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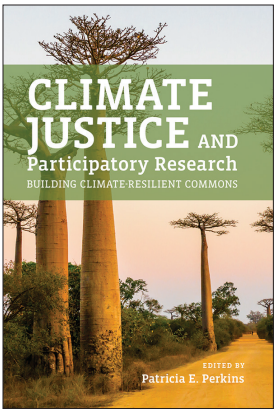

CLIMATE JUSTICE AND PARTICIPATORY RESEARCH: BUILDING CLIMATE-RESILIENT COMMONS

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Linking Soil and Social-Ecological Resilience with the Climate Agenda: Perspectives from *Quilombola* Communities in the Atlantic Forest, Brazil

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Introduction

Soils play an important and diverse role for environment and humanity. The World Soil Charter states that the "soils are a key enabling resource, central to the creation of a host of goods and services integral to ecosystems and human well-being" (FAO, 2015). Soil functions provide essential ecosystem services such as provisioning services (e.g., food production), supporting services (e.g., carbon storage), regulating services (e.g., climate regulation, nutrient cycling, and flood control), and cultural services (e.g., heritage, composing the landscape aesthetic, and community identities) (Dominati et al., 2010; Adhikari & Hartemink, 2016; Jónsson & Davíðsdóttir, 2016; Rodrigues et al., 2021). Besides maintaining biodiversity and contributing to global ecosystem protection, these services are especially important for Sustainable Development Goals (SDGs) 2—Zero Hunger, 13—Climate Action, and 15—Life on Land.

Approximately double the total carbon in the atmosphere is in soil reserves (Smith et al., 2021). Thus, soils have become part of the global carbon agenda for climate change mitigation through the launch of three high-level initiatives: i) the "4 per mille initiative," signed by more than one hundred nations at the 21st Conference of the Parties (COP) in Paris in 2015; ii) the Koronivia workshops on agriculture, which included soils and soil organic carbon (SOC) for climate change mitigation and were initiated at COP23 in 2018; and iii) the RECSOIL, a United Nations Food and Agriculture Organization (FAO) program for the recarbonization of soils (Amelung et al., 2020). These all recognize the potential of soils to remove between 0.79 and 1.54 Gt C yr–1 from the atmosphere (Fuss et al., 2018).

Despite the evident value of soils for human well-being and the global climate, unsustainable human activities threaten it. In Latin America, about 50 per cent of soils are facing some type of degradation (FAO, 2015). In Brazil, soil losses are caused mainly by erosion and inadequate agricultural management, which affects soil quality (e.g., by pollution, salinization, and acidification, among others). Land use conversion from natural ecosystems to cattle pastures and expansion of agricultural crop areas has ranked Brazil fourth among the top CO_2 emitting countries (Carbon Brief, 2021). Therefore, there is no doubt that the land use model urgently needs to adapt (Ball et al., 2018).

If on the one hand this historical model of natural resource uses shows that change is urgently needed, on the other hand, sustainable livelihoods and other knowledge systems can reveal paths to more inclusive and effective conservation. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recognizes the contribution of Indigenous and local knowledge (ILK) to the conservation and sustainable use of biodiversity (IPBES, 2019). Knowledge about commons, ecosystems, and associated management practices has been developed and is possessed by communities that have engaged in agriculture for their livelihood and benefits over long time frames (Berkes & Folke, 1998; Folke, 2004)—and this is the case for *Quilombola* communities.

Over more than three centuries, *Quilombola* communities have been formed in Brazil by formerly enslaved Africans who migrated by force from Africa through the Atlantic slave trade and who escaped the plantation systems (Arruti, 2008). Under slavery, these people suffered labour exploitation, rights violations, torture, and prolonged punishment, which caused massive mortality rates (Gomes, 2015). To struggle against colonial exploitation, the

enslaved *Quilombola* ancestors fled into the forests to create small settlements—*Quilombos*, from a Kimbundu word for "war camp"—as a strategy in their struggle for freedom (Leite, 2015; Gomes, 2015). Today, the focus of *Quilombola* struggle is no longer defense of freedom, but rather defense of land and territory. *Quilombola* communities have a unique ethnic identity and depend on the land for their physical, social, economic, and cultural reproduction. Due to the social and environmental vulnerability of most *Quilombola* territories, the *Quilombola* communities experience a critical state of living conditions, which has been aggravated during the COVID-19 pandemic (Coelho-Junior et al., 2020).

As part of their historical and cultural process, *Quilombola* communities have developed land uses grounded in traditional agricultural practices shaped by their identity processes (Gomes, 2015; Steward and Lima, 2017). In this context, this chapter discusses the social values of soils and their links to soil quality indicators (biological, physical, and chemical) in *Quilombola* communities, including decisive factors for adapting sustainable solutions and enhancing livelihood resilience while ensuring forest conservation and safeguarding cultural identity based on soil quality. We also describe a participatory research project that is ongoing in two *Quilombola* communities in the Brazilian Atlantic Forest of Rio de Janeiro State: *Quilombo do Campinho da Independência* (from now on called *Quilombo do Campinho*) and *Quilombo Santa Rita do Bracuí* (from now on called *Quilombo do Bracuí*) (see Map 2, page 30). This research is grounded in ecological economics, environmental justice, community-based management, and ethnopedology perspectives, as we aim to explore the links between soil and human well-being, approaching this from local to global levels to address the challenges of climate change in vulnerable communities.

Background

Soils' Contributions to People: Context and Novel Approach

Principle 3 of the World Soil Charter states that "soil management is sustainable if the supporting, provisioning, regulating, and cultural services provided by soil are maintained or enhanced without significantly impairing either the soil functions that enable those services or biodiversity." These soil ecosystem services are directly related to benefits that people obtain from

Table 6.1 Soils' role in delivering Nature's Contributions to People (NCP).

NCP Category	Soils' Contributions to People	Key References*
Material NCP	Food and feed	Silver et al. (2021)
	Materials and assistance	Morel et al. (2021)
	Energy	Smith et al. (2021B)
	Genetic, medicinal, and biochemical resources	Thiele-Bruhn (2021)
Non-material NCP	Learning and inspiration, physical and psychological experiences, and supporting identities	McElwee (2021)
Regulation NCP	Regulation of climate	Lal et al. (2021)
	Regulation of freshwater quantity, flow, and timing	Keesstra et al. (2021)
	Regulation of freshwater and coastal water quality	Cheng et al. (2021)
	Regulation of hazards and extreme events	Saco et al. (2021)
	Habitat creation and maintenance	Deyn and Kooistra (2021)
	Regulation of air quality	Giltrap et al. (2021)
	Regulation of organisms detrimental to humans	Samaddar et al. (2021)
	Dispersal of seeds and other propagules	Carvalheiro et al. (2021)
	Regulation of ocean acidification	Renforth and Campbell (2021)
	Formation, protection, and decontamination of soils and sediments	Sarkar et al. (2021)

* All references cited in Smith et al. (2021).

soils, as considered by the Millennium Ecosystem Assessment and further represented in the pioneering works by Dominati et al. (2010) and Adhikari and Hartemink (2016). But recently, the IPBES established a conceptual framework that attempts to contextualize "ecosystem services" by defining Nature's Contributions to People (NCP) as "all the contributions, both positive and negative, of living nature (i.e., diversity of organisms, ecosystems, and their associated ecological and evolutionary processes) to the quality of life of people" (Díaz et al., 2018).

A special issue of the journal *Philosophical Transactions B* provides an assessment of the contribution of soils to NCP. In the editorial article, "The Role

of Soils in Delivering Nature's Contributions to People," Smith et al. (2021) presents the key insights from each article that make up this special issue (Table 6.1). Smith et al. (2021) also emphasize that soil management priorities should include: (i) for healthy soils in natural ecosystems, protect them from conversion and degradation; (ii) for managed soils, manage them in a way to protect and enhance soil biodiversity, health, productivity and sustainability and to prevent degradation; and (iii) for degraded soils, restore to full soil health.

Socio-Ecological Resilience Based on Soil: Implications for Ethnopedology

The concept of resilience focuses on the adaptation and change a system can undertake while remaining within critical system thresholds (Walker et al. 2006). Thus, resilience thinking proposes a systemic approach to human-environment relations that fits well with attempts to predict or model social-ecological change. Adapting this concept for social-ecological resilience (SER), we have the combination of both: i) social resilience as the ability of a social system to react to a disturbance and, afterwards, return to a state in which social functions, structures, and processes continue as before (Adger et al., 2005); and ii) ecological resilience as an ecosystem's ability to absorb or recover from disturbance and change while maintaining its functions and services (Carpenter et al., 2001). Therefore, SER can be understood as the interplay of factors involved in recovering from disturbances, re-organization, and the development of socio-ecological systems.

Applying a SER lens in soil studies, we emphasize soil as a common thread in integrating social and ecological systems. The contribution of soils (an ecological system) to human well-being (a social system) depends on land uses and management (Adhikari and Hartemink, 2016; Prado et al., 2016; Turetta et al., 2020), which are often associated with cultural values. Waroux et al. (2021) highlighted that "culture as context is thus present as a frame for land-use decisions, behaviors, and land system outcomes." In this context, traditional knowledge of soil management, inherited through generations and adapted to social-ecological changes (Krasilnikov & Tabor, 2003), frames the role of culture and land history in soil studies, bringing to light ethnopedology as an interdisciplinary field (Barrera-Bassols & Zinck, 2003). Therefore, participatory research on soils in *Quilombola* communities can reveal the

cultural reasons that explain physical, chemical, and biological parameters, enabling better strategies for socio-ecological resilience to climate challenges.

Participatory Research on Quilombola *Communities in the Brazilian Atlantic Forest, Rio de Janeiro State*

Quilombo do Campinho

The *Quilombo do Campinho* is located in Paraty, southern Rio de Janeiro State, in a protected area (*APA do Cairuçu*) (see Map 2, page 30). The native vegetation is Atlantic Forest, a biome highly threatened by climate change (Colombo & Joly, 2010). The region's climate is of type CWa, according to the Köppen classification, with moderate temperatures and a tropical summer (Alvares et al., 2013). The *Quilombo* territory covers more than 287 ha and has a population of one hundred and fifty families, totalling approximately five hundred people.

The origin of *Quilombo do Campinho* goes back to the nineteenth century and it centres on three women—Antonica, Marcelina, and Luiza—who worked at the farmhouse of *Fazenda da Independência*, when the economic decline of the region forced the colonial farmers to abandon their lands and donate them to the enslaved people. The struggle for land continued for decades, until the *Quilombo do Campinho* became the first *Quilombola* community to receive land title in the State of Rio de Janeiro, on 21 March 1999. Their recognition as a "*Quilombo*" brought to the community the incentive for local farmers to be self-sustaining, even though many men and women work outside the community, mainly as employees in family households or in luxury resort condominiums in the region (Tavares, 2014). Currently, activities such as seedling production, agroforestry, ethnic tourism, and the community restaurant, have been developed in the community and are major income sources (Lima, 2008).

Despite their rights as a Brazilian "traditional community," *Quilombo* residents have faced challenges for many reasons: i) real estate speculation, which has increased due to the UNESCO designation of Paraty as a World Heritage Site; ii) restrictions imposed for clearing new areas for "agroforestry," since the traditional territory overlaps a protected area; iii) imminent risk of accidents and pollution related to oil and gas exploration in the Pré-Sal Pole of the Santos Basin; and iv) direct impacts of the COVID-19 pandemic on

community-based tourism and the community restaurant, the main income sources of the *Quilombolas*, rendering the community even more vulnerable.

Quilombo do Bracuí

The *Quilombo do Bracuí* is also part of the Atlantic Forest and is in Angra dos Reis, southern Rio de Janeiro State (see Map 2, page 30). The community territory has an area of 616 ha that are managed by 129 families, totalling approximately 362 people (INCRA, 2015). The *Quilombo do Bracuí* is located in the middle of the *Santa Rita do Bracuí* river basin, important for regional water supply (INCRA, 2015). The climate according to the Köppen classification is type Af, rainy tropical forest climate (Alvares et al., 2013). Also, the territory of *Quilombo do Bracuí* covers the buffer zone of the Bocaina National Park, a protected area recognized as a World Heritage Site by UNESCO.

The *Quilombo do Bracuí* is located at an old farm that was used for many years as an illegal port for the African slave trade, since there was a direct path from the sea to the farm, although the slave trade was officially prohibited in 1831 (Karasch, 2000). Due to economic decline at this time, José Breves, the colonial farmer, made a will donating part of his farm to ex-slaves. Their return to this area allowed the development of a community based on the reference to enslaved ancestors' freedom in a social context known as "black proto-campesinato" (Marques, 2011).

The *Quilombo do Bracuí* has faced huge challenges to maintain itself on the territory. Threats emerged from government initiatives such as projects for the development of "hygienic tourism," the construction of the BR 101 highway, and construction of luxury condominiums (Ramos, 2018). All these "drivers" aimed to force the inhabitants to leave the *Quilombola* territory, and even induced people to sign fake documents for land titles (Ramos, 2018). The community resisted by creating a local association, *Associação dos Remanescentes de Quilombo de Santa Rita do Bracuí* (ARQUISABRA) in 1998, which was certified in 1999 by the Palmares Cultural Foundation, Brazil's federal institution supporting Black cultural, historical, economic, and social contributions. However, it was only in 2006 that the land-titling process of the *Quilombo do Bracuí* was initiated by the federal government. And almost fifteen years after the titling process began, the *Quilombo do Bracuí* still has no land title.

Currently, there are two major problems faced by the *Quilombolas:* i) real estate speculation through land invasion due to the absence of land title; and

ii) the project to install a hydroelectric plant (UHE Paca Grande I and II) on the Paca Grande River, which is part of the Bracuí River watershed. Evidence warns of the "socio-environmental disaster" arising from these hydroelectric plants, both for the *Quilombola* community and for other traditional communities (e.g., the *Guarani de Bracuhy* Indigenous territory), in addition to affecting the buffer zone of the Bocaina National Park (Alves, 2019). Another threat factor is the proximity to the Angra dos Reis Nuclear Power Plants, leaving *Quilombola* inhabitants more exposed to potential environmental disasters.

Research Design and Goals

Our participatory research on *Quilombolas*' perceptions and social values of soil and soil sampling for physical, chemical, and biological analyses, includes four steps. The main purpose of this research is to identify and evaluate the determining factors for the soils' contributions to people by linking local and scientific knowledge. Thus, we aim to address four specific objectives: i) Select a set of indicators to evaluate soils' contributions for people in *Quilombola* communities; ii) Identify the threats and opportunities related to soils' contributions to people in *Quilombola* communities; iii) Describe and organize the determining criteria for soil management practices according to local knowledge; iv) Understand and explain the perception of social values of soils in *Quilombola* communities. Our secondary goals are: i) Explore and evaluate participatory methodologies to assess the potential of soils' contributions to people for socio-ecological resilience; ii) Facilitate knowledge transfer between local and scientific knowledge holders for socio-environmental innovation. For this, we draw on interdisciplinary methods of socio-environmental research, including participant observation at community meetings; open interviews with key informants; Q-methodology, or systematic study of participants' viewpoints, on social values of soils based on local perceptions, and laboratory procedures (technical and scientific methods for soil sampling and the chemical, physical, and biological analysis of soils).

The research process started with visits and participation in community meetings and cultural events in both *Quilombola* communities (Figures 6.1–6.3). The first meetings with community leaders occurred through the residents' associations (Associação de Moradores do Quilombo Campinho da Independencia [AMOQC] and Associação dos Remanescentes de Quilombo

Figs. 6.1–6.3
Community meetings in early stages of the research project.

Figs. 6.4–6.6 Soil samples at Soil Genesis and Classification Laboratory, UFRRJ.

de Santa Rita do Bracuí [ARQUISABRA]) and also through collaborative work by the Observatory of Sustainable and Healthy Territories of Bocaina (OTSS), an institution formed from the partnership between Fundação Oswaldo Cruz (Fiocruz), a Rio de Janeiro scientific institution for research and development in public health and biological sciences, and Fórum de Comunidades Tradicionais de Angra dos Reis, Paraty e Ubatuba (FCT), a local traditional communities organization. At these meetings, the project was designed, considering the specific demands of these local communities regarding soil quality and the potential of community engagement as an opportunity for participatory research with local impacts (especially, for the physical, chemical, and biological characterization of the soils, to guide them in improving management practices).

The research project was approved by the Research Ethics Committee at the Federal Rural University of Rio de Janeiro (UFRRJ), and the communities signed informed consent forms, indicating their awareness of the study, and gave their permission to use images and sounds from their territories. All interested participants were informed about the objectives and steps of this study at the beginning of this process. In each community, a local researcher was selected to join the fieldwork and to be a community spokesperson. An OTSS technical officer was also selected to assist fieldwork and data analysis. Finally, an assistant professor from UFRRJ and several undergraduate students were invited to collaborate on soil sampling, laboratory analysis, and data analysis. This collaborative work enabled an experience of sharing throughout the whole research process, enhancing the scope of participatory research in socio-environmental studies. However, due to the COVID-19 pandemic, which caused unsafe conditions in Brazil, this teamwork had to be suspended temporarily to comply with UFRRJ's biosecurity guidelines.

Initial soil samples were sent to the Soil Genesis and Classification Laboratory at UFRRJ, where analysis began (Figures 6.4–6.6).

Discussion and Conclusions

Local Soil Knowledge in Traditional Territories

As soil is a vital entity (Ball et al., 2018) that integrates water security, agricultural production, energy, climate, and biodiversity (McBratney et al., 2014), all impacts on soil have indirect effects on other systems, such as health and

human well-being (Prado et al., 2016). To study soils of traditional or specially protected areas, such as *Quilombola* territories, we must consider that traditional ecological knowledge is transmitted through generations, sharing experiences, and is adapted to the socio-ecological changes that occur in time and space (Krasilnikov & Tabor, 2003). The relationship between these communities and the soil derives most strongly from subsistence agriculture.

Local soil knowledge can be defined as "the knowledge of soil properties and management by people living in a particular environment for some period of time" (Winklerprins, 1999). This knowledge implies a lot of trial and error, but also includes scientific processes (Barrera-Bassols & Zinck, 2003). It has also been described as "both skill and knowledge" and "the heritage from practical daily life, with its functional demands." This characterizes a mixture between knowledge and practice, in general causing a difficulty in distinguishing the threshold between them (Sillitoe, 1998).

Local soil knowledge in traditional communities can provide major contributions to science. For instance, one key contribution is the lessons it can provide for understanding land use over different time scales, supporting strategies for sustainable agriculture. Traditional soil and crop management practices are based on local knowledge, obtained through experimentation by generations of people working on the land in a specific environment. Therefore, these practices reveal how to maintain the use of resources and the environment in a sustainable way. Recognizing this, there is surely no reason to ignore this knowledge/practice as a technology for advancing soil conservation.

Overview of Findings

The *Quilombola* communities in this study divide their territories into family areas (each family has a limited area for land use). Thus, different land uses integrating permanent crops, temporary crops, and agroforests can be highlighted (Figures 6.7–6.9). The agroforests in *Quilombola* communities demonstrate traditional soil management practices and produce food while promoting Atlantic Forest conservation and delivering ecosystem services (Tubenchlak et al., 2021). For example, in *Quilombo do Campinho*, Tavares et al. (2018) found that the agroforestry systems maintained high levels of total organic carbon, as well as providing the same conditions for soil aggregation as the forest. Thus, the authors concluded that the formation of biodiverse

Figs. 6.7–6.9 Different land uses and agroforestry systems in *Quilombola* communities.

agroecosystems by *Quilombolas* contributed to maintaining soil quality. These results correspond with literature that assembles evidence regarding benefits of agroforestry for global climate, food security, water supply, and forest conservation with direct impacts on land use sustainability (Verchot et al., 2007; Schroth et al., 2011; Miccolis et al., 2019).

During our fieldwork, we observed the intrinsic link between landscape conservation and sustainable soil management practices. Also, our dialogues with *Quilombola* farmers revealed the role of culture in soil management: "This crop area here belonged to my grandfather, it passed to my father, and I am training my grandchildren to take care of it as well." The oral transfer of cultural practices over generations is a characteristic of *Quilombola* peoples (Alves, 2019). Waroux et al. (2021) also present different cases to highlight how aspects of culture influence land systems in myriad ways.

We also conducted training on soil sampling for socio-environmental studies. It was possible to combine scientific and traditional knowledge




Figs. 6.10–6.13 Participatory soil sampling for knowledge transfer in *Quilombola* communities.

during this experience, strengthening participatory research (Figures 6.10–6.13). The experience with ethnopedology made it possible to understand soil beyond its environmental characteristics. Soil, or "land," has a relational value that makes the *Quilombolas* feel part of the soil system, managing a live system—soil, that gives life and the community power. A site in the *Quilombo do Bracuí* that represents these social values of soils is called *Aiê Eleteloju* (@ eleteloju.aie on Instagram), which means "Fertile Land" in the Afro Yoruba language. This space is divided into areas with crops (cassava, corn, beans), agroforestry systems, and conventional and medicinal vegetable gardens. In addition, it includes the *Terreiro de Candomblé*—a ceremonial meeting place in the Afro-Brazilian religion. According to Ramos (2018), the goal of *Aiê Eleteloju* is to be a space for dialogue and sharing of traditional knowledge, as well as for training on agroecological practices, social learning, and religious and cultural celebrations.

Quilombolas' Struggle for Land Tenure and Environmental and Climate Justice in Brazil's Atlantic Forest

Injustice in land access in Brazil is a consequence of the colonization process that generated a high concentration of land in few hands (Robles, 2018). Brazil has one of the highest rates of non-productive large estates in the world (Paulino, 2014) while the country has a huge number of people waiting for the opportunity to have and work their own land (Reydon et al., 2015). Also, it is important to highlight that the current structure of land ownership in Brazil acquired its form in the 1960s through the implementation of the Green Revolution and the modernization of large estates for agriculture and livestock production (Sauer and Leite, 2012). Agrarian reform for a more equitable distribution of rural land is the basis for a process of social justice and democratization in the country (Leite et al., 2004).

A critical point on inequality in access to land in Brazil is its Land Law itself (Law No. 601/1850), signed by Emperor Dom Pedro II in September 1850. The first restriction imposed by this law is in Article 1, which determines that only land purchases grant access to land, thus rendering it impossible for poor, Black, and *Quilombola* people to acquire land due to their socio-economic conditions. As the law was established under the slavery regime, its intention was to make it impossible for Black people to access land, in an attempt to hinder the slavery abolition movement, which only succeeded in

1888 (Amorim & Tárrega, 2019). However, the transition from slavery to free labour was characterized by numerous social and economic changes that directly interfered with former slaves' interaction with land (Smith, 1990).

Only one hundred years after the abolition of slavery did the Brazilian government recognize *Quilombolas*' right to continue living on their territories, by means of Article 68 in the Federal Constitution of 1988. It establishes that "the descendants of *Quilombola* communities who are occupying their lands are recognized as having definitive land title, and the State must provide their respective titles" (Brasil, 1988). Beyond the right to land tenure, the Federal Constitution also legitimized the cultural rights of the Afro-descendant *Quilombola* communities and other traditional peoples, in Articles 215 and 216 (Brasil, 1988). Despite such institutional advances in the Federal Constitution, the implementation of Article 68 for access to land required an additional definition of "*Quilombo*," since the Federal Constitution did not specify this (Thorkildsen & Kaarhus, 2017). This legal "gap" became an arena for political disputes over the guarantee of *Quilombola* rights to their territories. After many years' delay, the Brazilian government published Federal Decree No. 4,887/2003, which regulates the process of identification, recognition, delimitation, demarcation, and titling of *Quilombola* lands (Brasil, 2003).

Recent history shows that recognition by legislation alone does not guarantee social equity for *Quilombolas*. The attacks suffered by *Quilombola* communities are directly related to their defense of permanence in their territories, historically denied by the land tenure system in Brazil and consolidated through the denial of land access and the absence of social reparations to Black people for more than three hundred years of slavery (Terra de Direitos & CONAQ, 2018). Also, *Quilombola* communities in Brazil's Atlantic Forest are facing environmental regulatory barriers that prohibit their cultural practices of soil management due to environmental racism[1] and institutional racism.[2] Restrictions on cultural practices have generated notifications of environmental infractions for *Quilombolas*, putting them at risk of being arrested just for developing their traditional practices. This is despite much evidence on the role of *Quilombola* communities in Atlantic Forest conservation (Diegues et al., 2000; Diegues & Viana, 2004; Pereira & Diegues, 2010; Penna-Firme & Brondízio, 2007; Adams et al., 2013; Thorkildsen, 2014; Thorkildsen & Kaarhus, 2017).

According to Almeida (1989), the territories used by the *Quilombolas* are "lands of common use," since the use of land and natural resources is

not carried out individually, but collectively by the community, which creates specific management rules commonly agreed upon by the families living on the land, and different from state legislation based on private property. Soil studies from this perspective ("lands of common use") provide evidence of a range of contributions soils make to people and ecosystems, as well as ways of understanding the nexus of soil quality, management practices, and *Quilombola* rights. These rights also include the right to contribute to the climate agenda. Participatory ethnopedagogy with *Quilombolas* creates an opportunity to shift research back towards the basis of sustainability as evidenced in traditional territories—the healthy soil.

NOTES

1 Environmental racism refers to any environmental policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race or colour (Bullard, 1999).

2 Institutional racism is manifested through mechanisms, explicit or not, that hinder the presence of Black people in governmental spaces, as well as the formulation of effective public policies to combat racial inequalities (Giacomini & Terra, 2014).

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