legal requirements generates institutional distrust that hinders access to resources.

Although programs such as "Agua a la vereda" have sought to strengthen these partnerships through technical and financial support, mainstreaming the gender perspective remains the structural challenge in regional public policy[67]. Field data reveals a disconnect between women's operational work as resource managers and their presence in formal power structures. The following presents the perceptions of women in the project area regarding female representation on Community Action Boards and Water Supply Boards, highlighting governance gaps:

Table 4. Women's participation in community action boards and aqueducts

Field findings	The analysis of the field findings made it possible to identify a critical gap in the representation of women within local power structures, such as Community Action Boards and Rural Aqueduct Boards: ❖ Guatavita and Sesquilé: There is a 50% split participation; however, in cases where there is participation, it is divided between Community Action Boards and Water Boards, reflecting a moderate female presence in water management. ❖ Villapinzón: Participation in these governance structures is minimal, with only 15% of women integrated into any board, which demonstrates an almost total exclusion of women in the formal management of the aqueducts of the sub-basin.

Fieldwork, IDOM, 2025

[62]The Role of the Private Sector in Transforming the Care Economy in Latin America https://www.corewoman.org/post/el-rol-del-sector-privado-en-la-econom%C3%ADa-del-cuidado-en-am%C3%A9rica-latina

[63] Gender and Climate Change Tools | Ministry of Environment and Sustainable Development https://www.minambiente.gov.co/cambio-climatico-y-gestion-del-riesgo/herramientas-de-genero-y-cambio-climatico/

[64] Progress towards equality between men and women in territorial elected positions - Observatory, https://observatorio.registraduria.gov.co/anexos/igualdad_entre_hombres_y_mujeres_cargos_de_eleccion_territorial.pdf

[65] WOMEN OF THE PARAMO - IUCN Portals, https://portals.iucn.org/library/sites/library/files/documents/2017-043.pdf

[66] Empowering rural women through water and sanitation, https://www.iadb.org/es/blog/agua-saneamiento-y-residuos-solidos/empoderando-las-mujeres-rurales-traves-del-agua-y-el-saneamiento

[67] Agua a la vereda: A Social Cohesion Strategy for Expanding Water Coverage and Access in Rural Areas - Uniandes Journals, accessed February 17, 2026, https://revistas.uniandes.edu.co/index.php/rdi/article/view/7491/7894

2. Gender gaps in water governance.

Water resource management in the Bogotá Region landscape, while fundamental to development, reflects unequal power relations that place women in heavier workloads and with less decision-making power. This structure not only deepens existing social gaps but also undermines the sustainability of water strategies by ignoring the needs of half the population[68]. In this context, a gender perspective helps us understand that women are not only users but also essential managers at home and in the community. Therefore, integrating their participation is not an optional complement but a crucial factor in the effectiveness of any intervention[69]. Under this premise, water management ceases to be a neutral process and becomes a field shaped by social relations that determine equity and community resilience[70].

In everyday practice, women are usually primarily responsible for ensuring access to water for human consumption, hygiene, and food security. However, the 2022 National Water Study warns that, in rural regions, dependence on non-conventional sources increases the time spent hauling water, a feminized task that limits the educational and productive opportunities of women and girls[71]. Meanwhile, large-scale productive use, mostly associated with men, enjoys greater visibility and economic recognition[72].

Data from DANE confirms that this "time poverty" disproportionately affects rural women, a situation exacerbated by climate change, which extends the hours spent collecting water[73]. Despite this critical work for domestic water security, women's representation in decision-making remains marginal. As mentioned above, rural aqueduct boards and user committees are predominantly male, which limits the integration of care and basic sanitation priorities. This lack of a voice and a vote in water governance undermines the effectiveness of local solutions by excluding essential knowledge for sustainability[74].

Finally, the strengthening of community initiatives in Cundinamarca, and, in specific cases, the Tunjuelo River Rural Complex, demonstrates that when women's voices are recognized, the legitimacy and effectiveness of public policies increase. Their participation has allowed for the integration of traditionally ignored knowledge about health and food security. To transform these inequalities, it is imperative to move from addressing only practical needs (immediate access) to strategic needs, ensuring women's leadership, access to treatment technologies, and funding for projects that dismantle unequal power structures in water management[75].

The gender gap is not only a matter of political will, but also the result of physical and operational barriers that consume the time of rural women. While theory warns of underrepresentation in decision-making, field research allows us to identify factors that perpetuate this exclusion, such as difficulty accessing

[68] https://www.ideam.gov.co/sites/default/files/prensa/boletines/2024-08-23/resumen_ejecutivo_estudio_nacional_del_agua_2022_0.pdf
[69] https://www.dane.gov.co/files/investigaciones/genero/publicaciones/mujeres-y-hombre-brechas-de-genero-colombia-informe.pdf
[70] Water, Sanitation and Gender - IADB Publications, https://publications.iadb.org/publications/spanish/document/Agua_saneamiento_y_g%C3%A9nero_Gu%C3%ADa_operativa_para_proyectos_en_zonas_rurales_es.pdf
[71] Gender Approach to Water Management and Culture, https://www.agua.unam.mx/assets/pdfs/impluvium/numero19.pdf
[72] Water and Gender: Women Leaders in the Water Sector - World Bank, https://www.worldbank.org/en/events/2020/08/26/water-and-gender
[73] Women and men: gender gaps in Colombia - DANE, https://www.dane.gov.co/files/investigaciones/genero/publicaciones/mujeres-y-hombre-brechas-de-genero-colombia-informe.pdf National Water Study | IDEAM, https://www.ideam.gov.co/sites/default/files/prensa/boletines/2024-08-23/resumen_ejecutivo_estudio_nacional_del_agua_2022_0.pdf
[74] Gender perspective in water management and culture, https://www.agua.unam.mx/assets/pdfs/impluvium/numero19.pdf
[74] Water and Gender: Women Leaders in the Water Sector - World Bank, https://www.worldbank.org/es/events/2020/08/26/water-and-gender
[75] Women and Climate Change: The Importance of a Relationship That Saves Lives -, https://www.minambiente.gov.co/mujeres-y-cambio-climatico-la-importancia-de-una-relacion-que-salva-vidas/ Gender Gaps in Water Management and Natural Infrastructure - Forest Trends, https://www.forest-trends.org/wp-content/uploads/2020/02/Gender-Gaps-in-Water-Management-and-Natural-Infrastructure.pdf

resources and the care burden stemming from inadequate sanitation. These critical governance findings are detailed below:

Table 5. Gender gaps in water governance: field findings.

Field findings	The analysis of water management in the territory reveals that women assume the role of operational managers of the resource, facing critical challenges of access and representation: ❖ In the municipalities of Guatavita and Villapinzón, women mentioned that they must travel distances of more than 1,000 meters to obtain water for their homes. ❖ Specifically, in Guatavita and Villapinzón, the respondents reported that the time spent collecting water (round trip) can exceed two hours per day, which drastically limits their available time for productive or training activities. ❖ The women of Guatavita, Sesquilé, and Villapinzón indicated that the water for human consumption is frequently non-potable (raw) or simply filtered, which imposes on them the additional responsibility of purifying the resource at home to prevent diseases. ❖ In Guatavita, a high dependence on natural resources, such as springs and rivers, was noted. This situation makes them more vulnerable to climate variability, since these sources are the first to be affected during the droughts that they themselves unanimously reported.

Fieldwork, IDOM, 2025

3. Differentiated impacts of ecosystem degradation

The relationship between ecosystem health and women's well-being is deeply interdependent, with environmental degradation disrupting household dynamics and exacerbating the burden of unpaid work. When high-Andean forests are fragmented or páramos (high-altitude Andean ecosystems) are drained for activities such as livestock farming, declines in water quality and quantity force women to intensify their efforts to ensure household health.[76] In the Bogotá Region, the replacement of native vegetation with high-impact crops or pastures has degraded water quality through agrochemical runoff and soil compaction[77]. This poor water quality imposes an additional burden on women, as they must spend more time boiling water, using more firewood or gas, filtering it, or traveling to more distant, cleaner sources. This work, although vital for preventing illness in children and the elderly, remains invisible on national accounts. However, the interconnection is so close that the ecological restoration of a micro-basin could free up to 2 hours of female labour per day that had previously been dedicated to mitigating scarcity or pollution[78].

Furthermore, the fragmentation of high-Andean forests reduces ecosystems' capacity to regulate the regional microclimate and directly affects the livelihoods of rural women, who possess ancestral knowledge of using non-timber forest resources that are disappearing due to biodiversity loss. Soil degradation, accelerated by water variability, reduces the productivity of home gardens and pushes women toward greater economic dependence on men or on volatile external markets[79]. This situation is exacerbated by gaps in land tenure, which is predominantly male, making it difficult for women to make autonomous decisions about soil restoration or the protection of water sources within family properties.

[76] https://www.clacso.org/wp-content/uploads/2022/12/Iinforme-Final-de-Cuidados-rurales.pdf
[77] https://ppdcolombia.org/wp-content/uploads/2024/07/PPD_BOLETIN_GUARDIANAS_SUMAPAZ_2023_V2_COMP.pdf
[78] https://dag.revista.uab.cat/article/download/v70-n1-valderrama/854-pdf-es/9211
[79] https://www.clacso.org/wp-content/uploads/2022/12/Iinforme-Final-de-Cuidados-rurales.pdf

This is particularly concerning given that less than 20% of women farmers worldwide own their land, [80]and in Colombia, only 26% of rural women hold title to the land they work[81].

Environmental degradation is not a process external to domestic life; rather, it profoundly alters the productivity and stability of women-managed farms. Field findings demonstrate how the loss of environmental services (such as water regulation and pollination) translates into concrete limitations for food security and household well-being. The following table systematizes the main indicators of ecological deterioration observed from the perspective of women and men producers:

Table 6. Differentiated impacts of ecosystem degradation: field findings

	Women	Men
Field findings	❖ In the municipalities of Guatavita , women mentioned that soil compaction is one of the main limitations for productivity and water infiltration on their properties. ❖ The women of Guatavita identified the steep slopes as a critical risk that, added to the lack of vegetation cover, increases erosion and soil instability in the face of intense rain events. ❖ In municipalities such as Guatavita and Villapinzón, women reported the presence of exotic forest cover that reaches up to 20% or 30% of the area of some properties, which alters local water regulation and displaces native biodiversity essential for their activities. ❖ In Guatavita, the women indicated that the low productivity of the soil and the scarce availability of water force them to depend economically on external activities or on renting their labour as local day labourers.	❖ Soil compaction and water erosion represent a loss of productive capital and commercial land value in the Bogotá-Region landscape. These factors force the expansion of the agricultural frontier toward the páramos to compensate for low productivity in the livestock areas of Villapinzón, Tausa, and Cogua. ❖ The loss of biodiversity generates conflicts due to the presence of wildlife on productive plots and the disappearance of essential ecosystem services, such as natural pest control, for intensive production. In municipalities like Sesquilé and Guasca, biological degradation compromises the long-term profitability of the farms. ❖ Exotic forest covers displace the native biodiversity necessary for sustainable livestock systems. In Guatavita and Villapinzón, these covers alter water regulation, increasing operational costs for water management in large-scale production. ❖ Low soil productivity and water scarcity lead to the financial failure of traditional systems, generating an identity crisis and the risk of abandoning the rural vocation in Tausa and Cogua. In Zipaquirá and Cogua, mining-induced degradation destroys the water base upon which their own productive units depend.

Fieldwork, IDOM, 2025

[80] https://www.dane.gov.co/files/investigaciones/notas-estadisticas/oct-2021-nota-estadistica-situacion-mujeres-rurales-colombia-resumen.pdf
[81] https://viacampesina.org/es/colombia-solo-el-26-de-las-mujeres-rurales-tienen-titularidad-sobre-la-tierra-que-trabajan/

C. Gender gaps in the agricultural sector: an analysis of the climate crisis

Women are central to the social and economic reproduction of these territories, playing roles ranging from small-scale agricultural production to livestock management and the conservation of strategic ecosystems[82]. However, their position is mediated by historical inequalities that limit their access to property, financial capital, and technical training[83].

The 2023 National Agricultural Survey (ENA 2023) reaffirms that land remains the most elusive asset for rural Colombian women and is the primary barrier to their productive development. Although the legal relationship between producers and land takes various forms, such as formal ownership, leasing, sharecropping, usufruct, or de facto occupation, the quality and legal security of these arrangements exhibit critical gender disparities. While for men these forms of land tenure are usually backed by contracts or clear titles, for women, the relationship with the land is marked by informality and precariousness.

This legal uncertainty translates into a multidimensional vulnerability:

- Co-ownership: According to data from DANE, integrating administrative records shows that when women are listed in documents, they are usually recorded as "co-owners" rather than "sole owners." This distinction is crucial because, in practice, co-ownership tends to dilute women's effective decision-making power over the productive unit, leaving its management to third parties[84].
- Decision-making vs. ownership: In strategic regions like Cundinamarca, it is evident that, even when women have a legal connection to the land, their ability to decide what to plant or how to manage it is significantly lower than that of men listed as owners[85]. This suggests that land tenure does not always guarantee autonomy unless accompanied by a cultural transformation.

Table 7. Barriers to autonomy and participation in territorial decision-making for rural women.

Across various territories, limited autonomy is reported, with women sometimes needing men in the household's permission to make decisions about planting or managing the land. This barrier is compounded by a low social value placed on their opinions in community decision-making spaces, such as water systems or councils, despite their active role in production.

Fieldwork, IDOM, 2025

- Financing barriers: The legal insecurity of land tenure for women creates a domino effect that hinders their capitalization. Lacking robust property titles or formalized lease agreements in their names, women face systemic exclusion from the financial system. This situation not only restricts access to credit but also leads to higher interest rates, as the system perceives a greater risk of exposure. Despite FiINAGRO's 2023 agricultural credit regulations, collateral requirements continue to penalize rural women, who are categorized as having a higher financial risk profile due to the lack of personal assets to secure loans for the land they cultivate.

[82] https://lanotaeconomica.com.co/movidas-empresarial/compensar-56-millones-de-mujeres-residen-y-trabajan-en-zonas-rurales-de-colombia-segun-el-dane/
[83] https://lanotaeconomica.com.co/movidas-empresarial/compensar-56-millones-de-mujeres-residen-y-trabajan-en-zonas-rurales-de-colombia-segun-el-dane/
[84] Statistical Note - Rural Property in Colombia - DANE, https://www.dane.gov.co/files/investigaciones/notas-estadisticas/jul_2022_nota_estadistica_propiedad_rural.pdf
[85] Analysis of the socioeconomic situation of rural women, https://www.uexternado.edu.co/wp-content/uploads/2023/09/DDT73.pdf

As can be seen, the situation is defined by the intersection of traditional roles and structural barriers that limit their financial autonomy[86]. This manifests itself in a clear feminization of poverty.

- 31.6% of the 3.8 million rural households are headed by women.
- In 68.8% of these cases, there is no spouse present, which forces them to assume the care and production tasks alone[87].
- Economically, this translates into a 30% income gap compared to men, aggravated by the invisibility of their work under the category of "unpaid family workers"[88].

Although the Peace Agreement and the Comprehensive Rural Reform in Colombia establish preferential access for women, research has reported that gender commitments are progressing slowly; most provisions were in a "minimal" or "not initiated" state at the end of 2022[89].

Following the closure of previous programs, the new "Ruralidad para la vida" policies (2025-2030) aim to close these gaps by providing $85 million in loans from multilateral development banks, with priority given to female heads of household and conflict-affected victims[90]. However, access to services remains a barrier: only 26% of women received technical assistance in the last year, and the lack of collateral (property titles) continues to exclude them from agricultural credit. In addition, rural Colombia is experiencing a profound demographic transformation and an identity crisis that threatens its long-term sustainability and capacity for innovation. This reality can be broken down into the next critical areas:

Intellectual decapitalization and generational change

The rural sector is experiencing a steady loss of young talent and a worrying "feminization" of unpaid care work. Currently, 23.7% of young rural women who are not part of the education system are exclusively dedicated to housework. This phenomenon not only limits their economic autonomy but also creates a gap in technical knowledge among new generations. As a result, the responsibility for sustaining production falls on older women, who represent 13.4% of the rural population. These women leaders are forced to manage production units facing a severe technological gap, typically operating with outdated tools and with limited access to modernization processes that would facilitate physical labor[91].

Plurality and territorial justice

Agricultural policy design must move beyond a monolithic view of the peasantry to adopt a territorial approach that addresses the specific diversities and vulnerabilities of the intervention area. Rather than relying solely on national averages, the strategy must prioritize key local findings, such as the presence of the Muisca community in Sesquilé, whose ancestral and collective relationship with the land requires differentiated governance mechanisms. Furthermore, it is imperative to address the barriers faced by other disadvantaged groups in the region, including the migrant population and victims of the armed conflict. These groups encounter unique challenges regarding local integration, access to state services, and legal security; factors that often render them invisible within traditional institutional support frameworks.

[86] https://www.dane.gov.co/index.php/estadisticas-por-tema/enfoque-diferencial-e-interseccional/enfoque-diferencial-e-interseccional-publicaciones
[87] Situation of Rural Women in Colombia - DANE, https://www.dane.gov.co/files/investigaciones/notas-estadisticas/oct-2021-nota-estadistica-situacion-mujeres-rurales-colombia-resumen.pdf Analysis of the socioeconomic situation of rural women, https://www.uexternado.edu.co/wp-content/uploads/2023/09/DDT73.pdf
[88] https://www.uexternado.edu.co/wp-content/uploads/2023/09/DDT73.pdf
[89] Time is running out for the implementation of the gender approach, https://share-net-colombia.org/documentos/El_tiempo_se_agota_para_la_implementacio%CC%81n_del_enfoque_de_genero_2023.pdf
[90] https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%C3%B3micos/4141.pdf
[91] https://www.uexternado.edu.co/wp-content/uploads/2023/09/DDT73.pdf

Visibility of the LGBTIQ+ population in rural areas

For the first time, the country has statistical tools to map historically denied identities in rural areas. The 2023 records, which documented 6,500 valid cases through instruments such as the "Voluntary Registry for the Visibility of Sexual and Gender Diversity," reveal a stark reality: trans and non-binary people in rural contexts face significantly higher levels of labor exclusion and social stigmatization than cisgender women. This structural discrimination not only affects their emotional well-being but also marginalizes them from productive sectors, denying them access to decent rural employment and land ownership based on prejudice against their identity[92].

1. Differentiated climate impacts on the agricultural sector

In the agricultural sector, the climate crisis is not a neutral phenomenon; its repercussions disproportionately affect those with fewer resources who depend directly and immediately on natural cycles[93]. For rural women, these factors are now drastically exacerbated by the global climate crisis, which multiplies pre-existing inequalities[94].

Impacts on rural production systems

- Subsistence agriculture: In Andean family farming, the "tropicalization" of the climate has altered thermal zones, exposing crops vital to food security (such as corn and various fruit trees) to pest and disease cycles that were previously nonexistent at these altitudes[95]. This not only reduces crop yields but also jeopardizes the household's food sovereignty.
- Cattle raising Small-scale: Although extensive livestock farming is generally a male-dominated sector, women play a critical role in both small-scale livestock farming and artisanal dairy processing[96]. Currently, in Colombia, 55% of farms smaller than 5 hectares already dedicate part of their land to livestock farming; however, they operate at chronically low productivity due to a lack of technical assistance and machinery[97].

Table 8. Economic dependence on livestock and pressure on water resources in Cundinamarca municipalities

	In municipalities like Villapinzón and in areas of Tominé (Guatavita and Sesquilé), livestock farming is not secondary; rather, it is the main economic pillar for all the women surveyed. This dependence places critical pressure on water resources, which are primarily used to water animals (especially in Villapinzón) rather than for crop irrigation.

Fieldwork, IDOM, 2025

- Increased workload: Ecosystem degradation translates into a direct physical burden. The scarcity of water sources and the erosion of pastures force women to travel ever greater distances to collect fodder and water, increasing their working hours and deteriorating their physical well-being[98].

[92] https://www.dane.gov.co/files/investigaciones/notas-estadisticas/2023-May-NotaEstadistica-RegistroVoluntarioLGBTI.pdf
[93] https://ikicolombia.com/web/wp-content/uploads/2025/02/Resumen_PAGCC_CAMBIO-2.pdf
[94] https://www.minambiente.gov.co/wp-content/uploads/2025/02/PAGCC-DE-COLOMBIA_VF.pdf
[95] https://journals.umcs.pl/al/article/download/13950/9765
[96] https://www.ica.gov.co/mujer-rural
[97] https://indepaz.org.co/acceso-a-tierras-de-las-mujeres-rurales-en-colombia-desde-la-decada-de-los-ochentas/
[98] https://www.brot-fuer-die-welt.de/fileadmin/mediapool/2_Downloads/Fachinformationen/Dialog/Dialog_09_Mujeres_Agricultoras_Internet.pdf

Table 9. Vulnerabilities of rural women due to the degradation of natural water sources in Villapinzón.

	This overload is exacerbated by dependence on vulnerable natural sources. In Villapinzón, most people rely on non-potable water from springs, increasing health risks from contamination or from these sources drying up during droughts.

Fieldwork, IDOM, 2025

Faced with this hostile scenario, rural women have ceased to be passive subjects and have emerged as leaders in nature-based adaptation strategies[99]:

- Guardians of seeds and biodiversity: They act as custodians of the genetic memory of the countryside. By preserving native varieties that have proven more naturally resistant to extreme droughts and floods, family gardens are maintained as living banks of agrobiodiversity, ensuring a source of food even when commercial monocultures collapse.
- Based on ancestral knowledge: Millennia-old practices such as the production of organic fertilizers (biofertilizers), the use of natural biopesticides, and the planning of crop rotation following lunar cycles, have ceased to be seen as mere traditions and are now validated as low-cost, high-impact scientific tools for climate adaptation[100].
- Territorial and water leadership: Women are currently leading wetland restoration efforts and the design of rainwater-harvesting systems. Notably, fieldwork in Villapinzón revealed that 54% of the women surveyed actively utilize climate information to organize their daily tasks, demonstrating a technical capacity that challenges traditional perceptions of rural passivity.

Finally, resilience to climate change is strengthened through income diversification and the diversification of associative structures. Among the most effective strategies identified are:

- Productive diversification: Integrating agriculture with community tourism and the production of handicrafts to reduce dependence on a single crop cycle[101].
- Direct marketing: The creation of short marketing circuits that eliminate intermediaries, allowing women to receive a fair and direct price for their agroecological products[102].
- Association and microfinance: Strengthening savings groups and women's associations that facilitate access to microcredits and support networks, essential for financing small climate infrastructure projects on their properties[103].

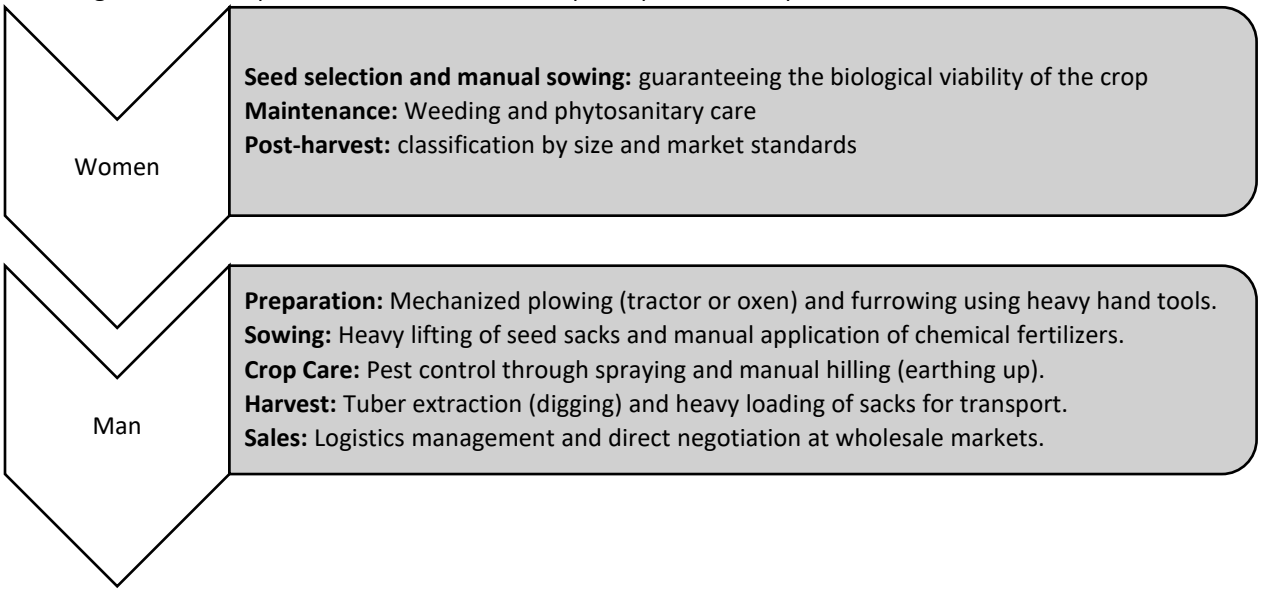
2. Gender roles in potato production

Cundinamarca, the department where areas are located, is consolidating its position as the epicenter of food security in the Andean region and as Colombia's leading potato producer. With 40,000 hectares dedicated to this tuber annually, its importance transcends the economic sphere and becomes part of the social fabric of municipalities like Villapinzón, where dependence on the crop is almost absolute: 81.7% of its agricultural area is dedicated exclusively to potatoes.[104]

[99] https://www.minambiente.gov.co/wp-content/uploads/2025/02/PAGCC-DE-COLOMBIA_VF.pdf
[100] https://andesresilientes.org/wp-content/uploads/2022/11/Saberes-ancestrales-de-mujeres-rurales-frente-al-cambio-climatico-como-potenciadores-de-politicas-para-la-agricultura-familiar-campesina-.pdf
[101] https://colombia.unwomen.org/es/stories/noticia/2025/06/la-resiliencia-de-las-mujeres-frente-a-la-crisis-climatica-en-colombia
[102] https://www.fao.org/colombia/noticias/detail-events/ar/c/1732568/
[103] https://www.sena.edu.co/es-co/Documents/Asi-vamos-10-(2)-(1).pdf
[104] https://fedepapa.com/home/wp-content/uploads/2024/10/Regional-Cundinamarca.pdf

Although the collective imagination often associates farm work with men, rural women play a critical, multifaceted role in sustaining the value chain. Their involvement is crucial in high-precision phases such as:

Figure 2. Critical phases and female and male participation in the potato value chain in Cundinamarca.



Despite their key role in the value chain, these workers' social vulnerability is evident: only 9% contribute to the health system[105]. Furthermore, women handle the food logistics for the work crews, an essential caregiving function that serves as an "invisible subsidy" for the Agricultural Production Unit (UPA), thereby reducing operating costs without remuneration[106].

Recurring frosts and prolonged droughts cause irreversible damage to plant foliage, reducing productivity by over 20% during critical growing seasons. The persistent lack of modern irrigation systems leaves producers entirely dependent on rainfall. The resulting problem is tubers that do not reach minimum marketable sizes, preventing them from competing in wholesale markets and perpetuating cycles of low profitability for farmers[107]. Soil management in Cundinamarca faces pressure from traditional extensive livestock farming, which has accelerated soil compaction and water erosion[108].

Table 10. Biological and physical factors limit soil productivity in livestock and agricultural areas.

The findings on the ground confirm that soil compaction is a constant limitation in livestock areas, compounded by low productivity and steep slopes that make physical labor difficult for women. Added to this is the loss of functional biodiversity; in Bogota, for example, female producers report the absence of pollinators and seed dispersers as a biological factor that compromises the health of their land.

Fieldwork, IDOM, 2025

[105] https://upra.gov.co/sites/default/files/2024-09/POP_Cadena_Papa.pdf
[106] https://americalatinagenera.org/wp-content/uploads/2014/09/U1ReproduccionyProduccion.pdf
[107] https://www.contextoganadero.com/agricultura/produccion-de-papa-disminuye-un-20-por-heladas-y-sequia
https://saludconlupa.com/noticias/resistencia-agricultores-andes-heladas-sequias-cambio-climatico/
[108] https://www.uniamazonia.edu.co/arainmba/wp-content/uploads/2022/02/03.-Impacto_ganaderia_1_baja2.pdf

When women choose the best seeds, they are doing much more than manual labor: they are protecting the farm from the elements. By saving the varieties that best withstand frost or drought, they create a kind of "life insurance" for their crops. Thanks to this care, if a harvest is lost to bad weather, the family doesn't have to buy expensive seeds, because they already have the strongest ones at home to start again. Faced with soil degradation caused by livestock compaction and the intensive use of agrochemicals, women's role is key to advancing towards regenerative agriculture. Their leadership in implementing organic fertilizers and crop rotation, practices that improve soil structure and moisture retention, has resulted in fewer low-quality potatoes. Ultimately, the sustainability of potato production in Cundinamarca depends on transforming this unpaid contribution into productive capital through effective economic and social recognition.

Strengthening the financial autonomy of these women producers by facilitating their access to modern irrigation systems and social security programs is not only an act of justice but also a national necessity for food security. If women continue to operate informally and have limited access to credit due to a lack of land titles, the agricultural sector will squander its greatest asset for adaptation and resilience.

3. Gender roles in dairy production

Cundinamarca is recognized as the epicenter of water and food security in Colombia's central region. In this region, dairy farming is not merely an economic activity but the core of the social fabric in municipalities such as Villapinzón, Sesquilé, and Guatavita. The rural vocation in these territories is profound; for instance, in Villapinzón, 100% of the women surveyed identify livestock activities as their primary source of income.

Although the collective imagination often associates livestock farming with men, field findings demonstrate that rural women perform a critical technical and caregiving role. While men typically focus on commercialization and fence management, women lead milking hygiene, calf health, and dairy transformation. However, structural gender barriers persist; in Villapinzón, it is reported that women's participation remains limited, in some cases by the need to "ask permission" from men to decide what to plant or how to manage the land.

Roles and barriers in the dairy value chain

- Women (precision and care): They are responsible for manual milking, equipment cleaning (essential for food safety/inocuity), calf feeding, and the transformation of milk into products like cheese and curd.
- Men (logistics and ltrength): Their roles include the management of extensive pastures, the transport of milk cans, and representation in wholesale market associations.
- Identified Barriers: These include a disproportionate burden of domestic work, lack of access to land titles, and weak administrative formalization within their associations.

Despite their fundamental role, social vulnerability is evident. In municipalities like Sesquilé and Tausa, women's associations struggle against the low social valuation of their leadership and a lack of initial capital for productive reconversion.

The sustainability of dairy production in Cundinamarca requires the formal recognition of women's work in animal hygiene and health, thereby transforming their current role into productive capital and increasing their financial autonomy. To achieve this, it is essential to strengthen base associations and ensure direct, "farm-to-farm" technical assistance to address climate risks like frosts and droughts. Finally, improving trust in environmental authorities is vital; currently, fears of restrictive regulations ("If we plant natives, the CAR comes after us") hinder reforestation efforts. Promoting the planting of native species and protecting water sources will consolidate the sector's resilience against climate change.

D. Gender and ecosystem-based adaptation in the Bogotá Region

The landscape of the Bogotá Region is defined by a complex, multidimensional interplay among industrial areas, high-density urban centers, and high-mountain rural zones. These rural areas are primarily dedicated to dairy farming and potato cultivation. While this productive dynamic is a vital pillar of food security, it has exerted considerable historical pressure on strategic ecosystems; the expansion of the agricultural frontier into the paramos has led to the loss of native vegetation, severely compromising soil water retention and accelerating erosion. In this context, degradation, also manifested in carbon dioxide and nutrient depletion from large-scale, extensive cattle ranching, Ecosystem-based Adaptation (EbA) emerges as an integral strategy that leverages biodiversity to help communities mitigate the adverse effects of climate change.[109] [110]

In this region, women have led the adoption of this approach through practices that harmonize mountain protection with productivity. One of the most prominent strategies is the creation of high-mountain nursery networks to propagate native species, thereby avoiding dependence on foreign plant material. Women in municipalities such as Guasca have spearheaded seed collection and germination processes for key species.[111] A notable example is the "Guardianas del Páramo" (Guardians of the Moorland) initiative, which has established 25 community nurseries where ancestral knowledge of biological cycles merges with technical protocols.[112] This nursery model not only restores degraded hectares but also serves as a powerful mechanism for economic empowerment: by commercializing seedlings for restoration projects or private environmental compensation, women diversify their livelihoods while protecting essential micro-basins that supply rural aqueducts.

Table 11. Female leadership initiatives in community nursery management and regional ecological restoration.

	In Zipaquirá, women are already leading reforestation processes, notably in the Pueblo Viejo and Río Frío nurseries. In Fómeque, the ADIF association (comprising entrepreneurial women) manages the CTAP Nursery, demonstrating that women are the primary keepers of the materials needed for ecological restoration in the region.

Fieldwork, IDOM, 2025

[109] https://www.nature.org/es-us/sobre-tnc/donde-trabajamos/tnc-en-latinoamerica/colombia/adaptacion-cambio-climatico-comunidades-rio-magdalena/
[110] https://www.humboldt.org.co/noticias/viveros-comunitarios-aliados-para-restaurar-los-paramos-de-colombia
[111] https://www.humboldt.org.co/noticias/viveros-comunitarios-aliados-para-restaurar-los-paramos-de-colombia
[112] https://ppdcolombia.org/convocatoria/guardianas-de-los-paramos-y-la-accion-climatica-sumapaz/

Faced with increasing water scarcity, the transition from conventional agriculture to agroecological models has become an imperative led by women in Cundinamarca and others municipalities. Unlike potato monocultures that rely on synthetic fertilizers, agroecological gardens use bio-preparations and minimum tillage to conserve soil moisture.[113] Furthermore, the conservation of heirloom and native seeds ensures the existence of genetic varieties capable of adapting to the new temperature conditions imposed by climate change.[114] These actions are complemented by low-cost rainwater harvesting technologies, such as rooftop collection systems and geomembrane storage tanks, which, under the CAR, benefit many households by optimizing water use during dry months.[115] [116]

Table 12. Agroecological Transition and Sustainable Value Chain Experiences Led by Women's Associations in Cundinamarca



Women's associations in Sesquilé (AMUSES and the Association of New and Entrepreneurial Women) and Guasca (the Association of Blueberry Women) are transforming traditional farming into specialized, sustainable value chains.

Fieldwork, IDOM, 2025

At the farm level, strategies are consolidated into three pillars: the use of live fences and silvopastoral systems to protect water sources; the maintenance of vegetation cover to reduce runoff and prevent landslides; and waste management through composting to prevent stream contamination.[117] This approach highlights that women are not passive victims of the crisis, but active leaders whose management of nurseries and rural aqueducts sustains regional water security. Nevertheless, to strengthen this impact, it is essential to integrate ancestral knowledge with scientific monitoring, design gender-sensitive Payment for Environmental Services (PES) mechanisms where land tenure does not act as a barrier to participation, and redistribute the burden of care work to ensure that the responsibility for sustainability does not fall exclusively on them.[118] [119]

Table 13. Synergies between female and male empowerment and ecosystem resilience[120]

Adaptation Measure (EbA)	Benefit for Women	Benefit for Men	Benefit for the Ecosystem
Rainwater Harvesting	Water autonomy and reduction in hauling time.	Reduces neighbor conflicts over water turns and lowers operational pumping costs, especially in Villapinzón, Guatavita, and Sesquilé.	Reduced pressure on surface water springs.
Community Nurseries	Income generation and technical leadership.	Community nurseries foster the recognition that protecting forests and riparian strips safeguards their property and productive infrastructure from flooding in Zipaquirá and Guasca.	Recovery of native biodiversity.

[113] https://www.adaptation-undp.org/sites/default/files/resources/PPD_BOLETIN_GUARDIANAS_SUMAPAZ_2023_V2_COMP.pdf
[114] https://www.brot-fuer-die-welt.de/fileadmin/mediapool/2_Downloads/Fachinformationen/Dialog/Dialog_09_Mujeres_Agricultoras_Internet.pdf
[115] https://www.gwp.org/globalassets/global/gwp-cam_files/ea_cosecha-aguas-lluvias_fin.pdf
[116] https://www.humboldt.org.co/noticias/viveros-comunitarios-aliados-para-restaurar-los-paramos-de-colombia
[117] https://www.nature.org/es-us/sobre-tnc/donde-trabajamos/tnc-en-latinoamerica/colombia/adaptacion-cambio-climatico-comunidades-rio-magdalena/
[118] https://lac.unwomen.org/es/stories/noticia/2023/10/en-colombia-las-mujeres-rurales-son-raices-mujeres-sembradoras-del-cambio

[120] https://ppdcolombia.org/wp-content/uploads/2024/07/PPD_BOLETIN_GUARDIANAS_SUMAPAZ_2023_V2_COMP.pdf

Regenerative Agriculture	Improved family health and food security.	Regenerative agriculture and silvopastoral systems ensure long-term farm profitability and reduce dependence on chemical inputs in Tausa, Cogua, and Villapinzón.	Reduction of pollution and soil erosion.
Riparian Restoration	Property protection against flooding.	Riparian restoration protects plots against soil loss and improves water quality for livestock, a male priority in Villapinzón and Sesquilé.	Improved water quality and flow regulation.
Associative Strengthening	Recognition in JACs and local boards; reduction of "permission" barriers.	Associative strengthening requires men in Cogua, Sesquilé, and Villapinzón to yield traditional decision-making spaces and embrace household co-responsibility to allow for female technical participation.	Improved territorial governance and reduction of illegal agricultural expansion.

Fieldwork, IDOM, 2025

Table 14. Persistent barriers and time gaps affect the technical participation of rural women.
Fieldwork, IDOM, 2025



Despite their leadership, qualitative findings reveal deep-seated barriers: in Villapinzón, some women report needing to "ask permission" from male household members to decide what to plant on their own land. Furthermore, the burden of care is exacerbated by climate change; in several municipalities, women spend over 30 minutes per trip just to collect water, a "hidden" labour that limits their participation in technical training.

In conclusion, the climate resilience of the Bogotá-Region depends intrinsically on a paradigm shift in the management of its high-mountain landscapes. The transition from extractive models and monocultures toward Ecosystem-based Adaptation (EbA) practices has proven to be the most effective way to restore water capacity and protect the biodiversity of the *páramos*. This transformation is not only technical but also profoundly social, as it finds its primary architects in rural women who, through agroecology, water harvesting, and forest restoration, have successfully mitigated environmental risks while strengthening their communities' food security.[121] [122]

Finally, recognizing women as active leaders in climate action requires public policies to evolve toward gender-just governance. To ensure long-term sustainability, it is imperative that financing mechanisms, such as Payment for Environmental Services (PES), prioritize female heads of household and that care systems are implemented to alleviate their unpaid workload. To this end, the project must sensitize and actively involve men in promoting gender equality, fostering co-responsibility approaches at the household level. Only by integrating female ancestral knowledge with technical territorial planning will it be possible to guarantee regional water stability, recognizing that the health of Andean ecosystems and the well-being of those who inhabit them are the fundamental basis for life in the capital and its surroundings.[123] [124]

[121] https://www.minambiente.gov.co/wp-content/uploads/2025/02/PAGCC-DE-COLOMBIA_VF.pdf
[122] https://www.minambiente.gov.co/wp-content/uploads/2025/02/PAGCC-DE-COLOMBIA_VF.pdf
[123] https://lac.unwomen.org/es/stories/noticia/2023/10/en-colombia-las-mujeres-rurales-son-raices-mujeres-sembradoras-del-cambio
[124] https://ppdcolombia.org/wp-content/uploads/2024/07/PPD_BOLETIN_GUARDIANAS_SUMAPAZ_2023_V2_COMP.pdf

E. Gender profile by intervention zone

The characterization of the project's intervention landscapes is based on a mixed-methods analysis. Statistical indicators were integrated to define sociodemographic and gender contexts (Tables A and B), while fieldwork captured local realities through qualitative data and stakeholder perceptions.

Intervention landscape 1. Guandoque (Cundinamarca)

Table 15. Demographic context in intervention area 1

Demographic and territorial context			
Municipalities where the intervention area is located	This area comprises Tausa (45.66%), Cogua (27.43%), and Zipaquirá (26.91%).		
Geographic distribution	**Tausa**	**Urban:** 26.4% **Rural:** 73.6%	DANE-Population projections based on the 2018 Census-DNP, published in Terridata municipal fact sheets
	Cogua	**Urban:** 43% **Rural:** 57%	
	Zipaquirá	**Urban:** 85.2% **Rural:** 14.8%	
Population disaggregated by sex (2024)	**Tausa** 9,711 people	**Women:** 48% **Men:** 52%	DANE-Population projections based on the 2018 Census, available on Terridata
	Cogua 26,870 people	**Women:** 50.6% **Men:** 49.4%	
	Zipaquirá 160,629 people	**Women:** 51.5% **Men:** 48.5%	
Population over 59 years old	**Tausa**	**11.3%** of the total population.	DANE CNPV 2018
	Cogua	**13.6%** of the total population.	
	Zipaquirá	**11.7%** of the total population.	
Literacy *(% of people over 15 years old who can read and write)*	**Tausa**	**Men:** 95.1%. **Women:** 94.8%.	DANE CNPV 2018
	Cogua	**Men:** 95.7%. **Women:** 96.4%.	
	Zipaquirá	**Men:** 98.3%. **Women:** 97.9%.	
Place of birth	**Tausa**	**Men** Other country: 0.31% Other municipality: 27.93% **Women** Other country: 0.28% Other municipality: 27.88%	DANE CNPV 2018
	Cogua	**Men** Other country: 0.34% Other municipality: 40.2% **Women** Other country: 0.24% Other municipality: 41.84%	

	Zipaquirá ➲	**Men** Other country: 0.94% Other municipality: 23.22% **Women** Other country: 0.93% Other municipality: 25.69%	

The demographic analysis of Area 1 reveals a sharp contrast between the rural, peasant profile of Tausa (73.6% rural) and the urbanized expansion of Zipaquirá (85.2% urban). This divide influences gender distribution: while Tausa shows a slight male majority, likely due to female migration to urban centers, Zipaquirá maintains a female majority, reflecting its role as a regional service hub. A critical challenge is the aging of the rural population, with over 11% of residents aged 59 or older. This trend threatens generational renewal in water and land management, leaving climate adaptation tasks often physically demanding for an older demographic. Regarding human capital, high literacy rates (over 94%) mask a persistent technical gap in rural areas. Gender inequality further exacerbates this through "time poverty": while rural men spend 3 hours daily on domestic work, women invest over 8 hours. This burden is expected to intensify as water scarcity increases the effort required for household and livestock management.

Table 16. Inequality gaps in intervention area 1

A. Inequality Gaps			
Services *(% of homes that have the service)*	**Tausa** ➲ **Cogua** ➲ **Zipaquirá** ➲	Aqueduct: 87.6%. Sewerage: 18.6%. Aqueduct: 88.82%. Sewerage: 36.43%. Aqueduct: 94.8%. Sewerage: 91.2%.	DNP, with data from the Superintendency of Public Utilities 2022 - published in municipal records Terridata
Average daily time spent on unpaid domestic and care work (hours)	Regional data Men: 1.7 hours Women: 3.6 hours	Data for rural areas: Men: 3.0 hours Women: 8.6 hours	DANE-ENUT reported in the Colombian Observatory of Women
	Data scope: Time use information is presented at a regional scale and by zones (urban and rural), since the ENUT (National Time Use Survey) lacks statistical representativeness at the municipal or departmental level.		
Poverty (% of people living in that situation)	**Tausa** ➲ **Cogua** ➲ **Zipaquirá** ➲	Extreme poverty: 11.3% Moderate poverty: 29.7% Extreme poverty: 6.1% Moderate poverty: 22.2% Extreme poverty: 7.0% Moderate poverty: 22.5%	Records in SISBEN IV, 2024 published in municipal records Terridata
Rate of domestic violence *per 100,000 inhabitants*	**Tausa** ➲ **Cogua** ➲ **Zipaquirá** ➲	Rate 2023: 74.3 *Downward trend vs. the previous year* Rate 2023: 92.1 *Downward trend vs. the previous year* Rate 2023: 291.1 *Upward trend vs. the previous year*	DNP, with data from MinDefensa, Medicina Legal and DANE - published in Terridata municipal records

These disparities are exacerbated by socioeconomic factors, including extreme poverty in Tausa and limited women's legal land ownership, which can restrict their participation in decision-making and their access to conservation incentives, such as Payments for Environmental Services (PES). For this reason, it will be necessary to develop a mechanism to involve all household members, including women.

Furthermore, the deficient sewerage infrastructure in rural Tausa (18.6%) relative to urban Zipaquirá (91.2%) directly affects women, who, as the primary managers of domestic water, are exposed to contamination from inadequate wastewater discharge. Adding to this outlook are the concerning rates of domestic violence and harassment in the area, factors that could jeopardize personal safety and limit women's autonomy in community leadership roles.

To complement the statistical baseline, fieldwork was conducted in the intervention area to capture the lived experiences and perceptions of local communities. This qualitative approach enables a deeper understanding of the social fabric and the specific challenges that women face in practice. The following table synthesizes these field findings, categorized by leadership dynamics, participation barriers, and climate-specific vulnerabilities identified in Tausa, Cogua, and Zipaquirá.

Table 17. Qualitative fieldwork findings: leadership, barriers, and technical needs (Area 1)

Category	Tausa	Cogua	Zipaquirá
Leadership and Organizations	Key actors include female heads of household, artisans, and vegetable producers.	Features women's home garden associations and the "Casa de la Mujer" (Women's House).	Strong female leadership in local associations and entrepreneurship groups.
Barriers to Participation	Caregiving burdens, limited time and transportation.	Reports of harassment, social pressure within guilds, and a lack of recognition of women's roles in the field.	Caregiving burdens, limited time and transportation, and youth disinterest due to limited options.
Climate Vulnerability	Specific impacts on beekeeping (colony mortality) and loss of nutrients in livestock pastures.	Farmers experience pronounced seasonal variability in rainfall.	Women responsible for care and production are most affected by water scarcity.
Logistics and Technical Needs	Training in marketing and technical assistance for cold storage and packaging.	Coordination with environmental and social NGOs for recycling and environmental education.	Specific budgets to cover transportation and childcare services during project workshops.

Fieldwork, IDOM, 2025

The fieldwork conducted in the municipalities of Tausa, Cogua, and Zipaquirá demonstrates that female leadership underpins community organization, with a prominent presence in artisan and producer associations and in environmental care groups. In Zipaquirá, strong female participation in local associations was observed, whereas in Tausa, women, particularly female heads of households, are recognized as primary actors in the management of natural resources. However, this community leadership contrasts with institutional disconnection, as these leaders do not currently participate in external technical projects across several sectors, thereby limiting their influence on structural water-related decisions.

A central finding of the diagnosis is the persistence of structural barriers that condition women's participation. Caregiving burdens and domestic chores are cross-cutting factors that limit available time, compounded by transportation difficulties in hard-to-reach rural areas. Nevertheless, in municipalities like Cogua, additional challenges related to a lack of autonomy and social pressure are detected, where situations of harassment and a culture that still limits women's agency in the field are reported. Likewise, mistrust of external entities, stemming from prior experiences of imposition or sanctions, discourages the female community's active involvement in new processes. With respect to climate vulnerability, women are identified as the most exposed group due to their direct role in water management for domestic

consumption and family food security. Phenomena such as droughts and the drying up of springs significantly increase their workload and affect their livelihoods, including home gardens and small livestock farming. Despite this exposure, it highlights that women possess extensive traditional knowledge and historical memory of water source behavior, often exceeding official technical information.

It's useful to highlight that in the region, a significant proportion of women rely exclusively on agricultural work or on renting out their labor to survive, creating economic precariousness that limits their capacity to invest in adaptation measures. Furthermore, the educational attainment levels of some rural women may hinder their understanding of complex technical languages, underscoring the need to value and preserve local knowledge as a fundamental resource for the territory's resilience.

Intervention lanscape 2. Villapinzón (Cundinamarca)

In this case, the analysis focuses on the municipality of Villapinzón. The demographic context and gender gaps are then presented using official municipal statistics, information which is subsequently compared with the qualitative and quantitative findings obtained in the field.

Table 18. Demographic context in intervention area 2

Demographic and Territorial Context			
Municipalities where the intervention area is located	The area is distributed between Villapinzón (77.52%) and Chocontá (22.48%).		
Geographic distribution	**Villapinzón**	**Urban:** 45.0% **Rural** 55.0%	DANE-Population projections based on the CNPV 2018, published in Terridata municipal fact sheets
Population disaggregated by sex (2024)	**Villapinzón** 20,735 people	**Women:** 49.9% **Men:** 50.1%	DANE-Population projections based on the 2018 Census, available on Terridata
Population over 59 years old	**Villapinzón**	**12.8%** of the total population.	DANE CNPV 2018
Literacy *(% of people over 15 years old who can read and write)*	**Villapinzón**	**Men:** 97.1%. **Women:** 96.1%.	DANE CNPV 2018
Place of birth	**Villapinzón**	**Men** Other country: 0.25% Another municipality: 21.32% **Women** Other country: 0.18% Another municipality: 21.81%	DANE CNPV 2018

Villapinzón is characterized by a landscape of hydric and social vulnerability, where rurality (55%) and poverty (47.1%) significantly shape women's daily lives. A distinctive challenge in this area is the physical burden of water management: as local springs dry up, women are forced to spend up to an hour per trip collecting water. This labor is compounded by a deficient sewage system that covers only 40% of the territory, increasing their exposure to environmental contamination. These physical demands coexist with an aging population (12.8%) and deeply rooted gender barriers. Fieldwork identified a critical lack of autonomy, exemplified by the persistence of "male permission" for land management decisions and a low

formal participation rate in community organizations (15%). Given the rising domestic violence rates and the environmental pressure from the leather processing industry, interventions in Villapinzón must go beyond technical assistance. Interventions must prioritize reducing 'time poverty' and empowering women to achieve full sovereignty over their natural resources and decision-making processes. Furthermore, it is essential to implement sensitization strategies targeting men to deconstruct their traditional roles as 'gatekeepers' or intermediaries of access to property and community participation. Only by promoting co-responsible masculinities and fostering democratic household decision-making will it be possible to dismantle the barrier of 'male authorization' and ensure that women exercise genuine autonomy over the territory and its benefits.

Table 19. Inequality gaps in intervention area 2

A. Inequality Gaps			
Services *(% of homes that have the service)*	**Villapinzón** ➲	Aqueduct: 88.3%. Sewage: 40.0%.	DANE CNPV 2018
Average daily time spent on unpaid domestic and care work (hours)	Regional data: Men: 1.7 hours Women: 3.6 hours	Data for rural areas: Men: 3.0 hours Women: 8.6 hours	DANE-ENUT reported in the Colombian Observatory of Women
	Data scope: Time use information is presented at a regional scale and by zones (urban and rural), since the ENUT (National Time Use Survey) lacks statistical representativeness at the municipal or departmental level.		
Poverty (% of people living in that situation)	**Villapinzón** ➲	Extreme poverty: 12.2% Moderate poverty: 34.9%	Records in SISBEN IV, 2024 published in municipal records Terridata
Rate of domestic violence *per 100,000 inhabitants*	**Villapinzón** ➲	Rate 2023: 264.20 *Upward trend vs. the previous year*	DNP, with data from MinDefensa, Medicina Legal and DANE - in Terridata municipal records

The table above reveals that although water supply coverage reaches 88.3%, the sewage system is significantly underdeveloped (40.0%), directly impacting the pollution of local water sources. Furthermore, 47.1% of the population lives in poverty to some degree.

As a part of the fieldwork, the community reports an alarming transformation of the hydric landscape over the last three decades. Climate risk perception in Villapinzón is critical and is characterized by three primary phenomena: hailstorms, frosts, and droughts. Local testimonies highlight the disappearance of springs and a drastic reduction in water flow on farms where, thirty years ago, streams ran year-round. This scarcity forces women into precarious water management: while some have access to aqueducts, many remain dependent on natural springs and reservoirs. This leads to extreme physical burdens, with some women traveling more than 1,000 meters and spending up to 1 hour per trip to collect water. Furthermore, a latent health risk persists as a significant portion of the population consumes non-potable (raw) water.

Regarding environmental degradation, the area faces multidimensional pressure on its natural resources. The expansion of the agricultural frontier, specifically potato cultivation on steep slopes, and livestock farming without proper waste management, has accelerated deforestation and soil contamination. A distinctive stressor in this area is industrial pollution from tanneries (curtiembres), with waste improperly disposed of in sensitive locations such as the Paramo. This situation creates constant tension between

production needs and the imperative for paramo conservation, a tension exacerbated by the absence of a Municipal Wastewater Treatment Plant (PTAR).

Despite women's high involvement in daily farm labor, their formal decision-making capacity and leadership remain limited. There is an evident technical disconnect: most rely exclusively on traditional knowledge for climate-related decisions and lack access to official meteorological data. Only a small minority (approximately 15%) currently participates in formal projects or community organizations.

Gender barriers in Villapinzón are explicit:

- In several households, women must still "ask for permission" from men to decide what to plant or how to manage the land.
- Domestic responsibilities and the geographical isolation of certain villages act as a "glass ceiling" for attending technical training.
- There is a widespread distrust of environmental authorities (such as the CAR), rooted in the perception that conservation projects may lead to sanctions or restrictions on their agricultural production.

The following table synthesizes the critical field findings for this area:

Table 20. Qualitative fieldwork findings: leadership, barriers, and technical needs (Area 2)

Category	Critical Findings in Villapinzón
Leadership and Organizations	The community structure relies on rural aqueduct associations and Community Action Boards (JACs). However, formal engagement is low, with only 15% of surveyed women linked to current initiatives. Female leadership is most visible in apiculture, local tourism, and dairy processing.
Barriers to Participation	Time poverty due to unpaid care and domestic workloads is the primary barrier. Restrictive gender dynamics persist, including the reported need for "male permission" for land management decisions. Logistical hurdles include distance, lack of transport, and institutional distrust.
Climate Vulnerability	Documented disappearance of water sources on family farms. High sensitivity to frosts, hailstorms, and droughts that threaten agricultural assets. Severe water insecurity, with collection times exceeding one hour for some households.
Logistics and Technical Needs	Stakeholders demand integrated technical assistance directly on the farm, tailored to each property. Key needs include training in restoration, community water-flow monitoring, and administrative support for direct marketing. Initial capital is required for transitioning to sustainable systems.

Fieldwork, IDOM, 2025

Intervention landscape 3. Tominé (Cundinamarca)

The intervention area is primarily concentrated in the municipalities of Guasca and Guatavita, both of which have a strong rural identity.

Table 21. Demographic context in intervention area 3

Demographic and Territorial Context			
Municipalities where the intervention area is located	This area comprises Guasca (44.80%), Guatavita (28.43%), Chocontá (16.57%), and Sesquilé (10.20%).		
Geographic distribution	**Guasca**	**Urban:** 48.2% **Rural** 51.8%	DANE-Population projections based on the 2018 Census-DNP, published in Territata municipal fact sheets
	Sesquilé	**Urban:** 38.5% **Rural** 61.5%	
	Chocontá	**Urban:** 59.9% **Rural** 40.1%	
	Guatavita	**Urban:** 43.0% **Rural** 57.0%	
Population disaggregated by sex (2024)	**Guasca** 18,569 people	**Women:** 50.1% **Men:** 49.9%	DANE-Population projections based on the 2018 Census, available on Territata
	Sesquilé	**Women:** 49.9% **Men:** 50.1%	
	Chocontá 12,939	**Women:** 50.1% **Men:** 49.9%	
	Guatavita 7,605 people	**Women:** 50% **Men:** 50%	
Population over 59 years old	**Guasca**	**12.9%** of the total population.	DANE CNPV 2018
	Sesquilé	**12.1%** of the total population.	
	Chocontá	**12.2%** of the total population.	
	Guatavita	**15,0%** of the total population.	
Literacy *(% of people over 15 years old who can read and write)*	**Guasca**	**Men:** 96.0%. **Women:** 96.8%.	DANE CNPV 2018
	Sesquilé	**Men:** 96.7%. **Women:** 97.0%.	
	Chocontá	**Men:** 96.0%. **Women:** 95.3%.	
	Guatavita	**Men:** 95.8%. **Women:** 96.6%.	
Place of birth	**Guasca**	**Men** Other country: 0.63% Another municipality: 29.28% **Women** Other country: 0.67% Another municipality: 29.33%	DANE CNPV 2018
	Sesquilé	**Men** Other country: 1.08% Another municipality: 31.63% **Women** Other country: 0.93% Another municipality: 31.85%	
	Chocontá	**Men** Other country: 0.49% Another municipality: 18.24%	

	Guatavita ➲	**Women** Other country: 0.33% Another municipality: 17.63% **Men** Other countries: 0.24% Another municipality: 20.10% **Women** Other countries: 0.16% Another municipality: 20.23%	

Regarding the social profile, Guatavita shows a slightly higher aging index, with 15.0% of the population aged 59 or older, compared to 12.9% in Guasca. Nevertheless, both municipalities maintain outstanding literacy levels exceeding 95% for both sexes, reflecting a solid educational foundation. In terms of mobility and local roots, 2018 Census data reveal that Guasca presents a more active internal migration dynamic: approximately 29% of its population was born in other municipalities, compared to 20% in Guatavita. In contrast, the presence of a foreign population is marginal in both locations, not exceeding 0.67%. This territorial configuration suggests stable communities with a strong sense of belonging, key factors for the success of intervention efforts in the area.

Table 22. Inequality gaps in intervention area 3

A. Inequality Gaps			
Services *(% of homes that have the service)*	**Guasca** ➲	Aqueduct: 80.4%. Sewerage: 40.5%.	DNP, with data from the Superintendency of Public Utilities 2022 - published in municipal records Territata
	Chocontá ➲	Aqueduct: 87.75%. Sewerage: 48.06%.	
	Sesquilé ➲	Aqueduct: 91.97%. Sewerage: 58.32%.	
	Guatavita ➲	Aqueduct: 42.6%. Sewerage: 17.5%.	
Average daily time spent on unpaid domestic and care work (hours)	Regional data: Men: 1.7 hours Women: 3.6 hours	Data for rural areas: Men: 3.0 hours Women: 8.6 hours	DANE-ENUT reported in the Colombian Observatory of Women
	Data scope: Time use information is presented at a regional scale and by zones (urban and rural), since the ENUT (National Time Use Survey) lacks statistical representativeness at the municipal or departmental level.		
Poverty (% of people living in that situation)	**Guasca** ➲	Extreme poverty: 3.0% Moderate poverty: 16.5%	Records in SISBEN IV, 2024, published in municipal records Territata
	Chocontá ➲	Extreme poverty: 11.2% Moderate poverty: 34.9%	
	Sesquilé ➲	Extreme poverty: 11.1% Moderate poverty: 26.2%	
	Guatavita ➲	Extreme poverty: 5.5% Moderate poverty: 24.0%	
Rate of domestic violence *per 100,000 inhabitants*	**Guasca** ➲	Rate 2023: 166.8 *Upward trend vs. the previous year*	DNP, with data from MinDefensa, Medicina Legal and DANE - published in Territata municipal records
	Chocontá ➲	Rate 2023: 91.1 *Upward trend vs. the previous year*	
	Sesquilé ➲	Rate 2023: 81.4 *Downward trend vs. the previous year*	

	Guatavita	➲	Rate 2023: 135.5 *Downward trend vs. the previous year*	

The gender dimension underscores serious challenges in how time is distributed. In the eastern region, women bear the disproportionate burden of unpaid domestic work. Additionally, public safety remains a concern: although Guatavita reports a lower rate of domestic violence (135.5 per 100,000 inhabitants) with a declining trend, Guasca shows a higher figure (166.8) with a worrying increase.
Fieldwork conducted in Guasca, Guatavita, and Sesquilé revealed that while community groups have high capacity for organization, access to resources remains limited. The findings highlight three key areas:

- There are serious concerns about soil degradation due to mining, monocultures of potato and blueberry, and the spread of invasive species. Limited basic services in peripheral areas force families to depend on natural reservoirs, with collection times exceeding one hour.
- Women participate actively in organizations, yet their leadership is undervalued socially, and a caregiving overload hampers their personal and economic growth.
- Communities seek direct 'farm-to-farm' technical assistance and communication strategies to break the isolation of scattered rural districts.

Table 23. Qualitative fieldwork findings: leadership, barriers, and technical needs (Area 3)

Category	Guasca	Guatavita	Sesquile
Leadership and Organizations	High associative capacity in various sectors: blueberries, weaving, beekeeping, and farmers' markets. Women lead organizations such as AGREGUA, Manos Tejedoras, and dairy associations.	Solid network of dairy cooperatives (Levacar, AMEG, Coprolag) and female entrepreneurs. Notable local tourism agency managed exclusively by women with a matrifocal structure (female heads of household).	Established dairy cooperatives (Coldorados, Copranses) and women's associations such as AMUSES and "Nuevas y Emprendedoras." Growing interest in youth movements and associations.
Barriers to Participation	Lack of interest and generational renewal among rural youth. Women face double workloads and meeting schedules incompatible with household care. Distrust toward previous extractive or infrastructure projects.	Lack of credibility in the municipal administration and institutional distrust. Women perceive a lower social valuation of their voices and leadership than men do. Conflicts with invaders on vacant border lands.	Technical information "does not flow" to the periphery and relies on word-of-mouth. Low social valuation of female management capacity. Resources tend to be centralized, leaving remote areas neglected.
Climate Vulnerability	Water rationing in sectors like Pastor Ospina and recurrent flooding of the Siecha River. Technical supply issues in dispersed areas like San Jorge, where they rely on direct collection from creeks.	Extreme water insecurity: 90% of surveyed women consume non-potable water (raw or filtered). Some travel more than 1,000 meters to obtain water, with collection times of up to two hours.	Severe scarcity in summer and risk of forest fires. Degradation of wetlands in rural districts like Agua Blanca. Landslides in Ranchería are affecting property stability.
Logistics and Technical Needs	Demand for "farm-to-farm" technical assistance in soil management and silvopasture. Need for climate monitoring kits and accounting/administrative training for associations to manage their own resources.	Prioritize irrigation projects in critical sectors and the creation of a municipal nursery for native species. Request incentives for water reuse plants in tourist accommodations.	Require reservoirs to store water in summer and genetic improvement of livestock. Need clear, free, and timely calls for participation to ensure the involvement of peripheral areas.

Fieldwork, IDOM, 2025

The vulnerability in the Tominé intervention zone presents a paradox: it is a region rich in strategic water resources, yet its residents, particularly in Guatavita, face extreme water insecurity. The municipality's low coverage of aqueducts (42.6%) and sewerage (17.5%) means water security is a daily challenge, especially for women who spend over an hour manually collecting water. This situation diminishes the community's adaptive capacity, as the physical effort and time spent on basic survival leave little room for pursuing long-term climate strategies.

In terms of ecosystem restoration, the area's high aging index (15% in Guatavita) and the 8.6-hour daily caregiving burden on women pose significant obstacles. When women's leadership is undervalued and their time consumed by domestic responsibilities, the social fabric necessary for hydric resilience remains underexploited. The project must recognize that women in Guasca and Guatavita are not only participants but also the traditional custodians of sacred sites like the Siecha Peaks. Their ancestral knowledge is a vital asset for Ecosystem-based Adaptation (EbA).

Therefore, these findings underscore the importance of linking water resilience to efforts to close basic service gaps. To ensure sustainable restoration, the project should implement "farm-to-farm" technical assistance to reduce the labor burden on older populations and women. Success hinges on transforming the strong associative capacity of dairy and craft cooperatives into a governance platform that empowers women with the technical autonomy and time to lead efforts to protect the páramo, so that the territory's water resources primarily support the resilience of the communities that protect them.

Intervention landscape 4. Tunjuelo (Bogotá)

The characterization of Intervention Landscape 4 incorporates data from both the Usme and Sumapaz localities. This area juxtaposes Usme, which functions as the critical transition border between Bogotá's dense urban sprawl and its rural páramo ecosystems, with Sumapaz, the only locality in the capital with a strictly rural composition. While Usme encompasses a vast rural territory (accounting for approximately 85% of its total area), most of its population is concentrated in the urban periphery. Conversely, Sumapaz encompasses almost 40% of the city's total area but houses only 0.05% of its population. The following table outlines the essential demographic and territorial context for both localities for the intervention's strategic planning.

Table 24. Demographic context in the intervention area 6 (Usme and Sumapaz)

Demographic and territorial context	Usme (Locality 5)	Sumapaz (Locality 20)	Source
Location of the intervention	Characterized by a complex rururban (rural-urban) composition. Acts as Bogotá's southern agricultural and environmental border.	Characterized by a strictly rural composition. The only 100% rural locality in Bogotá.	ETIS Locality 5 and 20
Geographic distribution	Urban: ~95% of population (concentrated in the northern edge).	Urban: 0%. Rural: 100%.	ETIS Locality 5 and 20

	Rural: ~5% of population (dispersed in the center and south).		
Population disaggregated by sex (2024)	~405,200 people. Women: 51.2%. Men: 48.8%.	3,926 people. Women: 49.7%. Men: 50.3%.	Population projections
Population over 59 years old	High concentration of youth and working-age adults (15-59 years). Represents a challenge for youth employment and rural generational transition.	56.7% of the total population. It represents a challenge for the generational transition.	Demographic profile
Literacy (% of people over 15 who can read and write)	95.1% of the population. Solid basic educational foundation, though higher education access is limited.	93.9% of the population. Solid basic educational foundation.	ETIS Locality 5 and 20

Demographic analysis highlights diverse challenges across the landscape. Usme presents a dual phenomenon: a densely populated, young working-age urban sector alongside a progressively aging rural population. While Usme's urban area faces immense pressure for formal employment and services, its rural sector shares an urgent need for generational succession in land and water management with Sumapaz. Sumapaz highlights a critical phenomenon of population aging, where more than half the population is over 60, women make up most of the elderly, and only 30.4% of women are of working age (15-59 years). This demographic structure suggests additional pressure on care systems. Furthermore, a technical gap is evident across both localities. Although basic literacy is high, women's access to technical and higher education remains severely limited, standing at only 3% in Sumapaz. In Usme, high commuting costs to the city center and economic precarity are major barriers. Across both areas, the heavy burden of household chores (cited as a 20% obstacle in Sumapaz alongside 30% high costs) restricts women's ability to advance their education and limits their participation in technical decision-making and sustainable agricultural practices.

Table 25. Inequality gaps in intervention area 6 (Usme and Sumapaz)

Category	Usme (Locality 5)	Sumapaz (Locality 20)	Trend / Observation	Source
Services (Health and Needs)	Healthcare Access: High demand in peripheral settlements.	Preventive Health: Maternal Mortality: 0 cases.	Urgent need to strengthen the Usme Hospital network and rural health posts, and to scale up Nazareth Hospital to level 2.	ETIS Locality 5 and 20
Use of time (Unpaid care work)	Care Gap: Women spend up to 2.5 times as many hours on unpaid care as men.	Care Gap (Childcare): Women: 21.9%, Men: 9.4%. In Sumapaz, women provide 2.3	Childcare and domestic work predominantly fall on women across both localities.	Diagnosis of the Economics of Care

		times as much care as men.		
Poverty (% of people in this situation)	Local Poverty: Extreme: 12.4%. Multidimensional (Female-headed households): 24.5%.	Local Poverty: Extreme: 25.9%. Multidimensional (Female-headed households): 20.0%.	Nearly 1 in 4 female-headed households in Usme and 1 in 5 in Sumapaz face multidimensional poverty.	SISBEN / ETIS

Vulnerability in the Tunjuelo landscape is critically manifested through multidimensional poverty, geographic isolation, and structural barriers that limit women's economic autonomy. In Usme, 24.5% of female-headed households face multidimensional poverty, which is exacerbated by the locality's peripheral geography and informal urban expansion. In the strictly rural Sumapaz district, the extreme poverty rate reaches 25.9%, and one in five female-headed households faces multidimensional poverty. This economic precarity, coupled with the geographic isolation typical of rural Bogotá, limits women's ability to invest in climate change adaptation measures and productive resilience in both sectors. In Usme's urban sector, long commute times to central Bogotá further compound women's "time poverty". Regarding the care economy, both Usme and Sumapaz reveal profound project gaps: women shoulder a vastly disproportionate share of unpaid domestic and caregiving work. Women in Usme spend up to 2.5 times as many hours on unpaid care as men, while women in Sumapaz assume childcare 2.3 times as much as men (21.9% versus 9.4%). This "time poverty" is particularly exacerbated in Sumapaz, where 80% of women are primarily engaged in housework. Ultimately, this limits their ability to participate in technical decision-making spaces related to water and land management across the area.

In the areas of health and safety, the landscape presents contrasts. Sumapaz shows positive indicators in preventive health, noting the absence of maternal mortality and school dropout rates due to child pregnancy. However, the intersection of urban informality in Usme and rural isolation in Sumapaz creates complex safety challenges. Limited local support networks in peripheral neighborhoods and rural districts often hinder the formal reporting of gender-based violence out of fear of repercussions. This obscures structural risks that can compromise women's physical safety and autonomy.

To move beyond simply analyzing statistics and to understand social dynamics from the perspective of those directly involved, a primary data collection exercise and community dialogues were conducted. This approach allowed for a comparison of gender gap and aging indicators with the everyday experiences of communities in rural Bogotá. Based on the field findings, the following results were consolidated, defining the qualitative dimension of the intervention:

Table 26. Qualitative fieldwork findings: leadership, barriers, and technical needs (Intervention landscape 4)

Category	Findings in Area 4
Leadership and Organizations	High levels of female participation are reported in Community Action Boards (JACs) and community gardens. 71% of the women surveyed participate in organizations.
Barriers to Participation	The women commented that lack of time due to caregiving responsibilities, institutional distrust, and adult-centrism are barriers to participation. They also reported needing to "ask permission" in some rural contexts to make decisions.

Climate Vulnerability	The women identified frost and drought as the greatest impacts. Critical flood risks in certain areas of this intervention zone.
Logistics and Technical Needs	Certified environmental education, strengthening of biodiversity monitoring networks, and support for home water purification.

The perception of climate risk in this region is unanimous and intrinsically linked to the survival of production systems. Women identify frosts and droughts as the most impactful phenomena, directly affecting their main activities: small-scale agriculture and livestock farming. This climate vulnerability translates into severe "time poverty"; faced with scarcity, women assume the physical responsibility of finding alternative sources, resorting to springs or rural aqueducts that sometimes require a walk of up to 500 meters. Furthermore, the water available for human consumption is frequently reported as undrinkable (raw), which imposes an additional, invisible workload at home to ensure family health through filtering or boiling.

Unlike other intervention landscapes, the Tunjuelo River has experienced historical environmental degradation of industrial and urban origins. Local accounts describe the river as a "dead" body of water along much of its course, impacted by leachate from the Doña Juana Sanitary Landfill, hazardous discharges from tanneries in certain sections, and the massive disposal of construction debris. In the rural area, this degradation manifests as soil compaction and the loss of functional biodiversity, such as pollinators and seed-dispersing birds, which local producers identify as critical limitations to the natural restoration of their lands. This ecosystem crisis acts as a risk multiplier, where the loss of environmental services forces women to depend economically on external activities or on selling their labor as day laborers.

In terms of social participation, Area 6 shows remarkable dynamism: 71% of rural women report being involved in organizations, primarily Community Action Boards (JACs) and community gardens like "El Tunjo." However, a gap persists between operational participation and strategic decision-making. While women's attendance exceeds 90% in grassroots processes, their representation on technical committees for water systems remains limited.

The barriers identified in the field are structural: the burden of caregiving and the persistence of stereotypes that associate technical water management with masculine roles. Furthermore, situations have been documented in which women still need to "ask permission" from the men in the household to make decisions about land use or the adoption of new technologies, a limitation on their autonomy that the project must address through economic empowerment mechanisms.

F. Main findings and recommendations of gender analysis

1. Use and prioritization of natural resources

How do women and men currently use and prioritize the natural resources impacted by this project? How might this change as a result of the project?

The use of natural resources in the territory is deeply marked by the sexual division of labor and pre-established gender roles.

Men	Men prioritize large-scale productive use and commercial agriculture. They tend to prioritize access to water for large-scale activities, as is the case in Villapinzón, where irrigation of pastures for livestock is prioritized, which places their main vulnerabilities in the financial and productivity spheres.
Women	Field data identifies women as the primary operational managers of water resources in the domestic sphere. They assume the main responsibility for managing water for human consumption, hygiene, and household food security, also prioritizing subsistence gardens and small-scale livestock farming. In municipalities like Guatavita and Villapinzón, the heavy reliance on natural resources, such as springs and rivers, positions women as the first to detect the effects of climate variability. However, this work involves a considerable physical burden; it is reported that in these areas, women must travel more than 1,000 meters to collect water, a task that is especially burdensome during droughts. Although this prioritization of domestic use is vital for the food security of these communities, it currently lacks formal recognition in the technical planning of rural aqueducts.

Through ecological restoration and strengthened water infrastructure, the project aims to free up hours of daily physical labor, allowing women to reinvest that time in strengthening their economic autonomy through the transition to agroecology and by creating community nurseries they lead. This transition also involves breaking down structural barriers and addressing the historical exclusion of women from the technical governance of water systems, ensuring that they no longer serve as an "invisible subsidy" for production and become leaders with technical expertise and decision-making power over their territories.

2. Impacts of the project on women and men

How will women and men be affected by the project activities, including their livelihoods, workload, and control of resources?

The analysis of the project's impacts begins with the recognition that the climate crisis is not a neutral phenomenon but affects the population differently along lines of gender roles and the division of labor. For men, the consequences of environmental variability and the project's activities are primarily manifested in the productive and financial dimensions. Since they tend to prioritize water resources for

large-scale commercial activities, such as irrigating pastures for livestock in Villapinzón, their greatest risks are the loss of profitability and competitiveness. Although it is recognized that the loss of livelihoods can generate identity crises and affect mental health, the project focuses its gender approach on women because men possess more robust coping mechanisms, such as greater access to official credit, technical information, and greater mobility for labor migration.

For women, the impact acts as a multiplier of "time poverty" and structural inequalities. Currently, women in these rural areas spend an average of 8.6 hours per day on domestic and care work, compared to 3.0 hours for men. In urban contexts like Bogotá, this care gap persists, with women bearing 2.3 times more burden than men.

Extreme weather events directly impact women's autonomy and safety in the following ways:

- Droughts: cause an increase in the time spent collecting water, which leads to the abandonment of other activities, whether productive, educational or leisure.
- Hailstorms: These result in the destruction of subsistence gardens and the loss of small animal husbandry, activities managed almost exclusively by women, leading to the loss of food sovereignty and independent income.
- Frosts: cause foliar damage in potato and pasture crops, which reduces dairy and agricultural productivity at the family level.
- Landslides: These cause the rupture of rural aqueducts, forcing families to rely on non-potable water, with the consequent health risks.

The project aims to mitigate these impacts by restoring and strengthening water infrastructure, thereby reducing the physical burden of manually transporting water and freeing up women's productive time. It also seeks to strengthen their economic autonomy through the transition to agroecology and the creation of community nurseries led by women. However, a critical challenge is resource control. Land ownership is predominantly male; in Colombia, only 26% of rural women hold property titles. This lack of titles acts as a barrier to accessing credit and participating in conservation incentives such as Payments for Environmental Services (PES). Furthermore, it has been found that women provide an "invisible subsidy" to agricultural production by managing food logistics for work crews without remuneration.

The analysis acknowledges that inequalities deepen when considering groups with vulnerabilities:

- For women facing compounded vulnerabilities—such as victims of armed conflict or migrants—gender gaps are exacerbated by the convergence of multiple forms of discrimination and their vital dependence on fragile ecosystems.
- The phenomenon of rural aging, which exceeds 15% in areas such as Guatavita, significantly hinders climate adaptation tasks, which require a great physical effort.
- The LGBTIQ+ population faces much higher levels of social stigmatization and labor exclusion in rural contexts.

3. Participation in decision-making and limitations

To what extent do women and men participate in decision-making processes regarding the management or governance of these natural resources? What are the limitations (social, cultural, economic, political) that might restrict the active participation of certain women in decision-making processes at the household, community, and project levels?

The governance of natural resources in the region reflects a profound power asymmetry. While men typically control strategic decisions, infrastructure, and budgets, women assume roles as "primary operational managers" of the resource yet have marginal influence in technical decision-making.

Female participation is inversely proportional to the level of technical and strategic power:

- Community participation (high): Women actively participate in organizations, but their work is concentrated in Community Action Boards (JAC) and family gardens.
- Water governance (low/marginal): In the technical management of rural aqueducts, representation is minimal, which implies an almost total exclusion from decisions about the water network of the sub-basin.
- Operational vs. strategic roles: In aqueducts where there is a female presence, women are usually relegated to administrative or manual water purification functions, while the handling of valves, pipes and infrastructure planning remains under male control due to gender stereotypes

The barriers restricting this leadership are structural and multifactorial. First, the "time poverty" resulting from the double workday is a critical obstacle, as rural women devote significant time to caregiving and housework. This burden is exacerbated by persistent gender stereotypes that associate technical tasks exclusively with men and render invisible the empirical knowledge women possess about the local water network. Furthermore, in many rural contexts, a restrictive culture still prevails in which women feel the need to "ask permission" from the men in their household to make decisions about planting, land management, or their own participation in training programs. From economic and political perspectives, the lack of autonomy is exacerbated by the asset ownership gap. In Colombia, only 26% of rural women hold title to the land they work, which not only diminishes their decision-making power but also systematically excludes them from access to credit and technical assistance.

4. Access to information

Do women and men have equal access to the information needed to participate in and benefit from the project activities?

In the project's intervention landscape, there is currently no real equality in access to the technical information needed for climate change adaptation and resource management. Men tend to have more robust coping mechanisms due to greater access to credit and official meteorological information. In contrast, most rural women rely primarily on traditional knowledge, historical memory, and ancestral wisdom for climate-related decision-making. While this knowledge is a vital asset that often surpasses the accuracy of official technical data at the local level, its empirical nature limits women's ability to anticipate extreme weather events through early warning systems.

The use of complex technical language by state institutions serves as a filter for exclusion, hindering the effective dissemination of agroforestry or soil management guidelines to women. This is compounded by a latent institutional distrust, particularly toward environmental authorities such as the CAR (Regional Autonomous Corporation), stemming from past experiences in which information was perceived as a tool for punishment rather than support.

To overcome these limitations, the project proposes a model to democratize information through gender-responsive farm-to-farm technical training. Recognizing the high regional rates of Gender-Based Violence

(GBV) and the fact that extension services are predominantly male-led, the model incorporates rigorous safeguarding protocols to mitigate the risks of Sexual Exploitation, Abuse, and Harassment (SEAH). This ensures that knowledge reaches the productive spaces managed by women in dispersed rural areas through safe, inclusive, and protected environments. The strategy includes installing climate and biodiversity monitoring stations that will serve as community learning centers, integrating scientific protocols with women's traditional knowledge. To guarantee that the information is truly inclusive, the project is committed to using diverse communication channels and clear language that breaks down the isolation of these remote communities and transforms technical information into a tool for women's empowerment and economic autonomy.

5. Gender violence and project risks

How prevalent is gender-based violence at the project site, compared to the national average? Is there a possibility that the project activities will perpetuate or increase gender inequalities and discrimination?

The prevalence of gender-based violence in the intervention landscapes present a complex and heterogeneous picture that, in critical areas, significantly exceeds the challenges observed at the national level. While Colombia registers an average of 228.8 cases of domestic violence per 100,000 inhabitants, where women constitute between 70% and 77% of the victims, the project covers territories with alarming risk indicators.

At the municipal level, "hot spots" with upward trends are observed, such as Zipaquirá (291.1) and Villapinzón (264.20), where violence appears to be increasing. On the other hand, although municipalities such as Guasca (166.8), Guatavita (135.5), and Tausa (74.3) report figures below the national average, these figures should be interpreted with caution. Gender analysis warns that, in highly rural or geographically isolated areas, the lack of local support networks and fear of reprisals can lead to significant underreporting. In these contexts, statistical silence often masks structural risks that compromise women's autonomy and physical integrity, limiting their capacity to fully participate in the environmental governance of the territory. Similarly, there is a deeply ingrained cultural barrier known as the "permission culture." In municipalities such as Villapinzón, it has been documented that many women still need to consult with or request permission from the men in their households to decide what to plant or how to manage their land. If the productive transformation interventions of Component 1 are directed solely at "heads of household" or formal landowners, the project could unintentionally reinforce male control over resources. Finally, the risk of exclusion extends to the realm of knowledge and technology. Technical water management and machinery operation are often marked by gender stereotypes that associate these tasks with masculinity. Without a differentiated approach, women could be relegated to minor operational roles, ignoring their ancestral and empirical knowledge of local biodiversity.

Based on these findings, the project identifies critical gaps that must be addressed across all areas. The following section details how each component of the project will mitigate these risks and empower women. This will be further reflected in the specific activities of the Gender Action Plan.

Component 1. Proof of concept to achieve the highest hydrological benefits at the Watershed scale.

The objective is to generate robust territorial evidence of Volumetric Water Benefits (VWB) that begins at the plot scale and gradually scales to the watershed level to trigger long-term financing under Component 2. Outputs under Component 1 prove that i) Restoration and conservation interventions in headwaters areas, along water streams and farms, together with ii) climate-resilient transformation of productive practices, lead to better livelihoods, reduced pressure on strategic ecosystems and, ultimately, yield water benefits. Activities under this component will be implemented in a) Public Protected Areas, b) Private Protected Areas (Civil Society Natural Reserves), and c) public and private property lands benefiting farmers, landowners, producer associations, and local organizations.

Table 24. Gender gaps to consider in Component 1

Gender Gap	Impact and risk for the project	Affected activities	Proposed Mitigation Measures	Opportunities and VWB Acceleration
Unequal land tenure and control	Land is a fundamental productive asset. In rural Colombia, women own less than 30% of land parcels, and these tend to be smaller and less productive. The lack of property titles prevents them from accessing credit, receiving technical assistance, and becoming direct beneficiaries of incentives, thereby impeding their ability to invest in the agricultural transformation promoted by the project.	1.1.1.2: Conservation agreements, 1.1.2.1: Passive restoration, 1.1.2.2: Active restoration, 1.2.1: Resilient production systems	Decouple benefits from property titles through "adaptation agreements" requiring joint signatures from both men and women.	Women's legal empowerment accelerates VWB by ensuring long-term maintenance of conservation practices, given their historical role in protecting family resource bases.
Lack of autonomy to adapt	Without control over land and access to capital, women cannot make autonomous decisions to adapt their farming systems to water scarcity or excess (e.g., building a reservoir, installing drip irrigation, or diversifying to drought-resistant crops). They remain trapped in highly vulnerable subsistence practices.	1.2.1.1: Silvopastoral systems 1.2.1.2: Agroecology in potato 1.2.1.3: Farm-level water saving 1.2.1.4: Agrifood diversification	Promote inclusive financial mechanisms with flexible collateral requirements adapted to the reality of landless rural women.	Empowering household water managers optimizes the implementation of water-saving techniques (Act. 1.2.1.3), accelerating runoff reduction and baseflow stability.
Segregation in value chains	Women are concentrated in the lowest-value and lowest-paid segments of agricultural value chains (planting and harvesting), whereas men dominate the more profitable stages of	1.2.2.1: Business models 1.2.2.2: Market access	Set explicit gender targets to promote women into higher-value-added roles, such as processing, management, and marketing.	Including women in commercial management adds value to rural products that contribute to water regulation, thereby creating a direct economic incentive

	commercialization and management.			to achieve resilience indicators.
Economic dependence	The lack of their own income makes them more vulnerable to the impacts of climate change. They lack savings to absorb crop losses from floods or droughts, making them more dependent on their spouses and reducing their bargaining power within the household.	1.2.2: Commercialization and markets, 1.2.1.4: Agrifood diversification	Provide direct support to collectives and producer associations led by women to generate independent income.	Women's control over household financial resources ensures that VWB-derived benefits translate into effective family resilience rather than just nominal income increases.
Exclusion from financial systems	Rural women face systematic exclusion from formal credit; their loan applications are approved at only 1 in 10, compared with 3 in 10 for men. Without capital, they can't implement resilient agriculture practices.	1.2.1: Resilient production systems, 1.2.2: Commercialization and markets	Collaborate with local cooperatives to ensure financing mechanisms include flexible guarantee requirements for rural women.	Access to credit is the engine that allows for the purchase of technology for water infiltration and efficient irrigation, directly increasing the volume of water regulated at the farm level
Women's exclusion from knowledge and decision-making	Women's traditional ecological knowledge of water sources is often overlooked, resulting in less effective management and restoration plans that are disconnected from the community's genuine needs.	1.1.1.1: Control, surveillance, and monitoring in Protected Areas. 1.1.2.1: Passive restoration of degraded lands. 1.1.2.2: Active restoration of degraded lands.	Establish gender quotas for leadership positions in all co-management and governance committees of protected areas.	Integrating women's traditional ecological knowledge is a key accelerator for identifying critical restoration sites, optimizing the project's hydrological outcomes.
Time poverty and unpaid work overload	The burden of domestic and care work (exceeding 8 hours a day) prevents women from participating in project activities, leaving the project without the "community workforce" it had assumed it had.	1.1.2: Restore high Andean ecosystems. 1.2.1: Climate-resilient production systems at farm level	Allocate specific resources for childcare services during training sessions and organize safe collective transportation.	Removing time barriers allows women to lead restoration brigades (Act. 1.1.2), ensuring the survival of species that regulate infiltration and runoff.
Invisibility of their water needs	Decisions on which water sources to protect may prioritize male-dominated productive uses (such as commercial irrigation) over domestic ones (including consumption, hygiene, and home gardens), thereby weakening household resilience and water security.	1.1.2: Restore high Andean ecosystems. 1.2.3: Efficient water use in community-run systems.	Prioritize domestic water uses (hygiene, home gardens) in protection and restoration plans.	By addressing domestic use, female empowerment accelerates the adoption of community water-efficiency measures, directly impacting the stability of local water balance.

Safety and mobility barriers	The risk of violence in remote areas restricts women's participation, excluding them from economic benefits (income from nurseries) and from technical capacity building.	**1.1.1.1**: Control, surveillance, and monitoring in Protected Areas. **1.1.2.2**: Active restoration of degraded lands.	Organize collective transport and establish mixed or all-female restoration brigades in remote areas.	Creation of local green jobs for women in environmental monitoring and surveillance activities, enhancing the security of the restored areas.

Concentrating technical assistance and capital exclusively on male heads of household while failing to consider gender dimensions in restoration projects exacerbates preexisting power imbalances and introduces significant risks to the success and sustainability of interventions. By excluding women, who perform a significant portion of agricultural labor and possess detailed knowledge of local water resources and ecosystems, the project achieves low adoption rates of resilient practices and produces ineffective plans that fail to prioritize the community's overall water security. Ultimately, if resource control and decision-making remain exclusively male, an increase in household income cannot guarantee family well-being or the necessary buy-in from half the population, severely undermining long-term resilience and the maintenance of protected areas.

Strategic recommendations

- ✓ Decouple benefits from land titles: Design the " climate resilient farm agreement " and land-use planning exercises to require the joint signature of both men and women, thereby recognizing use rights and labor contributions, not just formal ownership.
- ✓ Promote inclusive financial mechanisms for women: In partnership with local cooperatives, *ensure that any financing mechanisms promoted or supported by the project* include flexible collateral requirements that are tailored to the economic realities of rural women.
- ✓ Establish gender targets in value chains: set explicit targets to promote women into higher value-added roles (e.g., processing, management, commercialization) and to support women-led enterprises. Furthermore, the project will prioritize women's leadership and participation in crop diversification and in food and water security initiatives, ensuring they have direct control over resources essential for household and community climate resilience.
- ✓ Meaningful Participation and Technical Empowerment: Establish gender quotas for leadership positions in all co-management and governance committees. To ensure these are not merely "token" roles and to prevent male intermediation, the project will implement a specialized technical and leadership training program for women before they assume these positions. This ensures they have the specific skills (e.g., environmental management, public speaking, financial oversight) to participate autonomously, preventing men from acting as "spokespersons" or intermediaries.Valuing and remunerating women's role: Prioritize providing remuneration for women's associations and collectives with high female participation for the execution of key activities, such as managing nurseries and restoration brigades, thereby recognizing their role as conservation agents.

- ✓ Removing barriers to participation: Allocate specific resources to offer childcare services during meetings and training sessions, and to organize safe, collective transportation. These measures are essential to eliminate the time and mobility barriers that limit their involvement.
- ✓ Implement a 'Do No Harm' and survivor-centered framework: To prevent project-induced violence (backlash due to shifting power dynamics or women's economic empowerment), the project will conduct ongoing gender-risk monitoring and engage men in "positive masculinity" and co-responsibility workshops. Additionally, a clear and confidential GBV Referral Pathway (Ruta de Atención) will be established. This ensures that if gender-based violence occurs, survivors have immediate access to safe, non-judgmental, and survivor-centered support (health, legal, and psychosocial) in coordination with local authorities.

Component 2: Finance mobilization and scale-up.
The objective is to widen the use of existing regulations to mobilize and scale public and private financing for water resilience in the Bogotá Region by establishing financing pathways for VWBs that can sustain and expand investments beyond GCF's initial support. This component operationalizes i) an environmental fee into Bogotá's water tariff by providing evidence of water benefits for the Bogotá's Water Utility users, and ii) a mechanism for private companies to invest in VWBs results linked to their corporate stewardship and compensation goals.

Table 25. Gender gaps to consider in Component 2

Gender Gap	Impact and risk for the project	Affected activities	Proposed Mitigation Measures	Opportunities and VWB Acceleration
Under representation in power structures	Women are drastically underrepresented in leadership positions on Community Water Boards (Juntas de Acueductos Veredales) and other water management organizations.	2.1.1.3: replication models for water utilities.	Implement leadership programs for women focusing on water governance, public speaking, and financial management.	Female leadership in community water boards accelerates financial sustainability by improving fee collection and the transparency needed to attract private investment.
Incomplete adaptation plans	They [plans/policies] will be deficient if they do not incorporate women's priorities, who manage water for family health, food, and hygiene.	2.1.1.1: Cost-effectiveness indicators and methodologies. 2.1.1.2: Systematic reporting for authorities.	Develop verifiable plans to progressively promote women's participation and achieve parity in water board decision-making.	Parity ensures that VWB indicators reflect the territory's reality, providing the legitimacy required for environmental fees to be accepted and scalable.
Gender-blind design of financial mechanisms	Given that women often do not hold land titles, this mechanism poses a significant risk of becoming a massive transfer of resources to men, rendering the	2.1.1: Environmental fee for the water tariff. 2.1.2: Financial mechanism for private investments.	Redesign the Payment for Ecosystem Services (PES) system to be based on conservation labor performed, not	Recognizing women's conservation efforts through direct PES accelerates the mobilization of private capital with high Social (ESG) standards,

	conservation work that women perform invisible and uncompensated.		exclusively on land ownership.	optimizing the metric of investable VWBs.+1
Exclusion of new sources of income	A gender-blind PES (Payments for Ecosystem Services) scheme would deny them a vital source of income that could value their environmental work, increase their economic autonomy, and, in turn, their capacity to invest in adaptation.	2.1.2.2: Administrative and financial structure of the mechanism.	Ensure that PES agreements are signed by all household members, with processes that include everyone to guarantee direct benefits for women.	Direct payments to women increase their economic autonomy and their capacity to reinvest in climate adaptation, further securing the project's "exit strategy".

The exclusion of women from water governance structures will result in a weak and unrepresentative system, as decisions will lack the legitimacy and effectiveness that can only be achieved through the participation of half the user population. This governance failure risks perpetuating environmental injustice; ironically, a progressive instrument like Payments for Ecosystem Services (PES) could end up entrenching existing power and economic inequalities within the territory. Likewise, the project's financial sustainability will be compromised, as partnerships with the private sector and other mechanisms will not be viable in the long term if they focus exclusively on formal economic actors, who are predominantly male, thus ignoring a fundamental part of the local economy.

Strategic recommendations

- ✓ Promote gender parity through capacity building: Technical and financial support for rural water systems includes accompaniment to strengthen their capacities and develop a verifiable plan to progressively promote women's participation in decision-making and achieve parity on their boards of directors.
- ✓ Redesign the PES: The PES (Payments for Ecosystem Services) scheme must be based on conservation work carried out, not exclusively on land ownership. Furthermore, PES agreements must be signed by all household members, and the process of establishing the agreement must include all members.
- ✓ Implement leadership programs for women: Create a specific training program for women focused on water governance, leadership, public speaking, financial management, and entrepreneurial skills, to prepare them to assume leadership roles in the structures supported by the project and to support their own business initiatives.