Environmentalities, subjectivities, and adaptation capacities in Costa Rican smallholder farms

Carolina Castillo[1]

University of Costa Rica, Costa Rica

Abstract

This article explores how different forms of adaptation governance in Costa Rica shape subjectivities and adaptation capacities in smallholder farms. The country presently has a neoliberal-welfare state structure that stems from the progressive transition of its welfare state to neoliberalism. Drawing on literature on environmentality and based on field work through three localities in Costa Rica, it is argued that the country's neoliberal-welfare state structure has resulted in some localities displaying an adaptation governance aligned with neoliberal environmentality, while others align with welfare environmentality. Based on in-depth interviews with farmers and their families, it discusses how the capacity of smallholder farms to adapt to climate change tends to vary, as each form of adaptation governance possesses a particular rationality and uses different technologies of governance, resulting in different framings of adaptation and available resources and services, such as financial aid for adaptation, climate change information, and training. Moreover, drawing on Feminist Political Ecology, the article analyses how these forms of governance seek to produce subjectivities and how farmers respond to these efforts through their engagement with adaptation. The article concludes that the lessons learned from these different scenarios can serve policymakers and political leaders in other similar development contexts to have a better sense of the direction their climate adaptation policies should take so they can promote climate justice.

Keywords: Environmentality, climate change, adaptation, smallholder farms, gender

Résumé

Cet article explore comment les différentes formes de gouvernance de l'adaptation au Costa Rica façonnent les subjectivités et les capacités d'adaptation des petites exploitations agricoles. Le pays est actuellement doté d'une structure d'État-providence néolibérale, issue de la transition progressive de son État-providence vers le néolibéralisme. S'appuyant sur la littérature sur l'environnementalisme et sur des travaux de terrain menés dans trois localités du Costa Rica, l'auteur soutient que cette structure a conduit certaines localités à adopter une gouvernance de l'adaptation alignée sur l'environnementalisme néolibéral, tandis que d'autres s'alignent sur l'environnementalisme du bien-être. S'appuyant sur des entretiens approfondis avec des agriculteurs et leurs familles, l'article examine les variations de la capacité des petites exploitations agricoles à s'adapter au changement climatique. Chaque forme de gouvernance de l'adaptation possède une rationalité particulière et utilise des technologies de gouvernance différentes, ce qui se traduit par des cadrages d'adaptation et des ressources et services disponibles différents, tels que l'aide financière à l'adaptation, l'information sur le changement climatique et la formation. De plus, s'appuyant sur l'écologie politique féministe, l'article analyse la manière dont ces formes de gouvernance cherchent à produire des subjectivités et la manière dont les agriculteurs répondent à ces efforts par leur engagement dans l'adaptation. L'article conclut que les enseignements tirés de ces différents scénarios peuvent aider les décideurs et les dirigeants politiques dans

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[1] Carolina Castillo, Professor at the School of Sociology at the University of Costa Rica. Email: Carolina.castillo_e@ucr.ac.cr. This article is a result of my doctoral research, conducted at the Central European University. I want to express my gratitude to my supervisors, Violetta Zentai and Guntra Aistara, as well as the people who took part in the research. Also, thank you to the reviewers of this article for their comments and the editors of the *Journal of Political Ecology*.

d'autres contextes de développement similaires à mieux cerner l'orientation que devraient prendre leurs politiques d'adaptation au changement climatique afin de promouvoir la justice climatique.
Mots-clés: Environnementalité, changement climatique, adaptation, petites exploitations agricoles, genre

Resumen

Este artículo explora cómo las diferentes formas de gobernanza de la adaptación en Costa Rica moldean las subjetividades y las capacidades de adaptación de las pequeñas fincas agrícolas. Este país tiene actualmente una estructura de estado de bienestar-neoliberal que surge de la transición progresiva de su Estado de Bienestar al neoliberalismo. A partir del estudio de tres localidades costarricenses y tomando como referencia la literatura sobre ambientalidades, se argumenta que esta estructura de estado de bienestar-neoliberal ha desembocado en que algunas localidades presentan una gobernanza de la adaptación que concuerda con en el ambientalismo neoliberal y otras con el ambientalismo de bienestar. A partir de entrevistas en profundidad con agricultores y sus familiares, se discute cómo tiende a variar la capacidad de las pequeñas fincas para adaptarse al cambio climático, ya que cada forma de gobernanza de la adaptación posee una racionalidad particular y utiliza diferentes tecnologías, lo que resulta en diferentes formar de enmarcar la adaptación y en la disponibilidad de recursos y servicios, como financiamiento para la adaptación, información sobre el cambio climático y capacitación. A su vez, el artículo utiliza la Ecología Política Feminista para analizar cómo estas formas de gobernanza buscan producir subjetividades y cómo los individuos responden a estos esfuerzos a partir de su participación en la adaptación. El artículo concluye que las lecciones aprendidas de estos diferentes escenarios podrían servir a los formuladores de políticas y líderes políticos en otros contextos de desarrollo similares para tener una mejor idea de la dirección que deben tomar sus políticas de adaptación climática para poder promover la justicia climática.
Palabras clave: Ambientalidades, cambio climático, adaptación, pequeñas fincas agrícolas, género

1. Introduction

Adaptation has become a necessity for agricultural farmers across different regions to minimize climate change impacts (Donatti *et al*., 2018; Harvey *et al*., 2014; Keshavarz & Soltani, 2021; Kwadwo & Asantewaa, 2016; Morton, 2007; San-Luo *et al*., 2017), but it encompasses much more than technical solutions (Eriksen *et al*., 2015; Nightingale, 2017). Feminist Political Ecology (FPE) scholarship has provided insight into adaptation as a process shaped by power and politics, rather than reducing it to a technical response to biophysical changes (Eriksen *et al.*, 2015; Nightingale, 2017; Hackfort & Burchardt, 2016; Gonda, 2019). This means that adaptation is subject to social dynamics, as it takes place in contexts that can be characterized by social inequalities and power disputes – or cooperation – which can influence how the adaptation process occurs (Eriksen *et al.*, 2015; Gonda, 2019). The literature shows that due to the intersections of power structures, such as gender, class, race and other variables, that operate at different scales and between/within entities and individuals, actors differ in the way they are impacted by climate change and their abilities to adapt (Eriksen *et al*., 2015; García & Tschakert, 2022; Garcia *et al*., 2021; Gonda, 2019). The governance of adaptation, then, involves a diversity of actors across different scales, some with greater power than others, who seek to influence how adaptation occurs; therefore, it is a highly negotiated and contested process (Eriksen *et al*., 2015). Through these processes, existing power structures and subjectivities can become reproduced, enforced or challenged simultaneously, thus proving the complex interplay between structures and agency (Eriksen *et al*., 2015). However, more knowledge is needed on how subjectivities are produced in relation to adaptation (Eriksen *et al*., 2015).

In this article, I contribute to a wider comprehension of the politics of adaptation, understood as "political interactions that shape adaptation decision making, and efforts entangled within a patchwork of policies, interventions, and everyday actions" (García & Tschakert, 2022, p. 656), by analyzing how this process is negotiated between state and non-state entities at a subnational scale and smallholder farmers throughout three localities in Costa Rica. Costa Rica represents an interesting empirical case study because it currently displays a neoliberal-welfare state governing structure, which is evidenced in its environmental and climate governance (Fletcher, 2013; Fletcher *et al*., 2020). Like other countries in Latin America, Costa Rica began its transition to neoliberalism in the 1990s, but it has managed to do so progressively, allowing it to keep a restructured version of its welfare state (Sandbrook *et al*., 2007). I bring together literature on climate adaptation and

"environmentalities"[2], to analyze two forms of environmental governance in Costa Rica related to adaptation: *neoliberal* (Fletcher, 2010) and *welfare* (Boer, 2017). By analyzing two localities aligned with neoliberal environmentality and one with welfare environmentality, I show that each form of governance involves local entities and policies that play a significant role in shaping the adaptation capacities of individuals and smallholder farms, by focusing on what resources are available for adaptation and, at the same time, how people and smallholder farms navigate adaptation in these contexts.

Moreover, I will discuss how these local entities and policies seek to produce subjectivities related to adaptation and how individuals respond to these efforts. Literature on environmentality proposes that environmental governance cultivates environmental subjectivities (Fletcher, 2020; Pandya, 2022), although further research is needed (Fletcher & Cortes-Vazquez, 2020), particularly from a gender perspective (Pandya, 2022). The adaptation literature also discusses how subjectivities are produced through adaptation processes and how entities and policies take part in this "subjectivation" process, because they seek to produce certain subjects through discourses and practices, which can in turn lead to individuals internalizing or challenging them (García & Tschakert, 2022; Eriksen *et al*., 2015; Gonda, 2019).

This article builds upon these two bodies of literature by addressing how neoliberal and welfare environmentalities seek to intersect gender and environmental behaviors, in this case towards climate adaptation, to produce subjectivities. By focusing on gender as the entry point and drawing on Bacchi's (2016) notion of policies as "gendering practices," I show that in some cases state and non-state entities and their policies use gender categories that guide how resources are allocated. They seek to stimulate the ability of some people to adapt, while limiting others, which is a way of shaping power relations through adaptation. At the same time, it ties them to the (re)production of subjectivities. However, when entities and policies part from a gender-aware approach, they can restructure gender relations and promote adaptation capacities more equally, while enabling other subjectivities to emerge (Resurrección *et al*., 2019; Roy *et al*., 2022; Eriksen *et al*., 2015). I also show how actors experience these policies and negotiate these subject positions through their role in adaptation. Using an intersectional approach, I analyze the subjectivities that emerge in the intersections of gender, land tenure, and place, sometimes conveying the internalization of normative gender constructs and undertaking adaptation as intended by entities, while other times using adaptation as a means to defy these subjections.

The article is structured as follows. The next section contains theoretical and conceptual references, followed by the national context, case selection, and research methods. After that, in the results, I focus on the effects of the two environmentalities, neoliberal and welfare, by discussing how each field site presents a specific set of public and private entities that are related to agriculture. I analyze the services and resources available to farmers, such as finance, information, and training, and how they shape the adaptation capacities of smallholder farms. Then, I discuss how gender policies together with specific forms of environmental governance shape the emergence of subjectivities, as well as capacities for adaptation.

2. Theoretical underpinnings

In this section, I first address the concept of adaptation and its governance, drawing on the theory of environmentalities. This framework is useful for considering the existence of different forms of adaptation governance and how they influence adaptive capacities. I then address how environmentalities work to produce environmental subjectivities. However, few of these studies consider gender and other categories of difference, and to address this shortcoming I turn to Feminist Political Ecology and its contributions regarding adaptation, power, and agency to discuss how intersectional subjectivities are produced.

Climate adaptation and its governance

Adaptation is necessary in a climate change context to minimize risks. According to Ford *et al*. (2010), it comprises: "The actions taken to reduce or moderate or adjust to the expected or actual negative effects of

[2] Fletcher asserts there are various forms of environmental governance or "environmentalities" with specific rationalities, principles, and policies.

climate change and take advantage of new opportunities" (p. 2). They can be categorized into different types, such as coping strategies (reactive responses), incremental adaptation (anticipatory strategies), and transformational adaptation (long-term and profound changes that address the root causes of vulnerabilities) (Fedele *et al*., 2019). Although adaptation may seem very technical, feminist scholarship has evidenced that these actions and the means needed to implement them are shaped by power dynamics and social inequalities (Hackfort & Burchardt, 2016; Kaijser & Kronsell, 2014). Therefore, adaptation is much more than practical responses to climate change; it is a political and contested process (Eriksen, Nightingale & Eakin, 2015) whose governance involves a variety of actors with different powers and characteristics, at different scales and fronts, advocating for different choices (Glover & Granberg, 2020; Teermer *et al*., 2017; Kronsell, 2013). It can also adopt international/national top-down approaches, as well as be arranged at sub-national levels and with bottom-up approaches (Huitema *et al*., 2016; Teermer *et al*., 2017).

Moreover, its governance can be motivated by rationalities and technologies that take different forms (Fletcher, 2010). I draw on the environmentalities framework, which recognizes the existence of different types of environmental governance, to propose and argue that adaptation governance can also take on different characteristics (Fletcher, 2010). Inspired by Foucault's work on "governmentality,"[3] Fletcher argues there are "multiple environmentalities,"[4] which are types of environmental governance with distinct strategies and rationalities that guide natural resource management (Fletcher, 2010). The most relevant in this case is neoliberal environmentality, which is a type of environmental governance that relies on market-based mechanisms that drive the environmental behavior of individuals based on costs and benefits (Fletcher, 2010). It depends on the market to distribute public services and benefits, which are not distributed evenly, and draws on these market mechanisms to incentivize individuals to take certain environmental actions in exchange for economic retribution (Boer, 2017). So, environmental management becomes an individual responsibility instead of a shared social goal (Boer, 2017).

Following Fletcher's theory, Boer (2017) proposed another form of environmental governance which he called "welfare environmentality," based on his study of the government-funded REDD+ program in Indonesia. Boer (2017) explains:

> Under welfare environmentality the state redistributes benefits, rights, and services to targeted communities or sectors, and linking these to improved production and consumption practices. By providing certain rights to employment, health, and education the state exchanges livelihood options and security in return for recipients adopting responsibility for environmental care (p. 796).

Welfarism implies a State-centric type of governance because the State intervenes in shaping the lives of citizens and society by providing services and benefits, expecting to promote, in turn, the collective management of natural resources (Boer, 2017). In other words, it implies a certain rationality based on the premise that the State can engage individuals in social environmental management and protection by ensuring their collective rights, such as resources and land distribution (Boer, 2017). Using these types of technologies (policies, laws, procedures, and others), the State can improve the socioeconomic conditions of citizens, and, at the same time, these individuals become partners to the State in pursuit of social and environmental goals (Boer, 2017).

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[3] Defined as: "The ensemble formed by institutions, procedures, analyses and reflections, calculations, and tactics that allow the exercise of this very specific, albeit very complex, power that has the population as its target, political economy as its major form of knowledge, and apparatuses of security as its essential technical instrument" (Foucault, 2004, p. 108).

[4] They can be summed up as 1) neoliberal environmentality, which relies on market-based mechanisms that drive individuals' environmental behavior based on costs and benefits; 2) disciplinary environmentality, which creates certain subjects based on ethic principles; 3) sovereign environmentality, based on a top-down approach through which certain behavior is enforced; 4) truth environmentality, which is based on certain beliefs, like religion or traditional knowledge for example (Fletcher, 2010, 2020).

This "environmentalities" framework has hardly been used in adaptation research[5], but I find it useful to better understand the effects of these two forms of governance on adaptation and the capacities of people and their farms to respond to climate change. Adaptation capacities are "a vector of resources and assets that represents the asset base from which adaptation actions and investments can be made" (Vincent, 2007, p. 13). In this case, central to my argument is that smallholder farmer's adaptation capacities vary according to the form of governance, as each farm works with a particular rationality and uses different technologies of governance (Fletcher, 2010; Boer, 2017), resulting in different framings of adaptation and available resources and services. This is especially significant as we face a global context in which the trend is to shift towards a neoliberal environmental and climate governance where actions, such as adaptation, are promoted as an autonomous endeavor with responsibility placed on individuals and households (Ciplet & Roberts, 2017; Vatn, 2018; Stoner, 2021; Lucas & Booth, 2020). According to Arora-Jonsson (2014), since around 2000 there has been a shift in thinking from "government" to "governance", meaning that management is no longer the exclusive responsibility of the State and now involves other non-state actors, such as individuals.

Negotiating subjectivities and adaptation capacities

In this context of transition, where expectations seem to be increasing that individuals assume a predominant and autonomous role in adaptation, it is particularly important to understand how subjectivities are shaped by different forms of environmental governance. According to Fletcher (2020) and Pandya (2022), these forms have the effect of producing subjectivities through the encouragement of certain environmental behaviors. Fletcher (2020) mentions that "as alternative governing philosophies, different governmentalities can be understood to embody divergent principles or rationalities that in turn prescribe different policies and forms of subjectivity" (p. 489). Agrawal (2005) was the first to coin the term "environmental subjects" to refer to those who grow to care for the environment because of technologies of environmental governance that promote conservation. Yet, it has been acknowledged that not all governance technologies are effective at promoting conservation or other behaviors, so more studies are required to better understand how certain subject positions are used by different modes of environmental governance and the actual effects they have in producing subjectivities (Fletcher, 2017; Choi, 2020). Choi (2020), for example, maintains that there are multiple environmentalities linked to ecotourism in Jeungdo, South Korea, which result in multiple environmental subjectivities due to how individuals negotiate with governmental technologies, sometimes behaving as caretakers of the environment but in other cases behaving in contradictory or surprising ways.

There are few studies that consider how these processes are mediated by gender and other categories of difference (Pandya, 2022). Pandya, for example, mentions the need to carry on more intersectional research that includes gender, which she applies herself in the analysis of how women negotiate their subjectivities in the context of neoliberal environmentalities through their involvement in ecotourist programs in Uttarakhand, India (Pandya, 2022). In her study, she finds that class, caste, and gender conflate, shaping women's engagement with tourism. She also argues that environmentalities do not always turn individuals into environmental subjects that display eco-friendly behaviors.

Based on this scholarship, I argue that environmentalities seek to promote certain behaviors towards the environment, which I propose in this case to be climate adaptation. At the same time, individuals possess the ability to negotiate how they want to engage in these forms of governance, as well as their subjectivities (Pandya, 2022). The latter coincides with the importance that has been given by Feminist Political Ecology (FPE) and other feminist scholarship to the investigation of subjectivities and their emergence from the power dynamics that operate around adaptation governance (García *et al*., 2021; Gonda, 2019; Bee *et al*., 2015). Power is seen in this case "as the fluid and dynamic relations (both oppressive and liberating) between individuals, groups, and institutions that shape how adaptation is negotiated and enacted across levels and scales of decision making" (García *et al*., 2021, p. 191). Power, then, is central to these adaptation processes, as there are actors with different positions of power who seek to compete for authority and influence adaptation decisions at different scales (Eriksen *et al*., 2015; Nightingale, 2017). In this manuscript, the focus is on how subjectivities

[5] Exceptions are the research by Boyd *et al*. (2014) and Mills-Novoa *et al*. (2020).

emerge from the way adaptation is negotiated between entities at the subnational scale and individuals. Amid these processes, subjectivities derive from individual experiences shaped by power, and they are fluid and susceptible to change, as opposed to identity, understood as fixed (Bee, 2019; García & Tschakert, 2022; Ford & Noorgard, 2020). As Eriksen *et al*. (2015) suggest, "a focus on subjectivity therefore brings into view two crucial processes within climate change adaptation: how individuals come to be positioned in relation to adaptation efforts and how people understand themselves within those processes" (p. 528).

Based on the latter, I propose that environmentalities can promote simultaneously gendered and environmental behaviors and subjectivities through the way entities and adaptation policies allocate resources and extension services for adaptation (Assefa & Van Laerhoven, 2016; Ngigi *et al*., 2017; Tschakert & Machado, 2012). To analyze how subjectivities emerge from these processes, special attention will be given to gender as the entry point, which is understood as "a constitutive element of social relations based on the perceived differences between the sexes, and... a primary way of signifying power relations" (Scott, 1986, p. 1067). From this perspective, gender power relations operate within and through entities (Eriksen *et al*., 2015), in the form of underlying norms and values that guide policies (Magnusdottir & Kronsell, 2024). Policies, in turn, can encourage "the production of behaviors and characteristics conventionally associated with those called 'women' and 'men,' which allows them to come into existence" (Bacchi, 2016, p. 1). That is, they can function as gendering practices because of the way they categorize people and how, based on those categories, they promote gendered behaviors (Bacchi, 2016). As a result, they can constantly shape the processes of constituting 'men' and 'women' as "unequal political subjects," which can lead to material and discursive (lived) effects that shape people and their experiences (Bacchi, 2016, p. 1).

Adaptation programs and policies implemented by state and non-state entities can often function as "gendering practices", as they use gender categories to distribute resources and services, thereby seeking to influence the environmental behavior of certain individuals and make them responsible for adaptation at the household level (Nightingale, 2017; Arora Jonsson, 2014; García *et al.*, 2021; Bacchi, 2016). In other words, they mean to produce subjectivities from the intersection of gender with adaptation. At the same time, this involves shaping the capacities of actors to respond to climate change considering that assets and resources are often distributed unevenly based on gender and other categories (Carr & Thompson, 2014; Assefa & Van Laerhoven, 2016; Ngigi *et al*., 2017; Bee, 2013; Erwin *et al*., 2021; Sultana, 2022). FPE research has contributed to showing how multidimensional power structures and social inequalities intersect, shaping the different ways in which climate vulnerabilities are produced, as well as the capacities to adapt (Resurrección, 2017; Kaijser & Kronsell, 2016). For example, in their study, Erwin *et al*. (2021) analyzed how the adaptation capacities of farmers in Peru differed when considering intersections of gender, age, land ownership and other categories. Using a similar approach, the study by Ravera *et al*. (2016) in India highlights how the adaptation capacities of farmers and the adaptations they use vary depending on intersections of gender, age, caste, education, location, and other factors. Hence, the way resources are allocated can promote the adaptation capacity of some while limiting the capacity of others. However, when policies consider gender inequalities and their causes, they can potentially disrupt gender norms and roles, opening up the space to reconfigure power relations and subjectivities, as well as promoting more equal adaptation capacities (Roy *et al*., 2022; Gumucio & Tafur, 2015; Acosta *et al*., 2025; Eriksen *et al*., 2015; Resurrección *et al*., 2019).

Moreover, despite the influence that policies may seek to exert, individuals have the capacity to respond to this process of subjectivation in different ways, so subjectivities are constantly undergoing transformation (Bacchi, 2016; Gonda, 2019; Eriksen *et al*., 2015). For example, 'men' and 'women' are neither fixed nor essentialized categories, especially when considering how they intersect with other identity categories (Butler, 2004). For this reason, I am also interested in how intersections of gender with other dimensions of difference shape "intersectional subjectivities" or experiences that, in the face of that power, respond to it, either by internalizing and conforming to the norm or by resisting and challenging it (García & Tschakert, 2022). As Gonda (2019) points out, "some subjects comply with the discourse and try to become what they are 'supposed' to be, while others resist or strategically use the discourse to become 'something' else, sometimes outside the discourse" (p. 92). In these last cases, climate adaptation can become a way for certain individuals to exercise agency, which "encompasses the decisions and actions people carry out from within to push back on oppressive regimes that position them as specific, often subordinated, 'subjects' within adaptation processes" (García *et al*.,

2021, p. 191). This means that, just as there are people who express subjectivities that conform to expected environmental and gender behaviors through their role in adaptation, there are those who embrace adaptation as a way of expressing subjectivities that challenge and question these forms of governance, thereby redefining power dynamics. Therefore, it is important to highlight that the capacity to adapt is not only dependent on the resources available to each person, but it is also linked to people's subjectivities, because depending on how they perceive themselves in these processes, they decide if and how they engage in adaptation (García *et al*., 2021). Sometimes this becomes an act of defiance.

3. Research context and methodology

National context and site selection

Costa Rica has gained international recognition for its environmental conservation and for its role as an environmental laboratory that tests climate change policies, mostly centered on mitigation (Fletcher *et al*., 2020; Ramirez, 2020). Nevertheless, it faces great challenges because, like the rest of Central America, it is a climate change "hot spot" in the tropics, due to the reduction in rainfall patterns during the dry season (Ministerio de Ambiente, Energía y Telecomunicaciones. Instituto Meteorológico Nacional, 2012). Hanna *et al*. (2017) and Donatti *et al.* (2019) argue that in Central America, it is mainly smallholder farms that are the most vulnerable because of their great dependence on food systems for their survival, and that the region will suffer due to the effects of rising temperatures on crops.

Specifically in Costa Rica, 40% of the rural population over 15 years old is dedicated to agricultural production, and it constitutes the main source of income for the less formally educated section of the population (Bouroncle *et al*., 2014). Most of the farms in the country are smallholder run and family-owned, which rely on agriculture to subsist (Ruben & Sáenz, 2008). According to official statistics, it is a predominantly male occupation, and 84.4% of producers are men and only 15.6% are women (Instituto Nacional de Estadística y Censo, 2015). Taking into consideration these gender differences, the three rural areas where empirical data were collected were chosen because they have women farmers.[6] Also, these are places where agriculture continues to be an important economic activity for many families (Figure 1).

The first location where research was conducted is southeast of the capital San José. Tierra Blanca and Llano Grande are districts of the Cartago canton, where the majority of livelihoods are based on agriculture. Farmers produce onions, potatoes, carrots, lettuce, and other products in smaller quantities. The second location is northwest of the capital. The villages of San Luis in the district of Bolivar and San Miguel in the district of San Roque belong to the Grecia canton. Agriculture is concentrated in rural areas and mostly employs men (Instituto de Desarrollo Rural, 2015). This canton has traditionally produced sugar cane and coffee. The third location is Cóbano in the Nicoya Peninsula. Of the three, this is the furthest from the capital city. Traditionally, its local economy has been based on agriculture and farming. From pre-colonial times, Indigenous groups settled in this territory, producing crops like corn and beans (Instituto de Desarrollo Rural, 2014), which are still the local traditional products.

[6] The article builds on empirical results that were gathered from broader research that analyzed how gender shapes the constructions of vulnerabilities, adaptation capacities, and resilience of smallholder farms in Costa Rica.

Figure 1: Research locations. Source: Own production using Google Maps

Methods

Fieldwork was conducted throughout 2018, using a qualitative methodology that combined in-depth semi-structured interviews to recover the farms' life histories (Riley, 2010), farm visits, and participant observations. The intent was to delve into participants' subjectivity, including their perceptions, experiences, and understandings of climate change, gender, and agriculture. In total, 61 interviews were conducted with 22 men and 39 women, including farm managers and some of their family members triangulate the results. Therefore, my data comprises participants of different ages (all above 18), places, marital status, and with and without land tenure. The sample was gathered using purposive and snowball sampling (Bryman, 2012). Afterward, the interviews were transcribed and coded using thematic analysis with the assistance of Atlas Ti. Some themes were drawn a priori from the theory and others emerged from empirical data by looking for repetitive topics, similarities and differences, transitions, and missing data, processed through cutting and sorting (Ryan & Bernard, 2003). As for ethical considerations, the research did not pose significant ethical issues, but all normal procedures and best practices concerning informed consent, data storage, anonymity, and confidentiality were carefully followed.

4. Comparing two forms of adaptation governance

In each of the localities under study, there are different entities that directly or indirectly have to do with agriculture. Due to Costa Rica's neoliberal-welfare state governing structure, in each locality entities and their policies enforce a particular environmentality that translates into distinct possibilities for smallholder farms to access resources, which result in differing adaptation capacities. In northern Cartago and to a lesser extent in Grecia, a shift towards neoliberal environmentality is evidenced in the restricted extension services and resources available to farmers from governmental entities. In consequence, farmers' needs have been filled by private actors. Meanwhile, in Cóbano, there is a prominent welfare environmentality centered on governmental entities that offer extension services and resources to farmers. In the next sections, I discuss the organizations that take part in each environmentality and the resources available for farmers. I include resources that are intended for climate adaptation, as well as others that are not specific to that purpose, but that influence the adaptation capacity of farmers. Then, I discuss how each type of adaptation governance works together with

gender policies to encourage the emergence of certain subjects responsible for adaptation and the subjectivities that get produced in response, as well as their adaptation capacities.

The effects of neoliberal environmentality on smallholder farms' adaptation capacities

Most of the entities identified in northern Cartago and Grecia belong to the State, but with the neoliberal turn, there are restricted extension services and resources available to farmers. One of the effects of such a turn is a general opinion among farmers that public institutions are ineffective and unable to comply with their needs. In consequence, they have turned to private institutions to seek support. In Northern Cartago, there are seven governmental institutions[7], but farmers rely mostly on agrochemical distributors for their services, while in Grecia, there are five governmental institutions[8], but coffee cooperatives have filled the gap left by public entities.

In both contexts, there is a lack of alternatives to the State for financing and credit. In northern Cartago, farmers do not have many options. Banks are almost the only source of investment capital, but they offer loans at high interest rates that smallholders are not always sure they can cover. Hence, most consider that banks are not a safe option. Finance, specifically for climate change adaptation, is even more scarce. Farmers agree that the cheapest and most convenient option to deal with the negative effects of climate change, such as rising temperatures and changing rainfall patterns, is to purchase agrochemicals because distributors offer flexible payment conditions. In Grecia, coffee farmers have a few more financial alternatives from coffee cooperatives, such as short-term credits or sourcing equipment at a lower cost. Others have been able to request low-interest bank loans with the mediation of their cooperatives, but loans are not a financially sustainable and secure option for all farmers because of volatile coffee prices, and profits may not necessarily be enough to cover the loans. So, although they have options, what stands out is that there is no specific funding for adaptation.

Several authors point out that financial resources are linked to adaptation capacity because they increase the possibility of making investments needed to deal with climate change (Williams *et al.*, 2019; Gebrehiwot & Van der Veen, 2013; Jiri *et al*., 2017). In these contexts, the lack of financial support from government reflects that farmers are expected and incentivized to undertake adaptation as their responsibility through market mechanisms, which is consistent with neoliberal governance (Stoner, 2021; Fletcher, 2020). But this form of adaptation governance increases the vulnerability to climate change of those already economically vulnerable, since adaptation becomes very difficult to pursue and achieve on their own. Smallholder farmers do not usually produce enough profits to invest in it.

In addition, the lack of financial options restricts farmers' ability to make larger investments in more effective and long-lasting adaptation measures, for which they would require equipment, tools, or other types of input. Young farm manager Sol, from northern Cartago, is familiar with economic limitations. She explains that she would like to install a water tank to harvest water. Still, like other producers, her main restriction is lacking the money to do so. In this regard, she reflects: "Someone can give me an idea, but what if I do not have that money? […] So yes, if I had money, what wouldn't I do?" (personal communication, August 24, 2018). Hence, although farmers might come up with strategies to adapt, their economic situation and the limited options for obtaining financing restrict their possibilities. Their willingness to adapt is constrained by the lack of monetary resources. For instance, co-manager Ana, from Grecia, acknowledges that to adapt and mitigate climate change, people should take care of the soil by reducing the herbicides they use to control weeds. However, they are not able to afford this, because ironically they would have to pay more to laborers to remove weeds by hand. Therefore, in contexts such as northern Cartago and Grecia, smallholder farmers face more financial limitations than opportunities regarding adaptation. Our findings confirm what Williams *et al*. (2019) observed in Ghana among smallholder farmers, for whom adaptation capacity is limited due to their economic constraints.

[7] The Ministry of Agriculture (MAG), the Municipality of Cartago, the National Institute for Women (INAMU), the National Institute of Rural Development (INDER), the National Irrigation, Drainage and Underwater Service (SENARA) and banks.

[8] The Ministry of Agriculture (MAG), the National Institute of Rural Development (INDER), National Institute for Learning (INA), the Coffee Institute (ICAFE), and the Institute of Mixed Social Aid (IMAS)

Furthermore, a neoliberal environmentality can drive farmers to adopt maladaptive solutions and can keep them from becoming environmental subjects, in the sense used by Agrawal (2005). Faced with few alternatives to obtain financing, most farmers choose to invest their savings or even request small loans to increase their agrochemical use because it is less expensive, although it constitutes a reactive, short-term coping strategy, which also causes environmental damage. This is instead of choosing more sustainable, long-term changes that require higher monetary investments.

Another characteristic that coincides with neoliberal environmentality is that public entities offer insufficient information and training on climate change to comply with farmers' needs. In northern Cartago, climate change training is only being offered to farmers' associations; yet their scope is limited because there are many men and women farmers who are not members of an association and as a result are left out of being able to participate in these activities. This is Gabriel's situation, a young farmer who does not belong to any group and nor does he recall ever being invited to climate change information sessions. He acknowledges he needs "information to know what's to come and everything that is going on because climate change affects us all" (personal communication, January 31, 2018). From his view, public institutions should be responsible for providing it.

The lack of information and training on climate change makes farmers unsure of what adaptive measures are adequate for their crops in the face of climate variations. Studies by Williams *et al*. (2019), Zamasiya *et al*. (2017), Belay *et al*. (2017), and Gebrehiwot & Van der Veen (2013) show that climate change information can help farmers make more informed decisions pertaining to adaptation. In northern Cartago, however, when farmers encounter a problem, they tend to seek advice and information from agrochemical distributors, who usually suggest purchasing agrochemicals as a solution, instead of other types of adaptations. Because they are unaware of other options and lack information, they use chemicals, although it is unlikely to be the most successful, cost-effective, or sustainable response. The contradiction that surfaces from neoliberal governance in northern Cartago is that it places the responsibility of adaptation on individuals who do not necessarily have enough knowledge of climate change, but, at the same time, it keeps them from being able to acquire it, because informative activities and training are not available to everybody. This becomes a barrier to enhancing their capacity to adapt. At the same time, they are prevented from becoming environmental subjects because there are no learning opportunities on sustainable adaptations that could signify an alternative to agrochemical use.

In Grecia, at least concerning the training offered to farmers, welfare and neoliberal environmentalities seem to coexist and complement one another. Climate change information has only been available to farmers who are part of a coffee cooperative, but fortunately, both public entities and cooperatives have promoted education on sustainable farming, which partly covers climate change adaptation as well. So, public and private entities together extend the scope of farmers who can learn and benefit from more adaptive farming systems and practices. At the same time, they promote the emergence of environmental subjects, because farmers become more aware of conservation and the environment. To illustrate, in sustainable farming courses, co-manager Gloriana learned to plant dual-purpose trees to provide shade for coffee and also protect it from climate extremes; yet she considers that farmers still need more information on climate change and adaptation strategies. Her priorities are, in her words: "First, financing because they will need to make many changes, and second, education and training to understand why and how they have to do it" (personal communication, June 25, 2018).

In the next section, I will discuss how these resources are designed to incentivize adaptation capacities and behaviors in certain individuals, which is a way of promoting the emergence of gendered subjectivities based on who is held responsible for adaptation, and the subjectivities that, in effect, are created.

Subjectivities that emerge in neoliberal environmentality

Land is an important resource to understand what subjectivities emerge in these contexts, and differences in adaptation capacities. In northern Cartago and Grecia there has been a general lack of intervention by governmental entities in land distribution, which is also consistent with neoliberal governance. All families interviewed in northern Cartago, aside from one, had access to land by means other than through the state. One of the most visible outcomes is that women do not have equitable access to land. Unless they inherit it, most do not usually have the economic means to buy land, and there is no social expectation that they would given

prevailing gender norms and the unpaid labor they perform. In Grecia, women also face greater disadvantage than men because of gender constructions that frame coffee production as a masculine activity, combined with an absence of policies that seek more equitable land distribution. Women who inherit land are an exception, and none of them manage their farms independently. When the husband and wife each have land of their own, they manage it together as a unit (Castillo, 2023).

The lack of an explicit state intervention in land distribution coincides with the "patriarchal mandate" that Castillo (2019) maintains has permeated the agrarian policies of Latin America. It stems from a patriarchal pact based upon the idea that the right to the land belongs to those who exploit it, in which case are men, while women are responsible for domestic work and therefore "have no rights to the land" (p. 259). These gender-blind policies function as "gendering practices" by encouraging the continuation of gender roles and norms in agrarian livelihoods that promote the emergence of gendered subjectivities. As Magnusdottir and Kronsell (2024) assert, "gender neutral is an expression of power in a move that belittles the relevance of gender" (p. 364). By doing so, they enable the reproduction of conditions that place women at a disadvantage due to pre-existing structural inequalities. The outcome is that most farms are owned and managed by men, while most women on men's farms are responsible for domestic and care work. Yet, there is a minority of farms that are owned and managed by women. These women's subjectivities are different from those who do not own land, which I will discuss later in this section.

Women also have fewer alternatives to access finance and credit. To secure a mortgage, banks ask for land as collateral or a wage, but most women have neither. Hence, economically dependent and landless women, who are mostly younger daughters or middle-aged housewives, cannot access financial support. Nora, a farm manager from northern Cartago, explains: "If we do not have land, we do not have credits because the land is a warranty" (personal communication, January 27, 2018). Therefore, it is not only that there are few financing alternatives for farms altogether, but the ones that do exist do not take women's needs into account. Banks are said to have gender-neutral policies, but in practice, they favor men because they are the ones who can put land as a warranty when requesting a loan. The "gender subtext" of these policies, then, continues to promote gender differences (Orloff, 1999) and they sustain structural gender inequalities.

As for training, they are said to be open to everyone, but those who attend the most are men, because they are still considered the main producers. Women refrain from participating because they do not feel comfortable or, since they do not consider themselves producers, it does not interest them. For example, most women in Grecia abstain from attending these activities because of the idea that coffee is an occupation for men (Castillo, 2022). Melania's comment reflects this reasoning: "Men know more about coffee, so women do not go" (personal communication, June 19, 2018). But, when training and informative activities are related to other crops women like to grow, they become more interested in learning.

This set of interlaced structural and systemic conditions that are identified in these contexts deter women from becoming the subjects responsible for adaptation. Power relations operating across government and private entities, evidenced in their gendered policies of resource allocation, influence gender relations at the household level and shape the subjectivities of young and older women who do not own land. The subjectivities of these women reflect the internalization of gender constructions and their conformity with their assigned domestic and caretaking roles. Because these women do not own land, they do not tend to work permanently in agricultural labors and they do not usually take part in decision-making processes related to the farm or agricultural production, including climate adaptation, because they do not see it as part of their responsibilities (Castillo, 2021, 2022).

Rosario, the wife of a farm manager in northern Cartago, revealed how she sees herself in farm-related processes when she was asked if she would like to be consulted on decisions regarding the farm. She responded "yes, but I think they already know everything, and they don't need me" (personal communication, January 31, 2018). As for adaptation she expresses that it is up to them because "They are the ones who know the maneuvers of how to work" (personal communication, January 31, 2018). Therefore, women like Rosario see their capacity to adapt minimized because of how power dynamics operate within these farms and how they shape their self-perceptions. In addition, they are unable to access resources, like finance and training, because they are not landowners, so that also becomes a barrier to their adaptation and discourages them from getting involved in

these processes. In consequence, women who do no own land or have a wage, which are most women in northern Cartago and Grecia, face greater restrictions on their adaptations to climate change because they have limited decision-making capacity, no access to credit, and few opportunities to receive climate change information.

Policies, on the contrary, do encourage men to become the subjects in charge of adaptation, although not explicitly. For most of them, owning land not only grants them the power to manage their farms, but it also gives them greater access to resources offered by public and private entities. Lina, an older woman from Grecia and a former farm manager, refers to this when she explains that "one sees that banks put up more resistance to lending money to women than to men; it is as if they feel it is safer when it is a man" (personal communication, September 5, 2018). Hence, by enhancing their adaptation capacities through the provision of resources, adaptation becomes a task men are incentivized to assume. For most men, farm owners and managers, adaptation then becomes part of their role as farmers and providers, revealing that their subjectivities comply with gender constructs and norms.

Exceptional cases are women who have inherited land. Land tenure provides them with a sense of agency and power that allows them to defy gender norms and constructions. Their subjectivities display this resistance by undertaking the farm's management and making decisions about the farm (Castillo, 2022). In the following comment made by Lucía, a farm manager from northern Cartago, one can see her self-worth and how it is tied to her work on the farm. She said,

> …they have asked me, for example, why do you work if you are a stay-at-home mom, you have a business? Do you know why? Because I like it, they taught me how to work. I do not depend on anyone from outside but on what I have. And that feeds us every day. This feeds us every day. (personal communication, June 15, 2018)

Studies carried out in other contexts have pointed out that for women, like Lucía, land ownership can mean they have the right to farm on their own terms (Twyman *et al*., 2015). It can also provide access to other resources, like finance or training (Deere, 2012).

The same is true for these localities. Land is of special importance for women in contexts where agriculture is predominantly a male activity (Castillo, 2022). It allows these women to create other subjectivities as farm owners and managers. It entitles them to oversee the farm and make decisions, which consequently leads to a boost in their adaptation capacity because they believe in their legitimacy to choose the actions they see fit and to acquire the resources needed to invest in this process (Castillo, 2022). Hence, land tenure may be considered the most important resource when seeking to understand how adaptation capacities vary among and between genders (Castillo, 2022). Land allows women to rise as agents responsible for climate governance on their farms (Castillo, 2022), so adaptation becomes a way of pushing against gender norms and the subjectification attempted by neoliberal environmentalities.

In sum, landless women are the ones who suffer the most in these contexts of neoliberal climate governance, because they do not have the same possibility that men or women managers have to decide over adaptation, but the latter also find themselves in a disadvantageous position due to the constraints they face in the neoliberal context in which they operate. Men and women managers are left to face these changes on their own and are deprived of the appropriate or sufficient resources to minimize the risks. Hence, it can be said that adaptation is more of a burden than an opportunity for their smallholder farms.

The effects of welfare environmentality on adaptation capacities of smallholder farms

While in public entities in northern Cartago and Grecia offer limited services and resources, in Cóbano the opposite is true. There are seven governmental entities[9] which interviewees recognize play a prominent role.

[9] Ministry of Agriculture, INDER, INAMU, INA, INTA and Banks.

In this scenario where climate change is on the agenda, they have managed to direct their assistance to meet the new needs and challenges that farmers face, and accompany them through the changes.

In Cóbano, there have been different types of social welfare to help families achieve socioeconomic stability. Farmers not only draw on banks for finance, but they can also rely on public entities to access equipment and tools for food production. Financial assistance is not usually in the form of loans or capital. Instead, it consists of other types of resources like plastic greenhouse sheeting, fertilizers, tools, and other supplies. These have helped to significantly enhance their adaptation capacities and allow smallholders to put into practice more long-lasting adaptations, instead of having to conform to reactive, short-term mechanisms. For example, women use greenhouses to grow vegetables, constructed with plastic sheeting and structures handed out by public entities. These are long-lasting responses that are more effective in the face of climate change impacts. As Simona acknowledges, "They are looking for a way to help us by sending these micro tunnels [small, in-field greenhouses]" (personal communication, July 31, 2018).

In addition, farmers and their families are constantly being invited by the local office of the Ministry of Agriculture to training sessions and activities, including about climate change, so unlike most farmers in other localities, they are more informed about adaptation. For example, the local office of the Ministry of Agriculture (MAG) has been promoting sustainable mitigation and adaptation practices among farms with the Ecological Blue Flag program. Although this program is national in scope, only in this rural area has it been widely promoted. The program recognizes smallholder farms that voluntarily comply with certain sustainable practices. Roxana, a vegetable producer, explains: "It is about the family learning to live harmoniously with the environment […] the Blue Flag is to live without pollutants; use the least amount of chemicals possible" (personal communication, August 1, 2018). Farms are given specific guidelines on how to produce sustainably, and they are forced to keep track of the changes so that each year they can provide evidence of their improvements. They become aware of their practices and inputs by writing down everything they do. As a result, most farms diversify their productive activities by growing different crops and farm animals, and they use organic supplies, save water, recycle, and so on. The intention is that these families feel motivated to produce more sustainably while also learning to mitigate and adapt to climate change.

Governmental entities have helped to build the adaptation capacity of farmers. In contrast with neoliberal environment policies, in Cóbano smallholder farms are not expected to undertake adaptations on their own. Instead, they are guided towards practices to better cope and prepare for changing conditions. Improving their knowledge of climate change is an important step in this guiding process for building their adaptive capacities, which is consistent with what other studies (Williams *et al*., 2019; Zamasiya *et al*., 2017; Belay *et al*., 2017; Gebrehiwot & Van der Veen, 2013). These farmers have more information to understand what is happening and to make decisions. Better information also means having more options to choose from, which helps them to better navigate an uncertain climatic context.

In addition, entities in Cóbano promote sustainable farming practices among smallholder farms. By doing so they have been able to turn farmers into environmental subjects who seek to improve their living conditions and become environmentally conscious and committed counterparts in carrying out sustainable practices. This is particularly evident in women's projects. The tools, supplies, and knowledge women have received have been fundamental to steering them toward becoming environmental subjects by involving them in organic vegetable farming. Therefore, it can be argued that the environmentality generated through policy has been effective at engaging women in the management of resources, such as the capacity to choose and act in the context of climate change. Consistent with the welfare rationale, women have become partners with the state in the implementation of sustainable practices and adaptations that are aimed at improving the well-being of their families first, but also the collective in general (Castillo, 2022; Boer, 2017).

Subjectivities that emerge in welfare environmentality

The welfare form of governance is evidenced too in how public entities intervened in creating a more equitable land structure among some of the families that took part in the research. In Cóbano, there are several peasant settlements formed on lands that once were state-owned and then were distributed to families in need (INDER, 2014). Around 341 parcels have been distributed in this district among 452 families (Instituto de

Desarrollo Rural, 2014). Women have benefited from these policies, because after the "Women's Real Equality" law (Igualdad Real de las Mujeres) was passed in the 90's, the Institute of Rural Development (INDER) began distributing land to couples and assigning both as legal owners, which allowed some women to become co-owners of their land (Martín *et al*., 1992).

Also, resources are now allocated regardless of land tenure or gender. According to Carmela this is quite a new tendency, because while "before, women were for the house and men for the field" (personal communication, July 30, 2018), now women have more opportunities to develop organic vegetable productions, regardless whether they own land. Plus, public institutions have been particularly successful at capturing each gender's interests and integrating them into informative activities and training. For example, activities related to vegetables are frequented most by women, because these are the crops they like to grow, while men attend those related to cattle or other crops.

The technical and financial assistance provided to men and women farmers contributed to setting in motion reconfigurations in the power dynamics of these farms and forging other subjectivities. This is especially true of the intervention that public entities have had in the distribution of land and the legal rights granted to women (Castillo, 2021). Joint ownership enables adult women to exert their agency and power and see themselves as capable of taking on the farm's management, sometimes in collaboration with their partners or on their own, while their partners work outside the farm. Hence, their subjectivities as managers or co-managers make them feel entitled to grow their crops and decide over them (Castillo, 2021, 2022). For example, Clotilde, who is co-manager of a farm, expresses that agricultural work is her main interest when she says: "I'd rather be there wielding a shovel and a machete than cleaning. Or I'd rather be sweeping the yard, cutting all the crops and throwing out the trash than washing or ironing" (personal communication, July 28, 2018). The role of public entities in this context not only enhances these women's adaptation capacities but also encourages them to become agents responsible for adaptation in their farms. This is exemplified by Clotilde, who says she has heard about adaptation "and put it into practice because that's what the Blue Flag is about. I don't burn garbage. I don't cut trees, I plant them instead" (personal communication, July 28, 2018).

The recognition of gender differences for the provision of equal learning opportunities on climate change and other topics, as well as the distribution of supplies and tools to men and women regardless of land tenure and income, has contributed to easing the inequalities between men and women and among women too. Even the subjectivities of women who do not own land are different in this context, because they are able to engage in a productive activity, such as vegetable farming, which otherwise they might not be able to undertake. This was Cecilia's case, who expresses its importance when she declares "it was my Project. Everyone helped me, but I was the one who took care of it" (personal communication, August 3, 2018). The assistance provided to women like Cecilia gives them a different standing from which to negotiate gender dynamics within their farms, so they are able to resist gender norms. Their vegetables productions reflect this resistance. Plus, these women see their adaptation capacity enhanced because they are able to choose the kind of adaptations they consider appropriate for their crops.

In sum, a welfare environmentality together with gender-aware policies establishes preconditions that allow women farm owners and managers, as well as those who do not own land, to be able to push against traditional power dynamics and contest gender norms, while opening up opportunities for different gender dynamics to emerge within these farms. This also gives them greater decision-making power, more information on climate change to inform their decisions, and access to resources that enable them to implement their preferred strategies.

5. Conclusion

This article compared and discussed how neoliberal and welfare environmentalities influence the emergence of subjectivities and shape adaptation capacities of smallholder farmers from a gendered lens. The localities where research was conducted have a different composition of private and public agrarian entities that encourage a particular environmentality. Each place manifests in a distinct way the country's current welfare-neoliberal state structure. By analyzing the policies, institutional practices and resources available to farmers associated with these environmentalities, it becomes clear that in each place, farms have different access to

financial aid for adaptation, as well as climate change information and training, which translates into unequal adaptation capacities. In neoliberal environmentalities, such as the ones found in northern Cartago and Grecia, farmers' capacities to adapt are not being enhanced. This system intends to create subjects more dependent on consumption by exploiting their adaptation needs, but they do not have sufficient resources on their own to invest in more permanent adaptations, nor are they able to get them from other sources. This is consistent with Fankhouser's (2017) argument that low-income households tend to have an adaptation deficit. Therefore, I consider that this environmentality exercises new forms of systemic violence against these populations since it increases their precariousness in a climate change context. For this reason, financial alternatives and climate change learning opportunities are much needed so farmers can reduce their uncertainty in the face of the new challenges posed by this phenomenon, which is consistent with other studies (Belay *et al*., 2017; Zamasiya, 2017; Williams *et al*., 2019; Jiri *et al*., 2017; Keshavarz & Soltani, 2021).

A welfare environmentality like the one found in Cóbano, on the other hand, has helped increase farmers' ability to adapt through the provision of equipment, tools, and supplies, as well as learning opportunities, which have been essential in helping farmers face climate change impacts. This shows that the State can have a very positive effect in helping farmers improve their adaptation capacity. Moreover, it may be necessary for that State to undertake this responsibility with economically vulnerable populations that do not have the means to do it independently. In this sense, I agree with Eakin and Lemos (2006) when they claim that we need to "bring the State back in" to build the adaptation capacity of the most vulnerable populations. This entails strengthening those public institutions that can fulfill this need instead of dismantling them.

Another important finding is that different environmentalities, when combined with gendered policies, can shape the adaptation capacities of men and women, depending on how resources are allocated. Gender-neutral policies and neoliberal environmentality in a patriarchal context tend to promote men as agents responsible for adaptation. These are generally older men who own and manage the farms. Because of the resources that are accessible to them, their adaptation capacity is increased. On the contrary, women are not meant to surge as agents in charge of adaptation. Resources such as land, credit, or training are not usually available, which particularly restricts landless women's ability to adapt. Henceforth, gender inequality and violence are expressed in new ways in the context of climate change by a system that does not create the conditions for most women to have a greater possibility of taking part in adaptation responses. Their exclusion is replicated within the home due to gender dynamics. In the increasingly precarious conditions in which smallholder farms find themselves, landless women are the most marginalized; thus, they become even more subordinated to the market and patriarchal power, which are consolidated under neoliberal logics (Olivera, 2019). Nonetheless, the study also shows that, in exceptional cases, women with other subjectivities can surge as agents responsible for adaptation, which is the case of women landowners/farm managers, becoming an expression of resistance to the gender norm and the reconfiguration of power relations.

In a context with gender-sensitive policies and welfare environmentally, the patriarchal system can be challenged by promoting other subjectivities among women that enable them to become actors responsible for adaptation. A more equitable land structure and the availability of learning opportunities and financial resources for different men and women increase their adaptation capacities more equally. I concur with Erwin *et al*. (2021) who recommend that adaptation programs must consider the specificities of women to better involve them and thus increase their adaptability, and this is the lesson learned from the experience in Cóbano.

Finally, I also found that the agents responsible for adaptation are not necessarily environmental subjects. They might address environmental issues, which in this case are those related to climate change adaptation, but they do not necessarily tackle them by implementing sustainable or eco-friendly actions. Therefore, environmentalities do not always promote environmental subjects that seek to protect the environment. On the contrary, these subjects can be driven to choose unsustainable adaptations if these are the cheapest option and there are no other alternatives. However, when they have the support of institutions that provide them with knowledge of sustainable options and the material conditions to implement them, individuals can become partners to the State in the protection of the environment while also becoming more resilient.

In recent years, Costa Rica has been portrayed as a "laboratory" for sustainability and climate action (Ramirez, 2020; Fletcher *et al.,* 2020). While this image has been mostly tied to its efforts on mitigation and

not so much to its actions to improve adaptation, the lessons learned from these different scenarios could serve policymakers and political leaders in other similar development contexts to gain a better sense of the direction their climate adaptation policies should take, so that they can promote climate justice.

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