



ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ

UNIVERSITY OF PIRAEUS

‘Gendered Dimensions of Agricultural Transition and Climate Change
in Latin America: A case study of Indigenous Rural Communities’.

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Ioanna Georgouli

Abstract

Energy security is a central challenge for sustainable development in the twenty-first century. While traditionally associated with the availability and affordability of energy resources, recent approaches emphasize its interconnections with climate change, environmental sustainability, food systems, and societal resilience. Climate change directly influences agricultural production, natural resources, and food security, whereas agricultural systems impact environmental sustainability and the shift toward more resilient development models. Therefore, examining the social and environmental dimensions of climate change and agricultural transition is essential for broader discussions on energy security. In this context, and reflecting the interdisciplinary orientation of the Master's programme Energy: Strategy, Law and Economics, this study investigates how these broader processes intersect with gender inequalities and affect Indigenous rural communities in Latin America. The thesis explores the interconnections among gender, agricultural transition, and climate change at a regional level to clarify their combined impact on Indigenous communities. The research addresses two primary questions: How do the gendered dimensions of agricultural transition and climate change affect Indigenous rural communities in Latin America? Why are Indigenous women in rural Latin America particularly vulnerable to the impacts of climate change? The study employs a qualitative research approach, utilizing academic bibliographical sources to systematically analyze these dynamics. By integrating these variables and focusing on Latin America as a case study, the research establishes a scientific framework for understanding the role of Indigenous communities, with particular attention to women. Drawing on political ecology and ecofeminism, the study examines the gendered impacts of climate change and agricultural transition on Indigenous women, highlighting their strategies of adaptation, resistance, and environmental stewardship. The findings indicate that Indigenous women are disproportionately affected by environmental and socio-economic challenges, yet they play a central role in preserving traditional knowledge, promoting sustainable agricultural practices, and enhancing community resilience. This study contributes to the literature by providing a gender-sensitive perspective on the relationship between agricultural transition, climate change, and Indigenous livelihoods in Latin America.

Keywords: Agricultural transition, climate change, indigenous rural communities, women, policies, Latin America.

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Chapter 1. Introduction

1.1. The research statement and significance of the study

Energy security represents a central challenge for sustainable development in the twenty-first century. Traditionally, it has been associated with the availability and affordability of energy resources. However, recent scholarship emphasizes its interconnections with climate change, environmental sustainability, food systems, and societal resilience. Climate change directly affects agricultural production, natural resources, and food security, while agricultural systems, in turn, influence environmental sustainability and the transition toward more resilient development models. Understanding the social and environmental dimensions of climate change and agricultural transition is therefore essential for comprehensive discussions on energy security. Within this context, and in alignment with the interdisciplinary focus of the Master's programme *Energy: Strategy, Law and Economics*, this study examines how these broader processes intersect with gender inequalities and affect Indigenous rural communities in Latin America.

This master's thesis investigates the relationship between gender, agricultural transition, and climate change, with particular emphasis on their effects on Indigenous rural communities in Latin America. While previous research has addressed these interrelationships, this study is distinct in its focus on how Indigenous rural women actively navigate and respond to socio-economic and environmental challenges. Instead of depicting these women as passive victims, the analysis foregrounds their agency in developing strategies and forms of resistance to address these challenges.

This research is significant as it examines the relationship between agricultural transition and climate change in Latin America through a gendered lens, with particular attention to Indigenous women. By analyzing these interconnected processes at the continental level, the study offers a nuanced understanding of how environmental change and

shifts in agricultural practices affect Indigenous rural communities, especially women, while also highlighting their adaptive responses. The Arhuaco community in Colombia serves as the primary case study, demonstrating how environmental pressures contribute to the erosion of traditional practices, including the loss of textile knowledge.

In addition to its academic contribution, the findings of this study have policy relevance, as they can inform regionally grounded development and agricultural strategies tailored to the needs of Indigenous communities in Latin America. Furthermore, the study advances the existing literature by offering a broader understanding of how gendered dimensions, agricultural transition, and climate change interact at the local level. Its principal contribution is the emphasis on the active role of Indigenous women, highlighting the strategies they develop to address environmental, social, and economic challenges.

1.2. Research Questions

The present study is guided by an overarching research question, which structures the overall research design and is addressed through a set of specific research questions.

The overarching research question examines how the gendered dimensions of agricultural transition and climate change in Latin America impact indigenous rural communities. To operationalize this broad concept, the study formulates two specific research questions:

(RQ1) ‘How do the gendered dimensions of agricultural transition and climate change affect indigenous rural communities in Latin America?’

(RQ2) ‘Why are indigenous women in rural Latin America particularly vulnerable to the impacts of climate change?’.

1.3. Thesis Structure

This study draws on a critical and systematic review of the literature on climate and agricultural transitions and complements it with an in-depth analysis of a specific case study. The case study focuses on Latin

America drawing on recent data from accessible sources across selected countries.

In the first stage, a comprehensive review of existing scholarship is conducted, drawing on peer-reviewed scientific journals, academic books, official institutional reports and secondary statistical data. All those data together demonstrate the literature review that functions as the primary data collection framework for this bibliographic study.

In the second stage, the study develops a theoretical framework grounded in theories of climate change, agricultural transformation and gendered dimensions of autochthonous rural livelihoods alongside an examination of relevant environmental legislation and climate policies.

Finally, both the theoretical framework and the literature-derived data are systematically analysed in combination and afterwards critically discussed with regard to the theoretical part. This process leads to the identification of the study's main findings and conclusions, while also acknowledging the methodological and analytical limitations discussed below.

1.4. Methodology

A qualitative research approach was adopted to examine the relationship between climate change, agricultural transitions, and gender in Latin America. The analysis is based on peer-reviewed academic literature, policy reports, and other scholarly publications, providing a solid foundation for examining existing research from different disciplinary perspectives.

Data were collected through a systematic review of academic journals, research papers, and relevant policy documents. This approach enabled a critical engagement with both theoretical and empirical literature, allowing the study to identify key themes, recurring patterns, gaps in current research, and ongoing debates. Rather than simply summarising previous studies, the review synthesises existing knowledge to develop a broader understanding of the topic and contribute to current academic discussions.

A qualitative methodology is particularly appropriate for exploring complex socio-environmental issues, especially where quantitative data are limited or unevenly available. It also makes it possible to examine the social, cultural, and political contexts that shape agricultural practices and climate adaptation, with particular attention to lived experiences, power relations, and structural inequalities.

Overall, this methodological framework supports a detailed examination of the links between gender, agricultural transitions, and climate change in Latin America. The inclusion of a case study on indigenous rural communities, with a particular focus on women's roles, knowledge, and agency, provides a practical example of how these broader processes unfold at the local level. It also highlights the important, though often overlooked, contribution of indigenous women to agricultural resilience, sustainable practices, and community adaptation to climate change.

Chapter 2. Literature Review

2.1. Agricultural transition and climate change in Latin America

In the twenty-first century, Latin America is experiencing anthropogenic climate change driven by human activity (Quaqueta-Solórzano, 2022). While climate change is a global phenomenon, its impacts are particularly severe in Central and Latin America, where increasing temperatures, changing precipitation patterns and extreme weather events have intensified food and water insecurity and reduced agricultural productivity. These effects are unevenly distributed, with indigenous communities being among the most affected, posing a direct threat not only to their livelihoods but also to their food systems and cultural continuity, due to a combination of historical, socio-economic and environmental factors that will be examined in the following paragraphs.

Indigenous peoples are particularly vulnerable to climate change due to a combination of environmental, socioeconomic and institutional factors (Quaqueta-Solórzano, 2022). First, their livelihoods are often based on community-oriented ways of living that depend directly on natural resources, making them highly sensitive to environmental changes. Second, indigenous communities are particularly vulnerable because they often experience poverty, social marginalisation, and limited access to essential resources and public services. Third, institutional factors further increase this vulnerability. Many legal and governance systems are based

on individual rights and forms of entitlement that do not always align with the collective values and social structures of indigenous communities in Latin America. Climate change adds to these existing challenges by disrupting ecosystems and threatening the livelihoods of populations that are already at risk. At the same time, indigenous peoples possess extensive traditional and ancestral knowledge that has enabled them to adapt to environmental change and climate variability over generations.

A study conducted in the Arhuaco territory in the Sierra Nevada de Santa Marta, northern Colombia (Quaqueta-Solórzano, 2022), examined the effects of climate change on the local agricultural economy and identified several interconnected challenges. One of the most significant cultural impacts is the gradual loss of traditional knowledge, including wool processing and textile production, which are central to Arhuaco identity and cultural continuity. Environmentally, the expansion of monoculture has reduced crop diversity and weakened ecosystem resilience. Economically, declining agricultural productivity has lowered household incomes and encouraged migration to urban areas in search of better economic opportunities. This outmigration not only reduces household income but also weakens community cohesion. Climate change intensifies these problems by accelerating environmental degradation and placing additional pressure on traditional livelihoods, threatening the long-term sustainability of Arhuaco communities.

For indigenous communities, climate change and agricultural transition involve a combination of environmental, social, economic, and institutional changes that affect everyday life and traditional livelihoods. Rising temperatures have gendered consequences, as women, who are often responsible for food production and water collection, face increasing workloads and greater exposure to climate-related risks. Changes in rainfall patterns and growing uncertainty over water availability further increase competition for water and food resources. These pressures are compounded by other challenges, including the expansion of illegal crop cultivation, large-scale livestock farming, deforestation, encroachment on sacred lands, and wider changes in land use. Together, these factors undermine the resilience of indigenous

communities and make adaptation to climate change increasingly difficult.

Simultaneously, traditional indigenous institutions of justice and governance are being weakened, undermining community-based mechanisms of regulation and social cohesion. Nevertheless, indigenous populations retain a degree of political autonomy, exemplified by representative bodies of the Arhuaco community within the ethnic state framework. Precisely, within the Arhuaco society not only the political representative, but also the spiritual authorities, called Mamos, portray a determinant role in preserving the law of origin and representing the collective decision making (Medina, 2024). Both of these representatives seek to advocate effectively for indigenous interests by engaging in decision-making processes, negotiating political recognition and promoting the integration of traditional and scientific knowledge as a means of developing more resilient and sustainable agricultural production systems. Through their political autonomy the representatives seek to integrate traditional knowledge into climate adaptation and sustainable agricultural practices (Medina, 2024).

However, indigenous men and women are not affected in the same way by climate change and agricultural transition as described above. Evidence suggests that indigenous women experience disproportionately greater impacts, due to their central role in food sovereignty, environmental stewardship and household subsistence, while simultaneously facing socio-economic marginalization, which are further examined in detail in the following chapter (Cediel-Becerra et al., 2022).

2.2. The role of gender and women's general contribution

There is pronounced gender inequality within indigenous communities, with particular emphasis on the experiences of the poorest women (Silva-Santisteban, 2020). Research demonstrates that women's bodies are more vulnerable to toxic pollution, and that exposure during pregnancy can have intergenerational consequences, affecting future generations. Beyond environmental factors, indigenous women are situated at the intersection of colonialism, capitalism, and sexism, which collectively reproduce systems of domination over poor indigenous

women in ways analogous to the domination of nature under extractives' logics. This dynamic reflects a broader drive for control, historically and politically led by male-dominated power structures. Indigenous women are often positioned in opposition to extractivist systems because of their central role in sustaining livelihoods, managing natural resources and preserving ecological knowledge within their communities (Rocheleau, 1996). Indigenous women are often perceived as a challenge to these systems because they play a central role in sustaining community life: they are responsible for providing food and water to their families and, crucially, for transmitting ecological and cultural knowledge.

As a result, political and economic elites seek not only to extract natural resources but also to appropriate indigenous women's knowledge systems. Notably, some male political leaders continue to question the impacts of climate change (Silva- Santisteban, 2020), and this denial extends to the structural oppression of both women and nature. At the local level, indigenous women also face deeply rooted patriarchal structures that often exclude them from political participation and decision-making. These inequalities reflect broader power relations shaped by colonial legacies, in which colonial authority was largely exercised by men, and reinforced by contemporary political and economic systems. Despite playing a central role in environmental stewardship, food production, and sustaining community life, indigenous women continue to be disproportionately affected by discrimination and marginalisation across these overlapping systems of power.

2.3. Case study: The status of the indigenous rural communities

2.3.1 Socioeconomic challenges of the indigenous rural communities

First, indigenous rural people are highly diverse in terms of concerning specific pillars, namely the identity, the territory, the language along with the culture and lastly the common origin (Cruz, 2018). Although in Latin America a homogenization of indigenous rural populations is observed as result of both the colonization and the capitalism. Through the years indigenous rural communities have faced discrimination in various areas, such as politics and land ownership, but they have struggled for the recognition and protection of their rights. Their confrontation is a

combination of national and international attempts. One of the major issues is the fact that the majority of rural indigenous people live in poverty depriving the right to control their ancestral land, properties and resources due to being excluded from participation in political decision-making processes.

Analytically, there are many legal frameworks protecting indigenous rights on paper, but practically limitations and obstacles exist not permitting the actual implementation of laws and legislations. Indigenous rural people do not have the same opportunities as the rest of the population, living marginalized in poverty as also mentioned above. Poverty rates are even higher when women lead the household. Generally, there is a well-documented correlation between poverty and natural resource wealth (Quaqueta-Solórzano, 2022). In many cases as it also happens in Latin America, countries rich in natural resources do not experience improved living conditions for their citizens. Instead, under global capitalism and systems of capital accumulation, resource wealth is frequently extracted and directed toward international markets rather than benefiting local populations. This process is reinforced by the international division of labour, in which resource-rich countries are positioned primarily as exporters of raw materials, while industrialized nations control processing, technology, and high-value production.

Subsequently, natural resources are commodified and sold globally, generating profit for multinational corporations and national elites, rather than supporting local self-sufficiency (Quaqueta-Solórzano, 2022). This contrasts sharply with many Indigenous economic systems, in which surplus production is traditionally exchanged or sold locally, maintaining community-based economies rather than feeding global accumulation. National development strategies often prioritize export-led growth, further deepening dependency on global markets and perpetuating structural inequality. Additionally, indigenous access to public services is lower than the one of non-indigenous.

Precisely on the educational domain, the level of education on rural indigenous is lower than the rest, since the colonizers tried assimilating them using violent means, such as forbidding their native languages to be spoken (Ulloa, 2017). Accordingly, the language barrier blocked the indigenous populations from learning and gaining knowledge.

Additionally, geographical distances made the whole process even harder to follow, while traditional values of the autochthonous groups were completely disrespected along with their language. For example, the cultural aspect of rural indigenous towards nature was apparently demolished as analysed in the following paragraphs.

Concerning the health domain, indigenous used to have immunity towards diseases, with the Europeans bringing them bacteria and many illnesses. Nowadays, approximately 80% of the indigenous population in Latin America does not have access to the public health care systems, following instead their own ancestral traditional medications. Malnutrition and child mortality rates are high, while life expectancy rates remain low. Furthermore, contamination, depression and drug dependency rates are extremely high among the indigenous populations resulting often in criminal actions (Ulloa, 2017).

Except education, rural indigenous have been repeatedly discriminated for almost four centuries in the production sector too. In detail, colonies used to emphasize the extraction and the production of raw materials, such as mine, sugar, coffee, tobacco and rubber in favour of Europeans. Yet the colonizers forcefully moved 12 million slaves from Africa to Latin America for that purpose (Ulloa, 2017). Indigenous did not have any right to either own or protect their ancestral land, such as the Amazon forests and consequently to prevent the natural sources exploitation. Their tries to face the situation usually ended up in violent suppression.

2.3.2. Indigenous' environmental Cosmo theory

The reasons why indigenous and colonisers have developed different approaches on climate and resources land in their different mentalities. Indigenous from Latin America believe that humans and non-humans rights should be together included in every decision-making process concerning the environment, since the circulation of life is based on them both. Ethics and respect in environmental justice is mandatory for the indigenous.

On the contrary, capitalists, who are also colonisers, have no hesitation to destroy the environment for their own profit (Deere, 1998). Indigenous

people mentality perceives nature as a valid political actor, as a living being represented respectfully by humans. Nature for them is a living entity and even though humans have the responsibility and act in charge of nature, it still has the right to exist.

This concept is called *environmental self-determination* showing the sacred relationship between indigenous and nature enrolled in a system where specific practices are allowed to be applied with respect towards nature. Summarizing, the different way of thinking leads to different decisions about how knowledge and either ancestral or modern techniques will be used and for with objective.

2.3.3 Two different agricultural models

Particularly, rural indigenous populations have historically followed traditional agricultural methods, which provided them with food sovereignty (Paraguez, 2018). For example, in Peru, Chile, Ecuador, Guatemala and Mexico they followed specific seasonal and day timing processes, including the technique of leaving the land fallow for 3 to 5 years to increase fertility and combat pest, observed rituals dedicated to God, and took into account the lunar phases. These practices were embedded in holistic knowledge systems that emphasized balance between humans, land and spirituality. Together, they contributed to long-term soil regeneration, biodiversity preservation and community self-sufficiency.

By comparison, indigenous communities have supported and practiced mixed cultivation for centuries (Paraguez, 2018). Polyculture systems enhance soil fertility, reduce pest outbreaks, and improve water retention. They rely on natural fertilizers such as earthworm castings and compost, as well as natural pesticides such as tephra and plant-based preparations. Traditional irrigation methods often use wooden or other natural water channels instead of plastic pipes, which are considered healthier and more environmentally sustainable. Indigenous communities have also preserved native seeds by storing them in clay pots, ensuring biodiversity

and long-term food security. Agricultural practices such as manual weeding and the use of living fences instead of wire fencing also help maintain ecological balance. Together, these methods support ecosystem conservation and sustainable land management. They reflect Indigenous worldviews that emphasise the interconnectedness of humans and the natural world, as well as the cyclical nature of life.

By contrast, industrial agriculture is largely shaped by capitalist market demands and favours large-scale monoculture systems aimed at maximising productivity and economic efficiency (Paraguez, 2018). Such systems rely heavily on synthetic fertilizers and chemical pesticides in order to rapidly increase production and meet global commercial needs.

Today's challenges are many due to the capitalistic market forces that control land, water and resources and which have totally changed indigenous providing system. That system is intertwined with the indigenous cultural and ecological heritage making them independent and keeping them safe. Analytically, it is a family-based traditional agricultural system with the objective to produce and provide food for everyone. In economic terms, around 30% to 40% of regional GDP in Mesoamerica and the Andes arises from rural indigenous populations' sustainable agricultural systems. To conclude, a strong correlation between indigenous rural livelihood and national food systems is obvious (Paraguez, 2018).

On the contrary, modern industrial agricultural systems usually supported by elites, are largely oriented towards productivity, market expansion and profit generation. Consequently, they are not ashamed of using chemicals, while polluting the atmosphere, devastating the environment and leading indigenous population to severe exploitation and unemployment and poverty by using inappropriate methods and techniques (Paraguez, 2018). In detail, environmental concerns are often secondary to economic objectives, who aim for the profit. So, they plant and cultivate mostly rice, soy, maize, barley and wheat because they are globally in demand.

On the other hand, indigenous usually study the ground and the climate using traditional methods and afterwards based on them, they decide on the production kind and the techniques. Agroecological approaches suggest that traditional indigenous knowledge can be combined with

scientific and technological innovation to promote environmentally sustainable agriculture, food sovereignty and social well-being (Altieri, 2011).

On a second phase, family based agricultural systems are organized for the products to be self-consummate (Paraguez, 2018). The surpluses are sold locally only, while local ecosystems and bio diversities are studied and embedded in the whole process. Traditional knowledge about ecosystems, food and medicines include the use of natural ingredients and solutions with the goal to achieve sovereignty. Sovereignty is yet the enemy of globalization agricultural monetization, concluding in an enormous gap between the rural indigenous system and the capitalistic one (Paraguez, 2018).

2.3.4 Consequences with a focus on extractivism

Concluding, both social and environmental inequalities have led indigenous populations to demand justice and equal opportunities in all domains of life, particularly in the context of global environmental change driven by capitalist development. One of their primary demands is their rights to be protected by law and specific legislations (Deere, 1998).

Nonetheless, a significant gap remains between indigenous and capitalist worldviews. Indigenous peoples traditionally follow ancestral systems of law, particularly regarding land ownership and territorial governance, which differ fundamentally from state-based legal frameworks. Within Indigenous worldviews, nature is not treated as a commodity, nor is it subject to private ownership or extractive exploitation. Instead, land is understood as a living, shared system that sustains both human and non-human life. Cultural governance therefore serves as a means of protecting territorial integrity while safeguarding food and water sovereignty (Deere, 1998). By contrast, capitalist economies are based on the extraction of natural resources and the exploitation of labour to generate profit, often with little regard for ecological limits or social consequences. In this context, extractivism can be understood as a model of development that relies on the intensive exploitation of natural resources for export, frequently at the expense of Indigenous territories, environmental sustainability, and social justice (Acosta, 2013).

These processes are closely connected to wider patterns of extractive development across Latin America (Silva-Santisteban, 2020). Extractivism is not simply an economic strategy but also a structural system that reinforces environmental degradation, social inequality, and political marginalisation. One of its most significant consequences is its contribution to climate change. Activities such as deforestation, land-use change, and the expansion of industrial agriculture and livestock farming generate substantial greenhouse gas emissions. This is particularly evident in the Amazon and in the large-scale cultivation of export crops, such as soy, in Brazil, Argentina, Bolivia, Paraguay, and Uruguay (Silva-Santisteban, 2020).

Its contribution to climate change is also indirect. Resources such as oil and gas are extracted in Latin America but are largely consumed elsewhere, where their combustion produces additional greenhouse gas emissions. As a result, the environmental costs of extractivism are often separated geographically from the places where extraction occurs, making its overall contribution to climate change less visible.

For Indigenous communities, these activities often lead to soil and water contamination, deforestation, and the degradation of local ecosystems. Such environmental changes undermine traditional livelihoods and frequently give rise to local resistance. However, these struggles are rarely connected to wider international debates on climate change, despite being rooted in the same structural processes. Environmental degradation also increases communities' exposure to floods, droughts, and biodiversity loss, further reinforcing existing social and economic inequalities (Silva-Santisteban, 2020).

The continued expansion of extractive industries is supported by political and economic narratives that present them as essential for national development. Governments, corporations, and other powerful actors often downplay their environmental impacts or argue that technological innovation will make extraction more sustainable. Similar arguments can be found across the political spectrum in Latin America, where both conservative and progressive governments have continued to rely on extractive industries while giving limited attention to their long-term environmental consequences. As a result, indigenous communities remain

disproportionately affected by the negative outcomes of this development model (Silva-Santisteban, 2020).

2.4. Indigenous women's vulnerability and reactions

Women in Latin America often are often primary contributors to agricultural production, but they face racism and sexism due to the machismo culture existing in the society and which is seen in societal structures. Rapes, trafficking, violence, femicides, labour exploitation, non-provision of public health services during pregnancies ending in high mortality rates are some of the phenomena women face in Latin America and precisely rural indigenous women (Ulloa, 2017). Nevertheless, due to globalization women managed to become financially independent and then, organize their political representation aiming for gender equality in each sector of daily life. Hence, indigenous women increasingly gained visibility through social movements and political organizations. Except the social movement, the international feminist movement fundamentally further assisted indigenous women to access and own land titles as discussed below analytically (Deere, 1998).

Even though globalization as a concept helped women to get politically organized, plenty of social movements in Latin America led by them were afterwards focused on fighting against globalization of specifically rural lifestyle and land ownership (Cruz, 2018). Their rights on land and water ownership became legally visible during 1980-1990s as a result of the agrarian reforms took place in Latin America from almost 1960 until in some cases today. Analytically, between 1960 till 1980 the land was shared to the lowest, poor Stata and men. Women were fully excluded from the negotiations concerning access to water, food and land.

Yet in the 1980s the role of states has been increased leading to new counter reforms including water, food and energy privatization with the purpose of creating a more competitive and efficient successful market globally. Most of the agrarian reforms benefited only men both legally and practically. Prevailing patriarchal norms and customs according to with men lead and is the household's head completely agreed with the reforms. Only in the Andes region, widows and single mothers who owned land could participate in the decision-making processes.

Social and gender norms in indigenous Latin American societal groups identify women as helpers, not as workers or providers. They support the belief that women are traditionally expected to prioritize domestic responsibilities or in cases they work as workforce, women are not treated the same way as men (Deere, 1998). For instance, seasonal land workers tend to be usually women working in favour of men with less average salary and excluded from education. Another example is that the irrigation systems are designed for men, who attend public meetings with women being discouraged from anything similar. Overall, the agrarian reforms had two levels, but women were not included in neither of them. In Costa-Rica and Colombia the reforms still take place though.

In detail, agrarian reforms in Latin American countries affected women as followed (Deere, 1998). In Nicaragua, Costa-Rica, Colombia, Peru and Honduras, there are no longer exist norms placing men in the position of household leaders and both genders have equal rights. The same happens in Chile and Ecuador. In Colombia and Costa-Rica the reforms are still on processing emphasizing gender equal laws. In Costa Rica, land redistribution occurs peacefully through voluntary, state-led mechanisms, whereas in Colombia it is driven by rural violence and forced dispossession. Referring to the water law, it varies per country. In Mexico, gender equality had reached great levels. Although, patriarchal customs and norms still favour men excluding women. Lastly, about the land titles, in Colombia, Costa-Rica, Honduras and Nicaragua the joint couples' titles are mandatory. In El-Salvador, Colombia and Nicaragua women are yet prioritized when it comes to land distribution.

To be more precise, the examples of Colombia and Costa Rica are further analysed. In Costa-Rica via the consensual unions, the land titles were legally recognized with an emphasis given to women's titles. Joint titles for married couples became day by day a normality. Laws also enacted to promote on a general basis social equality for women. Nonetheless, land distribution has been reduced under the neo-liberal model. Moreover, rural indigenous women still have low awareness about their rights and social-patriarchal norms insist ending up with limited laws' effectiveness despite the great change that had happened. Deep-rooted patriarchal norms continue to limit the effectiveness of these laws, highlighting the gap between legal protections and the realities of everyday life.

The Colombian case shows that some fundamental changes have been occurred, such as the establishment of the National Association of Peasant and Indigenous women in 1985 (Deere, 1998). In addition, the agrarian law 30 in 1988, which recognized women's right to own land and joint titling helped around 19% of women to become beneficiaries and approximately 37% of the households titling passed from men to women. But often the implementation of the aforementioned laws encounters obstacles and faces social resistance due to men's social profiles that remain severe e.g. as primary householders.

Except the land ownership, women also require greater access to water, credit and technical assistance too in order to strengthen their decision-making capacity. The majority of the Latin American states supports the redistribution of land to the rural indigenous populations both men and women, because otherwise drug dealers and traffickers have the power (Deere, 1998). Anyhow, women's collective resistance remains resilient by various ways, such as by preserving traditional seeds and by practicing agroecology. This way, women assert control over their land, while on the parallel they safeguard both cultural heritage and ecological sustainability.

Despite agrarian reforms, poverty remains a major factor shaping women's social position and everyday lives (Quaqueta-Solórzano, 2022). Poverty is particularly widespread among female-headed households, highlighting the gendered nature of economic vulnerability and structural inequality. Limited access to land, financial resources, education, credit, and political participation continues to reinforce women's long-term marginalisation.

In addition, extractive capitalist systems are associated with multiple forms of violence, including economic, social, political, and environmental violence, all of which are rooted in broader structures of inequality. Women are disproportionately affected by these processes. Environmental degradation caused by mining, deforestation, and large-scale agriculture increases women's unpaid care and agricultural work, weakens food sovereignty, and deepens economic insecurity. At the same time, land dispossession and exclusion from decision-making processes further restrict women's access to resources and opportunities.

Capitalism and androcentrism are closely interconnected, as both have historically been organised around unequal power relations and systems of domination. The pursuit of economic growth and profit often reinforces patriarchal structures, while extractivism and exploitative labour systems reproduce existing gender inequalities (Quaqueta-Solórzano, 2022). As a result, women are frequently among those most affected by environmental degradation, economic exploitation, and social exclusion.

A key concept in understanding these dynamics is dispossession, which refers to the systematic removal of people from their land, resources, labour and decision-making power in order to facilitate capital accumulation (Quaqueta-Solórzano, 2022).

Nonetheless, indigenous rural women emerge as key agents of resistance, actively shaping and sustaining alternative forms of social and environmental justice. They develop alternative models that challenge extractivism, exploitation and capital accumulation. Namely, through community organizing, agroecology, seed preservation and collective land defence, they resist both colonial and neocolonial forms of domination, while simultaneously proposing more sustainable, collective and socially just ways of organizing economic and environmental life.

Chapter 3. Theory, data and method

3.1. Theoretical background on political ecology

Political ecology as defined by James Greenberg (1994) concerns "the mutually constituted interrelationships among human society, biocultural system and environment". The key premise is that these entities cannot be considered separately but are instead linked aspects of a socio-environmental system, in which particular, human-related systems of agriculture, law, public health, development, and history intersect with and are shaped by ecology. This political-environmental relationship occurs where human productivity, which may occur in the legal system or public sphere, or in forms of agriculture or public health systems; these forms of activity have power as their driving variable; while power creates both kinds of productivity (Greenberg, 1994).

From early times, it is recognized that political ecology originates from the field of geography, with an interest in the interplay between and spatial distribution of environmental processes; ecology, from a broad

viewpoint, represents the interaction between various parts of living systems (Greenberg, 1994).

Early perspectives on the study of human-environment interaction, such as cultural ecology and more broadly based approaches also drew on ecological thought. However, this relationship is not direct and simple. Political ecology extends the analysis further and explores those other processes of political, economic and social systems that are influencing the environmental process (Greenberg, 1994). This approach allows for the integration of a wider view of human-environment interaction, by drawing from more widely established approaches, and also more recent critiques of human-environment theory.

Rather than an isolated study of environmental systems alone, it investigates political and economic processes driving environmental changes, by integrating analyses of production, distribution, and governance and power with the examination of environment outcomes (Greenberg, 1994).

It can build on the theoretical analyses of, for example, Dependency Theory and World-Systems Theory (Bryant, 1998), which illustrate how global economies are organized hierarchically via core and periphery regions which in turn promote various forms of local processes and experiences as well as of global processes. These latter processes are understood in terms of differential flows of value and resources between those regions. These approaches can address how human activity and ecological processes influence one another at multiple scales from that of the local level, up to global forces of global politics and the state in general, which may affect environmental conditions at various levels, including how decision-making processes interact with the environment (Greenberg, 1994).

Drawing upon this framework, Bryant (1998) further explores the linkages between political processes, environment change and systems of knowledge in the Global South. In these perspectives, analysis of how processes of development generate environmental benefits and costs across society and at different levels will be found, focusing on processes by which certain communities are disadvantaged by processes of

accumulation in others. These forms of disadvantages are linked to wider political, economic, and social contexts.

Environmental change may be experienced by communities and in specific events (such as the 1985 nuclear fallout over Europe, or floods), as well as in general ecological and cultural processes; this also leads to uneven distribution of the environment in question, of exposure to risk and, as far as human actions are concerned, uneven exposure to resource availability.

One specific aspect that receives close attention is that of access and control of resources under conditions of power relations (Bryant, 1998). As this indicates, environmental governance will also likely contribute to, reproduce, or transform these social and economic inequalities. One challenge is that the framework will probably need to address a critique about the cultural hegemony of western science in environmental policy and discourse. Local knowledge, traditional, and indigenous knowledges should perhaps be incorporated in a less marginalized way.

3.2. Theoretical background on the feminisation of agriculture

Every day on a global scale, female contributions within agriculture often become completely disregarded. Globally women often take up an estimation of 43% of all agricultural labour, and more than two-thirds of livestock keepers in countries in the Global South. In Europe for example in 2017, close to a third of agricultural labourers were women, while in Australia and Canada only around a quarter were (Glazebrook, 2020).

Even in spite of this considerable labour, women are frequently denied payment in accordance to their work – only earning around 77% of that of men in total earnings.

In 2.7 billion laws across the world, 2.7 billion are banned from equal access to work, the vast majority of which are for women. Women are disproportionately involved in work such as family contribution labour, work which supports the economy without being recognised in terms of

the contribution that women make. Globally on average 23% of the gender pay gap is at work. On average women spend more than twice the hours in work caring for their homes or family compared to men, meanwhile female leadership positions are minimal in the Fortune 500 only 5% of Chief Executive Officers (CEOs) were women (Glazebrook, 2020).

The vast amount of work women put in and their limited representation across male-dominated fields is clearly evident across different continents.

For example women, including in Latin America contribute approximately half of the world's food production despite only owning 12.6% of land worldwide, and more than one third of all working women contribute to the agriculture industry (Glazebrook, 2020). While in many countries in the Global South agriculture acts as a predominant form of employment, this dwindles down to an average of just under a quarter of employment in richer parts of the world. In countries such as Latin America women farm small amounts of land, raise a smaller number of animals and lack the technology or credit needed to be profitable in markets, ultimately undermining their family food security and resilience against other stresses (Glazebrook, 2020).

In a number of regions women's farm labour has not even recorded in economic statistics because it has been historically considered male domain, thus perpetuating the idea of their lack of influence in agriculture. This, coupled with laws restricting access to resources not only limits women's productivity but also their voice and freedom, essentially leading to their subjugation and lack of food sovereignty. Beyond this the reasons for this feminisation of the workforce are rooted in broader trends such as the decline in profitability for many smaller farms and increase in migration as men seek better paid work elsewhere, which has led women to fill the gap (Lastarria-Cornhiel, 2008).

A gender biased rural labour system has in effect allowed women to be integrated into production systems in roles previously occupied by men, without any corresponding gain in the ownership of productive assets, access to information or authority (Lastarria-Cornhiel, 2008).

While female engagement in the labour force has expanded overall into services, trade, and small enterprises, many women remain employed in precarious, low wage, seasonal, part time work. In Latin America for example from 1950 to 1990 women working rural areas increase by more than double, rising from 18 to 34%, and with a growing portion working outside of agriculture, women are becoming more visible in labour markets and as owners of small plots, but without the respect they have a right to receive (Lastarria-Cornhiel, 2008). This often is down to gendered attitudes regarding agriculture which often position it as male occupation and is not always recognized by the statistical system. The increasing participation of women in agricultural production in Latin America, for example, has not correlated to greater access to productive resources and power for women, as men still dominate ownership and decision-making (Lastarria-Cornhiel, 2008).

Women are much more likely than men to lack land and own only one twelfth of all private property despite their almost equivalent participation in food production.

Gender disparity also affects the impact of climate change, as women, particularly those in Latin America, are disproportionately vulnerable to environmental shocks that impact their ability to food security. As women take on a significant amount of food production in vulnerable areas with insufficient resources to mitigate climate change impacts, empowering women's access to land, technology and finance can not only improve overall agricultural outcomes but also create sustainable food systems (Glazebrook, 2020). In order for this to happen women and men need to collaborate and make significant policy and social changes, and have to use indicators that are gender-disaggregated so they will be able to monitor gender outcomes (Glazebrook, 2020).

Although women perform a huge role in agriculture worldwide it continues to be undervalued by society and is also one of the many reasons women continue to experience gender bias, due to unequal access to land and productive assets. Legal reform and the creation of supportive mechanisms for women is a vital step towards improving this situation and achieving greater equity, for not just the global south but also for the globe as a whole (Glazebrook, 2020).

3.3. The feminisation of agriculture in Latin America

Recent decades have witnessed the rapid diversification of income sources for rural Latin American households. With this transformation has come increasing economic participation of women in the economy – both in non-agricultural sectors, and as wage labourers in rural agriculture, particularly in crops like fruits, flowers and vegetables produced for export (Deere, 2005). Women's jobs as wage labourers are, however, largely seasonal, temporary and financially unstable.

“Feminization” of smallholder agriculture is occurring in various Latin American countries, with a growing share of women serving as the primary farmers.

This process is driven by factors such as male outmigration for work opportunities, the increasing proportion of female-headed households, and broader household strategies of survival. Land scarcity, dwindling peasant agriculture viability, and a growing range of non-agricultural economic options for rural households explain much of this trend. (Deere, 2005). Even as women's economic participation increased, their work continues to be under counted and undervalued as the previous section suggests.

Women are more and more often missing in agricultural censuses; agricultural labor is seen as a male occupation, and the name on the deed for family land remains that of the husband or male household head.

Data on women's ownership of land, when available, vary greatly in the region (ranging from about 11 percent in Brazil to 27 percent in Paraguay). In some cases (as in Peru) shared ownership is also significant, though it is likely even less reported. Rural women's participation in the workforce more than doubled from 18 percent in 1950 to 34 percent in 1990, the product of both expanding work opportunities and growing economic pressures (Deere, 2005).

While the majority of rural men continued to be involved in agriculture, rural women's employment more often occurs outside this sector, in trade, services and small-scale manufacturing, and typically with low pay and poor conditions that reflect ongoing gender inequalities (Deere, 2005).

Also women often face a double burden of paid labor and domestic and care work. The intensification of neoliberal policies exacerbated this.

A contraction in state support for social services and transfer of the costs of social reproduction to households' places additional pressures on rural women, as reduced public spending for health care, education, and public transport, combined with increased living costs, unemployment, and stagnating wages forced women into the labor market.

(Deere, 2005). Migration is one mechanism through which these trends unfold. Historically, migration to cities has been dominated by women and to a lesser extent by men and women in regional and international migration; seasonal internal migration was mainly female except for that among men. By the early 1990s women continue to dominate migration to the region (for jobs in services, trade, manufacturing), while men continue to dominate the flow of seasonal agricultural labor. Migration to the United States was originally predominantly male, but female migration out of Latin America grew more quickly than male migration after 1990 (Deere, 2005).

Thus, the rise in male out-migration helps explain the “feminization of agriculture” through men’s disappearance from the rural economy, increasing women’s share of responsibility for rural production and growing levels of female-headed households, the women that take over rural production and the management of households.

Variation in intensity and characteristics of change across countries and even between regions within countries also varies significantly. Research shows evidence from countries such as Mexico, the Central American countries and Peru of increased women's roles in small peasant production and as wage-earning agricultural workers in export crops. In all these contexts however, work performed by women tended to be lower-paid, more precarious, less often represented in official data, and the process by which land was inherited or otherwise gained often continues to be hidden. (Deere, 2005).

In summary, the “feminization of agriculture” in Latin America is a complex process linked to the region’s changing economic structures, household survival strategies, and emerging gender dynamics. The growing visibility of women as producers and as labor force participants

is undeniable, yet their labor continues to be devalued and underestimated by the broader society and also by those statistics meant to capture economic activity in the region, although many specificities are lost in cross-country comparisons (Deere 2005).

3.4. Ecofeminism

Ecofeminism, a sociopolitical viewpoint that emerged within the broader realm of feminist thought, offers significant contributions to understanding gendered inequalities within the mechanisms of extractivism and capitalist development. Feminist viewpoints show patriarchal roots to these processes, where women as well as nature have been historically subject to patriarchal rule and exploitation by the patriarchal system (Silva-Santisteban, 2020). Ecofeminism contributes to further reinforce this connection and argues for the promotion of caring and sustainable relationships with nature.

Many theories about ecofeminism in the region have been developed outside of Latin America though.

Even though Silva-Santisteban stress the need to come up with specific Latin American Ecofeminism though as it would reflect that region for studies.

3.5. Data collection

This academic research applies an exclusively qualitative multi-method research design for a broader view that integrates structural analysis with the experiences of the realities concerning the gendered dimensions of agricultural transition and climate change within Latin America, particularly targeting indigenous rural communities, and primarily women. To put it in more detail, qualitative component aim is to reveal the social, economic and sector transformation as per with transition phases and climate changes upon Latin American indigenous rural

communities, while the study attempts to see how these phenomena at the local level are been perceived and experienced by them, especially indigenous women; furthermore, the academic endeavor also looks at the way through which such indigenous women confront such realities by creating some diverse solutions. To the end of the qualitative approach, this academic investigation also uses various literary and scholarly works, i.e., from reviewed articles to published books, that can be readily searched and obtained through trustworthy data-bases in order to achieve some data basis from reliable resources for analyzing the vulnerabilities from gender perspective and supplementing the present study in terms of literature used for the work. With respect to the used data base, this research includes latest information of varying types about the main topic in terms of both breadth of scope and reliability.

3.6. Analytical framework

The study will employ a qualitative research design focusing on Latin America as a case study where more global demographic, economic, climate and gender trends can be observed through their expression in the local sphere. In this way it is possible to analyse how these broader agricultural, climate, economic and gender processes result in specific social processes at local level. Particular attention is paid to Indigenous rural women, which can reveal the ways in which the impacts of climate change, agrarian transformation and gender inequalities meet at the local level.

More particularly the study will consider how Indigenous rural populations can be affected by gendered dimensions of agrarian transition and climate change, and through what mechanisms Indigenous women are made particularly vulnerable.

This latter question will be discussed further in chapter 4 which focus more specifically on the climate change impacts on Indigenous women and the ways gendered inequalities affect these impacts. To achieve these objectives, the study utilizes thematic analysis aiming at identifying, analyse and interpret the recurrence of patterns in the collected data. The material will be coded and organized in several key themes corresponding to agrarian change, climatic impacts, gender roles and vulnerability of

Indigenous women in specific local context. These thematic analyses will then enable the study to show how the two global processes of structural inequalities and ecological change combine at local level.

In analyzing this latter process, political ecology and ecofeminism will be applied to provide critical framework for the study of power relations, gender experiences and climate change at the local level.

Overall the study uses qualitative design methods; its findings are generated from a variety of peer-reviewed journal articles and academic books selected from credible academic data bases; The study will investigate the gendered impacts of agricultural transition and climate change in Indigenous rural communities of Latin America by applying political ecology and ecofeminist framework in order to identify and analyse particular mechanisms of vulnerability experienced by Indigenous women.

Chapter 4. Analysis and discussion of the findings

4.1. Presentation and analysis of the data

The qualitative data considered in this study were analysed thematically in order to identify repeated patterns and associations within the literature. These findings are presented in two thematic areas that provide direct responses to the research questions and that reflect the major concerns identified in the reviewed literature. The first of these explores the environmental, agricultural and social and economic impacts of climate change and agricultural transition in Latin America.

The studies considered suggest these aspects are not separate issues but are intertwined dimensions that collectively define the life-worlds of indigenous rural people. For example, environmental decline, altered production, and socioeconomic deprivation reinforce each other to increase vulnerability while shaping local diets and lifestyles. The second thematic area examines the feminisation of agriculture and the coping mechanisms of rural women. Besides documenting the disadvantages they endure, women's growing presence in agriculture, contribution to community well-being, and organisation for land, resources, and cultural heritage are highlighted. The themes form the bedrock of the following discussion, where they are synthesised and their significance is assessed against the theoretical perspective and the questions of study.

4.1.1. Environmental, agricultural and socioeconomic impacts

From an environmental point of view climate change has impacts such as increase in temperatures, changing precipitation patterns, greater frequency of droughts and floods, and other extreme events, all of these factors will make more difficult life for Indigenous rural populations. Studies indicates that continue deforestation, mining and other extractive activities worsen degradation of natural systems on which numerous indigenous groups depend on. Also mention of invasion of their territory of many groups are a cause of threat of places of important cultural, historical and spiritual value for native populations.

As result of climate change pressures their livelihoods based on ecological balance become harder.

Agriculture has suffered very important change in recent decades: studies mentioned there has been gradual loss of Traditional Indigenous farming practices as the result of intensification and commercialization. They go away from crop diversity, use of traditional ecological knowledge and mixture farming practices, and go towards intensive and commercial agriculture monoculture for a globalised market. While change in agriculture has been presented as a measure of increased productivities, other point out that they make more homogeneous production, degraded land and increase reliance on external inputs. These changes in agricultural system have caused loss of agricultural resilience to climatic variability and to marginalization of traditional practices and local knowledge.

The above mentioned environmental and agricultural changes have significant social and economic consequences.

Indigenous rural population suffer relatively high levels of poverty, poor access to education, to healthcare, to limited opportunities to economic. These situations are related to some aspects political and economical of a large number of Latin American countries such as being providers of raw materials for a globalized market. The benefits for extraction and agricultural products were not distributed among native communities but concentrated between the transnational companies and national elite groups. The literature report decreases in incomes agriculture, increase of migration, decline of the community's relations and to some extent, the

erosion of culture in native communities as an outcome of inequalities present.

Another relevant issue pointed out in the literature is the low level of participation of the indigenous communities in decision related to lands and resources. Even if many countries have legal and institutional framework for protecting indigenous rights, implementation of these rights are unequal and with obstacles for achieving full realization because weak capacity of institutions, clash of interests, limited representation of the indigenous population in national political spheres. Also, women are in a more vulnerable situation as they are already facing additional difficulties regarding access to land, finance and institutional spheres, especially those are head of households.

In sum the literature seems to indicate that environmental degradation, agricultural transition and socio-economic inequality should be interpreted not separately but in a united manner, a cycle where each factor strengthens others and makes indigenous communities more vulnerable in their livelihoods and in other spheres like the cultural and institutional ones.

4.1.2. Feminization of agriculture and the resistance of rural Indigenous women

Latin America's feminisation of agriculture should be understood as an outcome of broad social, economic and environmental changes, rather than a demographic one. It is intrinsically linked to the male exodus from rural areas, the rise in female-headed households, the declining economic viability of smallholder farming and the growth of informal work opportunities for women in the informal economy and/or to migrating to cities or abroad, often under exploitative working conditions and. In many Indigenous communities' women have gradually taken more responsibility for agricultural production alongside their continued household and care work.

This is what leads them to play increasingly significant roles in both the local food economy and the survival of their families.

Nonetheless, women's agricultural work is largely invisibilised. It has often been interpreted as a part of women's private and reproductive work that cannot be quantified; thus its participation is barely registered in agricultural statistics or is absent in national policies, rural development programmes or technical assistance initiatives. Continued strong gender norms continue to associate farming and landholding with males, limiting the access to land, credit, training and appropriate technologies, and constraining the autonomy of Indigenous women. The visibility of these inequalities has increased together with a set of changes affecting rural areas at large.

Agro-export production expansion, land privatisation and extractive industries have reconfigured Indigenous territories, these are framed as development but primarily benefit external actors rather than communities.

For Indigenous women they have resulted in heavier work burdens, insecurity, and loss of traditional practices and access to land, water, forests and other natural resources. Indigenous women, however, do not passively respond to the process. Through community organisations, associations and movements of Indigenous organisations, Indigenous women collectively challenge these structures and participate in struggles for land, water and the defence of territories, for their food sovereignty and for the pursuit of a different vision of rural development.

Their action goes far beyond adaptation to development and they seek to de-construct and transform the socio-cultural and institutional structures causing gender inequalities. An important facet of resistance consists in the defence of land, water and food sovereignty; Indigenous women have played central roles in defending lands against the expansion of mining and industrial agriculture and in seeking to regain control over territories and resources. Land represents for them not only an economic asset but the foundation of identity, memory, cultural continuity and sovereignty.

Resistance also takes the shape of preserving agricultural traditions and indigenous knowledge: the practices of organic farming (agroecology), seed conservation and biodiversity protection contribute to their sustainability and strengthen their food sovereignty.

Also, Indigenous women increasingly challenge inequalities in the community and society, they are becoming more visible in leadership, local government and advocacy campaigns for land and rights; although structural obstacles persist. Overall, the feminization of agriculture must be understood as part of wider structural processes that affect rural women in Latin America in a gendered and ethnic dimension, but Indigenous women demonstrate resilience and agency in defending their livelihoods and advocating for change.

4.2. Discussion and reflections

The results of this study indicate that climate change and agricultural transition in Latin America are not independent processes but rather closely interlinked ones that, in turn, influence environmental conditions, farming practices and rural livelihoods – with Indigenous people bearing some of the brunt. Framing this research through a political-economic perspective illuminates how environmental degradation and agricultural change are linked to wider patterns of inequality and uneven resource distribution. With regard to the first research question the literature points to climate change and agricultural transition reinforcing the vulnerability of rural Indigenous communities.

Traditional forms of agriculture are undermined by environmental degradation and changing weather patterns and falling biodiversity, whilst increased expansion of industrial forms of agriculture reduce diversity of crop types and increase dependence on imported external resources and markets.

Thus a loss of food sovereignty and insecure livelihoods result. These results are consistent with the political ecology of agriculture approach, which specifically focus on the relationship between environmental change, power relations and distribution of resources. Furthermore, this study also found evidence that agricultural transition not only impacts on environmental resources but also Indigenous knowledge systems which are ignored under industrial agriculture paradigms. This is due to the continued legacy of colonial land relations, neo-liberal development and resource extraction.

In respect to the second research question regarding the experiences of Indigenous women, evidence showed that women suffer most due to structural gender inequalities, whereby access to land, credit, institutional support and decision-making opportunities is restricted.

This problem is intensified as gender role changes during the feminisation of agriculture increase women's farming responsibilities. The literature does however show that Indigenous women are not just passive recipients of negative environmental impacts but are actively involved in sustainable ways of managing their environment, such as through engaging in agroecological initiatives and the defence of their land. The findings highlight the coexistence of vulnerability and agency and are partially aligned with ecofeminist perspectives by highlighting the interconnection between environmental exploitation and gender inequality.

Although, some of ecofeminism does not sufficiently highlight the political agency of Indigenous women of Latin America as it goes beyond only environmental stewardship and encompass the defence of their right to their land and self-determination. Another relevant finding of this research is the gap between policy recognition of rights and practical implementation, as many Latin American states, despite legal reforms concerning Indigenous rights and gender equality, demonstrate weak institutional frameworks, which hinder the actual realization of rights for Indigenous people. This shows that without fundamental social structural change legal frameworks alone are insufficient.

This study also has limitations in as much as it relies on secondary qualitative material; it is therefore dependent on available literature and is limited in scope, due to the sheer diversity of the experience of Indigenous women throughout Latin America.

Future studies should use ethnographic methodologies or the participation of Indigenous women to overcome such limitations and reinforce the findings. In sum, this research has demonstrated that climate change, agricultural transition and gender inequality are mutually constituted issues. This requires an holistic approach which tackles environmental justice, gender inequality and incorporates the recognition of indigenous knowledge. Whilst Political ecology and ecofeminism offer useful

frameworks for the analysis, this study emphasizes that a more focused attention needs to be given to the historically shaped, local, culturally grounded experience of Indigenous women throughout Latin America.

Chapter 5. Conclusions and Limitations

5.1. Conclusions

At this stage, it is appropriate to revisit the two research questions that guided this study. The first addresses how the gendered dynamics of agricultural transition and climate change shape and reinforce vulnerability among Indigenous rural communities in Latin America. The second examines why Indigenous women in rural Latin America are uniquely vulnerable to climate change and explores the strategies through which they and their communities can protect themselves under such challenging circumstances.

The findings of this study demonstrate unambiguously that agricultural transition and climate change are interconnected phenomena that collectively create conditions of increasing vulnerability for Indigenous rural communities.

The following summary condenses the main findings into three sentences while preserving the original meaning:

Changing climatic conditions, such as rising temperatures, erratic precipitation, and more frequent and intense weather events, are causing the disintegration of many systems upon which communities depend. These systems are grounded in biodiversity and local, ecologically specific knowledge that is deeply connected to culture, place, and cosmology. Simultaneously, the expansion of market-oriented agricultural systems based on monocultures and intensive external inputs undermines sovereignty over resources and knowledge.

These two phenomena occur within an increasingly globalized capitalist system driven by extractivist logic, where expansionist agro-industrial production and other export-oriented activities contribute to land grabs, dispossession, and environmental degradation. Vulnerability manifests in multiple, interrelated forms: ecological stress, social disintegration, economic insecurity, marginalization, and cultural erosion. These dimensions interact and reinforce one another, resulting in increasingly complex forms of exclusion and oppression for Indigenous peoples in their interactions with external actors. Regarding the second research question, the evidence indicates that Indigenous rural communities,

particularly Indigenous women, develop various strategies to protect their livelihoods, although these strategies remain constrained by structural limitations.

The development of alternative models for adaptation to environmental and socio-economic changes constitutes a central strategy, highlighting the critical role of women in ecological and social regeneration.

For example, increased emphasis on local and Indigenous food systems, seed conservation, biological control, and soil conservation fosters resilience and food security while strengthening food sovereignty and control over territories and resources. Collective organization of women at the grassroots level has enhanced their capacity to advocate for territorial rights, resource protection, and participation in collective decision-making regarding resource use and management. Legal approaches also constitute a significant avenue through which women seek access to resources, entitlements, and decision-making processes.

Various policy interventions have been implemented in the region to protect land rights and promote gender equality, including agrarian reform processes and legislation recognizing women's rights to joint property ownership and use in several countries. Despite these advances, significant challenges persist, such as implementation gaps and unequal access to secure land tenure, due to patriarchal social relations, weak law enforcement, and inadequate awareness of rights (World Bank, 2026).

These findings align with recent developments in international climate and environmental governance. Since 2022, international organizations have increasingly recognized that effective climate adaptation and sustainable resource management require the meaningful participation of Indigenous Peoples and women in decision-making processes. The Kunming–Montreal Global Biodiversity Framework (Convention on Biological Diversity, 2022), the COP28 Joint Statement on Climate, Nature and People (COP28 Presidency, 2023), and the COP29 Baku Workplan under the Local Communities and Indigenous Peoples Platform (UNFCCC, 2024) all emphasize the importance of protecting Indigenous knowledge systems, strengthening land tenure security, promoting

gender-responsive climate policies, and ensuring the effective participation of Indigenous communities in environmental governance. These developments reinforce the central argument of this study: addressing climate change is inseparable from issues of social justice, gender equality, and Indigenous rights, and there is growing international recognition of Indigenous women as key actors in climate adaptation and sustainable development.

In summary, this analysis identifies a clear dual tendency among Indigenous rural communities in Latin America. First, the evidence highlights the vulnerability of Indigenous rural women to climate change and agricultural transition processes driven by extractivist and capitalist models. Second, it demonstrates the significant capacities of Indigenous women to resist these models through various social and ecological strategies, and to a lesser extent, legal frameworks. However, these efforts are unlikely to be effective without fundamental structural changes, including robust policy measures addressing environmental justice, gender equity, and the integrated recognition of Indigenous knowledge.

5.2. Limitations

This thesis qualitatively investigates gendered aspects of agricultural transition and climate change in Indigenous rural communities in Latin America. Although the study presents a general overview of the subject matter under consideration, it should be mentioned that the study has limitations which will be set forth and considered in this section. Firstly, the thesis is exclusively qualitative, i.e., it relies on secondary data in the form of peer-reviewed academic papers, books and institution reports. While such data allows for the breadth and depth of analysis it denies the researcher access to local communities, their lived experiences (in particularly of women) of everyday life and their specific and culturally embedded forms of knowledge and action.

Secondly, the research adopts a continental scope, i.e. An analysis of Latin America as a whole. This is problematic since Indigenous

communities throughout Latin America are extremely heterogeneous, not only with regard to their cultural background, language and history, but also with regard to their politico-economic contexts and circumstances. The thesis can therefore neither claim to provide representative findings across all Indigenous communities nor to represent homogenous groups within those communities, i.e. Internal differentiations within rural Indigenous groups. Thirdly, using existing literature inherently means the researcher has access to only selected knowledge on Indigenous realities produced in Western academic institutions. Such sources may reflect partial knowledge and perceptions or may exclude certain perspectives of indigenous peoples on environmental and climate change and socio-economic transition.

Fourthly, the study regards Indigenous women as a singular category: as such it oversimplifies complex power relations with regard to race, ethnicity, class, age, region, education and the community roles held by women within those diverse settings. This has the danger to hide important variations concerning experiences of climate change and agrarian transitions in various context. Fifth, by case study focused on Arhuaco communities in Colombia, and supported by some examples of additional case studies, I restrict the comparison. While I do believe that the case studies can inform the discussion of general trends at the continental level, they cannot claim to be representative of all socio-political and environmental contexts present across Latin America. Accordingly, I should emphasize that not all context-specific differences and trends are presented, and that my analytical focus cannot be presented as generally representative.

Finally, due to the qualitative nature of the thesis, quantitative generalisations can neither be made, nor is this aim presented. The analytical insights provided should therefore be interpreted as highly context-specific and interpretative. The ideal future research on the gendered dimensions of agricultural transition and climate change would build on and be integrated with ethnographic research and community-based approaches such as semi-structured interviews, participatory research and qualitative analysis of local narratives, knowledge and practices. Furthermore a more localized analysis could highlight the heterogeneity of context-specific responses among different

indigenous communities and geographical areas, and may thus contribute to a more precise analytical framework.

Chapter 6. Glossary

Agricultural Transition

The process through which traditional, subsistence-based agricultural systems are transformed into industrialized, market-oriented models, often characterized by monocultures, technological inputs and integration into global markets.

Climate Change

Long-term alterations in temperature, precipitation patterns and extreme weather events, largely driven by anthropogenic activities, which significantly affect ecosystems, agriculture and human livelihoods.

Gendered Dimensions

The ways in which social roles, norms and power relations between genders shape differential access to resources, responsibilities and vulnerabilities within socio-economic and environmental processes.

Feminization of Agriculture

A structural process in which women increasingly participate in agricultural production, often due to male out-migration, economic pressures and demographic changes, without corresponding access to resources or decision-making power.

Indigenous Rural Communities

Social groups living in rural areas who maintain ancestral ties to land, distinct cultural identities, traditional knowledge systems and community-based modes of organization.

Vulnerability

The degree to which individuals or communities are susceptible to harm due to exposure to environmental, economic or social stressors, combined with limited capacity to adapt or respond.

Political Ecology

An interdisciplinary framework that explores how political, economic, and social processes shape environmental change, with particular attention to power relations, inequality, and access to resources.

Ecofeminism

A theoretical approach that examines the links between the exploitation of nature and the oppression of women, focusing on interconnected systems of domination and advocating more just and sustainable alternatives.

Extractivism

An economic model based on the large-scale extraction of natural resources for export, commonly associated with environmental degradation, social inequality, and the marginalisation of local communities.

Food Sovereignty

The right of communities to define and control their own food systems, including how food is produced, distributed, and consumed, grounded in local knowledge, cultural practices, and sustainability.

Agroecology

A sustainable approach to agriculture that combines ecological principles with traditional knowledge, supporting biodiversity, soil health, and locally based farming systems.

Dispossession

The process through which communities are displaced from land, resources, or decision-making power, often linked to capitalist expansion and extractive forms of development.

Chapter 7. References

Acosta, Alberto (2013). Extractivism and neoextractivism: Two sides of the same curse. In M. Lang & D. Mokrani (Eds.), *Beyond development: Alternative visions from Latin America* (pp. 61–86). Rosa Luxemburg Foundation. Available at:

https://www.tni.org/files/download/beyonddevelopment_extractivism.pdf

Altieri, M. A., & Toledo, V. M. (2011). The agroecological revolution in Latin America: Rescuing nature, ensuring food sovereignty, and empowering peasants. *The Journal of Peasant Studies*, 38(3), 587–612. Available at: <https://doi.org/10.1080/03066150.2011.582947>

Bryant, R. L. (1998). Power, knowledge and political ecology in the third world: a review. *Progress in Physical Geography: Earth and Environment*, 22(1), 79-94. Available at: <https://we.riseup.net/assets/568594/bryant.pdf>

Cediel-Becerra NM, Prieto-Quintero S, Garzon ADM, Villafañe-Izquierdo M, Rúa-Bustamante CV, Jimenez N, Hernández-Niño J and Garnier J (2022). Woman-Sensitive One Health Perspective in Four Tribes of Indigenous People From Latin America: Arhuaco, Wayuú, Nahua, and Kamëntsá. *Front. Public Health* 10:774713. Available at: <https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2022.774713/full>

Convention on Biological Diversity (CBD). (2022). *Kunming–Montreal Global Biodiversity Framework*

COP28 Presidency. (2023). Joint Statement on Climate, Nature and People

Cruz-Saco, M. A. (2018, May 15–16). *Indigenous communities and social inclusion in Latin America*. Paper presented at the United Nations Expert Group Meeting on Families and Inclusive Societies, New York, NY, United Nations Headquarters. Available at: <https://www.un.org/development/desa/family/wp-content/uploads/sites/23/2018/05/2-1.pdf>

Deere, C. D. (1998). *Gender, land, and water: From reform to counter-reform in Latin America*. IWMI Books & Reports. Available at: https://www.academia.edu/107924124/Gender_land_and_water_from_reform_to_counter_reform_in_Latin_America

Deere, C. D. (2005). *The feminization of agriculture? Economic restructuring in rural Latin America* (UNRISD Occasional Paper No. 1). United Nations Research Institute for Social Development. Available at: <https://www.econstor.eu/bitstream/10419/148788/1/862541824.pdf>

Glazebrook, T. (2020). Gender matters: Climate change, gender bias, and women's farming in the Global South and North. *Agriculture*, 10(7), 267. Available at: <https://www.mdpi.com/2077-0472/10/7/267>

Greenberg, James. (1994). James B. Greenberg 1994 Political Ecology: Editors Preface. with Thomas K. Park. *Journal of Political Ecology*. Vol 1:1-12.. *Journal of Political Ecology*. Vol 1. 1-12. Available at: https://www.researchgate.net/publication/262005864_James_B_Greenberg_1994_Political_Ecology_Editors_Preface_with_Thomas_K_Park_Journal_of_Political_Ecology_Vol_11-12

Guáqueta-Solórzano, V.-E., et al. (2022). *Indigenous perceptions and adaptive responses to the impacts of climate variability in the Sierra Nevada de Santa Marta, Colombia*. *Frontiers in Climate*. Available at: <https://www.frontiersin.org/journals/climate/articles/10.3389/fclim.2022.910294/full>

Lastarria-Cornhiel, S. (2008). *Feminization of agriculture: Trends and driving forces*. World Development Report 2008 background paper. World Bank. Available at: <https://documents1.worldbank.org/curated/en/655741468338477909/pdf/41367optmzd0Fe1Agriculture01PUBLIC1.pdf>

Medina, Edwin Rubio., & Quintana Luisa Castaneda., (2024), *Between Voices and Silence: Indigenous Women and Sexual Offenses by Men Among the Arhuaco People*, Sage, Vol. 30(14) 3776–3795. Available at: <https://journals.sagepub.com/doi/pdf/10.1177/10778012231179216>

Rocheleau, D., Thomas-Slayter, B., & Wangari, E. (Eds.). (1996). *Feminist Political Ecology: Global Issues and Local Experiences*.

London & New York: Routledge. Available at:
https://www.researchgate.net/publication/322995090_Feminist_Political_Ecology_Global_Issues_and_Local_Experiences_Dianne_Rocheleau_Barbara_Thomas_Slayter_and_Esther_Wangari_eds_London_and_New_York_Routledge_1996_Reviewed_by_Helen_Ross

Silva Santisteban, R. (Ed.). (2020). *Indigenous women & climate change* (ISBN 978-87-93961-00-5). International Work Group for Indigenous Affairs (IWGIA); Servindi; ONAMIAP; COHARYIMA. Available at:
<https://iwgia.org/en/resources/publications/3537-indigenous-women-and-climate-change.html>

Parraguez-Vergara, E. (2018). *Does Indigenous and campesino traditional agriculture have anything to contribute to food sovereignty in Latin America? Evidence from Chile, Peru, Ecuador, Colombia, Guatemala and Mexico*. International Journal of Agricultural Sustainability, 16(3), 254–271. Available at:
<https://www.tandfonline.com/doi/full/10.1080/14735903.2018.1489361>

Ulloa, A. (2017). *Perspectives of environmental justice from Indigenous peoples of Latin America: A relational Indigenous environmental justice*. Environmental Justice, 10(4), 144–149. Available at:
<https://journals.sagepub.com/doi/pdf/10.1089/env.2017.0017>

United Nations Framework Convention on Climate Change (UNFCCC). (2024). *COP29 Baku Workplan under the Local Communities and Indigenous Peoples Platform (LCIPP)*

UNFCCC. (2024). *Decision 7/CP.29: Enhanced Lima Work Programme on Gender*

World Bank. (2026). *Secure land rights unlock women's economic potential*. Available at:
<https://www.worldbank.org/en/results/2026/04/27/secure-land-rights-womens-economic-potential>