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DIALOGUES FOR INTEGRATIVE SOCIO-ENVIRONMENTAL REPARATION IN A COMMUNITY-BASED PARTICIPATORY RESEARCH

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Abstract

Integrative socio-environmental approach aimed at comprehensive reparation through Community-Based Participatory Research conducted in the rural community of Lagoa dos Cavalos, municipality of Russas, Ceará, Brazil. The theoretical and methodological contributions from a well-established Ecuadorian initiative aimed at integral reparation, known as the Clinica Ambiental, were crucial in addressing the following question: How can processes of shared knowledge creation enhance the community plan for the Lagoa dos Cavalos territory, thereby strengthening its traditions, lifestyles, and health and good living practices? Discussions are initiated for reparations aimed at healing approaches in territories affected by the destructive logic of neo-extractivism. It has been recognized that the epistemological foundations for knowledge production require updates that support the preservation of the right to life. Additionally, the concept of reparation can facilitate community-based participatory experiences in contexts of socio-environmental conflicts.

Keywords: Knowledge; Methodology; Good Living.

Resumo / Resumen

DIÁLOGOS PARA REPARAÇÃO SOCIOAMBIENTAL INTEGRADORA EM UMA PESQUISA PARTICIPATIVA DE BASE COMUNITÁRIA

Abordagem socioambiental integradora com vistas à reparação integral em uma Pesquisa Participativa de Base Comunitária, realizada na comunidade rural Lagoa dos Cavalos, município de Russas, Ceará, Brasil. As contribuições teórico-metodológicas de uma experiência equatoriana consolidada com o objetivo de reparação integral, denominada Clínica Ambiental, foram estratégicas para conceder resposta à pergunta: De que modo processos de criação compartilhada de conhecimentos podem contribuir para o plano comunitário do território Lagoa dos Cavalos, fortalecendo suas tradições, modos de vida e práticas de saúde e Bem Viver? Aqui se abrem diálogos para reparação orientada a abordagens sanadoras em territórios sob a lógica destrutiva do neoextrativismo. Apreendeu-se que as bases epistemológicas para produção do conhecimento necessitam de atualizações que colaborem com o fortalecimento da preservação do direito à vida, e que a categoria reparação tem potencial para experiências participativas de base comunitária em áreas de conflitos socioambientais.

Palavras-chave: Conhecimento; Metodologia; Bem Viver.

DIÁLOGOS PARA LA REPARACIÓN SOCIOAMBIENTAL INTEGRADORA EN UNA INVESTIGACIÓN PARTICIPATIVA DE BASE COMUNITARIA

Se presenta un enfoque socioambiental integrador orientado a la reparación integral, desarrollado mediante Investigación Participativa de Base Comunitaria en la comunidad rural de Lagoa dos Cavalos, municipio de Russas, Ceará, Brasil. Los aportes teóricos y metodológicos de una iniciativa ecuatoriana ampliamente reconocida en el campo de la justicia socioambiental —la Clínica Ambiental— resultaron fundamentales para abordar la siguiente pregunta: ¿de qué manera los procesos de coproducción de saberes pueden fortalecer el plan comunitario del territorio de Lagoa dos Cavalos, potenciando sus tradiciones, modos de vida, y prácticas de salud y buen vivir? Se abren diálogos en torno a la reparación desde enfoques de sanación territorial en contextos afectados por la lógica destructiva del neoextractivismo. Se reconoce que los fundamentos epistemológicos de la producción de conocimiento requieren ser actualizados para sustentar la defensa del derecho a la vida. Asimismo, se argumenta que la noción de reparación integral puede actuar como un dispositivo articulador de experiencias participativas de base comunitaria en escenarios de conflictos socioambientales.

Palabras-clave: Coproducción de Saberes; Metodología; Buen Vivir.

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INTRODUCTION

Conflicts over land and the control of shared resources impact on the health of traditional communities, particularly their social fabric, both of which are essential for maintaining harmony with nature. Health, understood as a social phenomenon and an intercultural, interdisciplinary, and multidimensional elaboration, would contribute to an integrative perspective in the field of socio-environmental reparation, from the perspective of native peoples, respecting their cultures and worldviews (Beristain, 2010; Breilh, 2015; Maldonado, 2019).

In the context of international law and human rights, reparation is founded on five key elements. Restitution of rights includes the restoration of residence, the return of property and land, and the addressing of past injustices. Compensation for material damages involves providing monetary reparations. Rehabilitation encompasses psychosocial care, health support, education, and environmental bioremediation. Satisfaction measures pertain to actions that promote dignity. Finally, guarantees of non-repetition refer to legal changes intended to protect the rights of individuals and the environment. In environmental cases, there are six fundamental principles for implementing the right to environmental reparation: integrity, proportionality, hierarchy, transformation, participation, responsibility, and "relationality" and diversity. (Beristain, 2010).

This broader concept of reparation is essential, particularly in the context of environmental justice in Latin America. However, since environmental cases lack established international legal norms, this compromises the 'process of restitution and exercise of the population's rights, or respect for the conditions of reproduction of nature' (Beristain, 2010, p. 165–166).

This article begins with the guiding question: How can processes of shared knowledge creation enhance the community plan for the Lagoa dos Cavalos territory, thereby strengthening its traditions, lifestyles, and health and good living practices? It presents an integrative socio-environmental approach that is rooted in the concept of socio-environmental reparation. This approach was developed within the framework of Community-Based Participatory Research (CBPR) in the rural community of Lagoa dos Cavalos, located in the municipality of Russas, Ceará, Brazil.

The Lagoa dos Cavalos community is an emblematic case among the rural communities affected by water infrastructure works of the Tabuleiro de Russas Irrigated Perimeter Project (PITR/2nd Stage). In 2011, a Conduct Adjustment Agreement (TAC) was signed during an extrajudicial environmental negotiation. This agreement involved representatives from the Commission in Defense of Families of the 2nd Stage of the Tabuleiro de Russas Project, the National Department of Works Against Droughts (Dnocs), and the Federal Public Ministry. An analysis of official documents related to agreements on this alternative regulation mechanism, covering the period from 2011 to 2018, revealed a context of threats and violations of fundamental human rights during the negotiations. This situation indicates a low level of social effectiveness due to the depoliticization of the environmental conflict (Braga, 2020).

Community-Based Participatory Research (CBPR) was utilized in this context because it focuses on the environmental etiology of health and disease, fostering collaboration among health and environmental activists and environmental health research institutions. Based on a relationship of trust between community members and academic researchers, this proposal employs equitable collaboration and mutual learning as effective approaches for regulatory and political decision-making, as well as for deepening and expanding research themes (O'Fallon; Dearry, 2012).

By combining community and academic knowledge, CBPR fosters horizontal relationships throughout the research process, supported by co-learning and the co-production of knowledge. Such relationships express various levels of community involvement and engagement, as shown in Figure 1 (Balazs; Morello-Frosch, 2013).

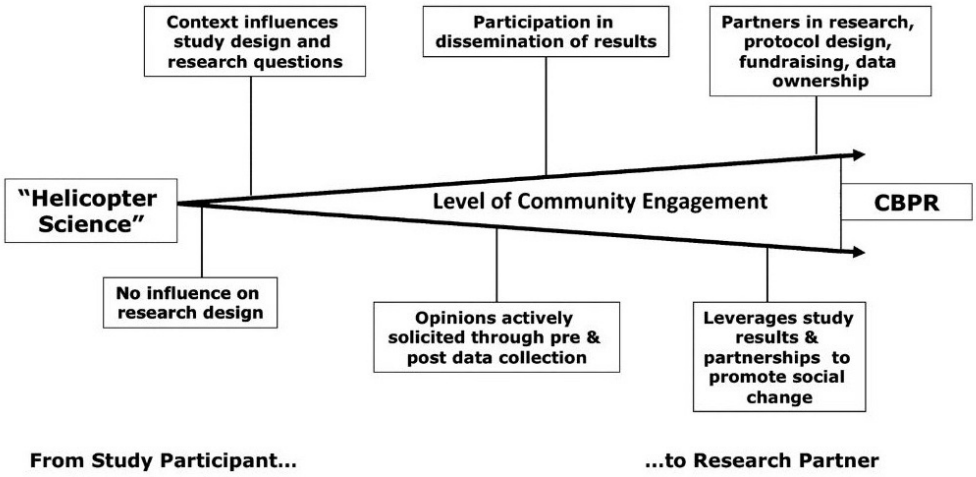

Figure 1 - Different levels of involvement in CBPR depend on how much the participants are partners or collaborators in the study. Source: Balazs; Morello-Frosch (2013).

CBPR also strengthens science by contributing to the relevance of the topics investigated, the rigor in the design, collection, and analysis of data, and the achievement of results in the scientific, political, legal, and regulatory spheres. Consequently, this approach is crucial for scientific progress, particularly in research on cumulative impacts, as it considers the structural determinants and related social stressors that define contexts of socio- environmental vulnerability. Figure 2 illustrates the interrelationships among relevance, rigor, and scope in a research project (Balazs; Morello-Frosch, 2013).

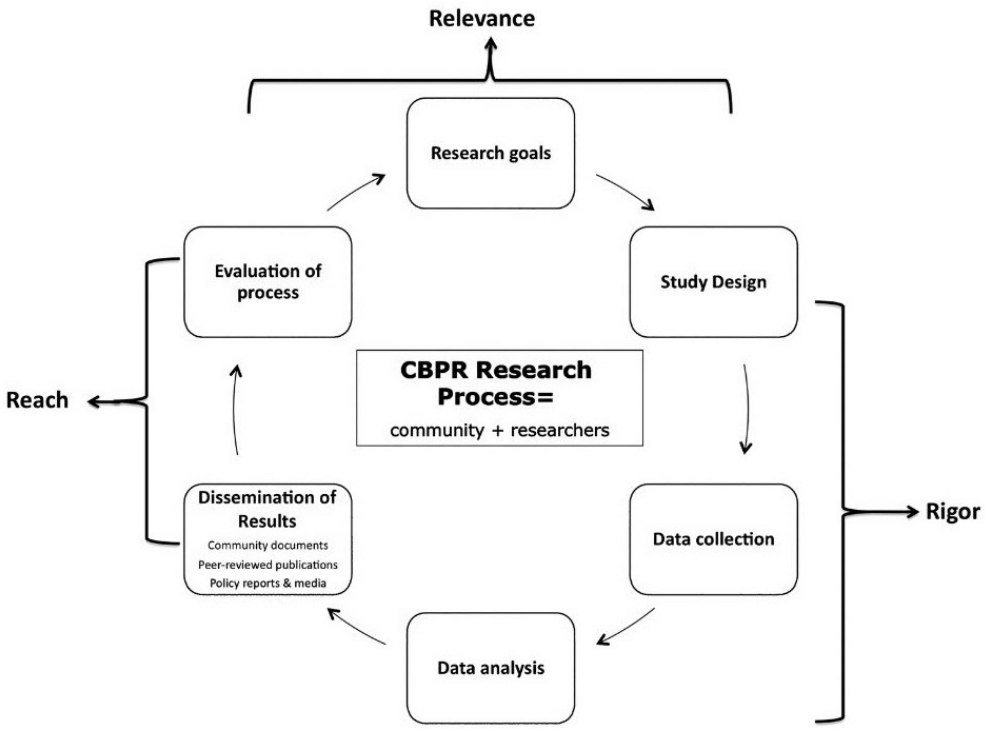

Figure 2 - The 3 Rs (rigor, relevance, and reach) in relation to the generalized stages of a CBPR approach. Source: Balazs; Morello-Frosch (2013).

Porto et al. (2018, p. 156) highlight that "a key similarity between CBPR proposals and environmental justice movements is that both aim to provide visibility and a voice to communities affected by public decisions regarding environmental issues".

Given the variety of methods that encourage community engagement, this work presents an integrative socio-environmental approach developed within the framework of community- based participatory research, in conjunction with the socio-environmental reparation project known as the Clinica Ambiental.

THE CLINICA AMBIENTAL SOCIO-ENVIRONMENTAL RESTORATION PROJECT

Clínica Ambiental was founded in 2008 and operates in the provinces of Sucumbios, Napo, and Orellana, in the Ecuadorian Amazon, dedicating itself to the socio-environmental reparation of territories affected by extractive activities, such as oil, mining, and agribusiness. The project is coordinated in collaboration with various entities to address today's complex challenges, integrating the generation of scientific knowledge, community involvement, and the advancement of social technologies. (Clínica Ambiental, 2024).

> The Clínica Ambiental emerged as an alternative for radical solidarity and rescue, and for the deepening of stories of care and the reproduction of life, based on the idea of sumak kausay and bien vivir, of life in fullness and harmony with nature and local culture. (Porto et al., 2018, p. 162).

In the exchange of knowledge between academia and communities, the Clínica Ambiental adopts popular research strategies with scientific rigor, acting in the following three stages:

a) Opening eyes: this comprises the collective stage of Participatory Research and Action (PRA) of communities and organizations.

b) Act: a space for socio-environmental intervention for sustainability centered on community discussion, meeting, and implementation processes.

c) Rejoice: space for the reconstitution of the social fabric, such as the promotion of exchange of experiences and agroecological and permaculture fairs, cultural activities, audiovisual productions (Clínica Ambiental, 2018).

> The proposal to produce knowledge [from the Clinica Ambiental] aims to support the confrontation of different forms of oppression and the attack on territories, nature, and families, while simultaneously fostering self-esteem, the joy of living, and experiences of forms of economy and work. (Porto et al., 2018: 162).

According to one of the founders of the Maldonado organization (2018), in the face of climate emergencies and the intensification of socio-environmental conflicts, understanding reparation will depend on how people, families, or communities feel repaired, from the perspectives and cultures of those who experience rights violations. The abuse of communities disrupts their living conditions and ways of life, leading to multiple exposures to contaminants, diseases, poverty, and subordination, primarily engendering fear as a form of domination.

Thus, the Alternative Community Integral Reparation System (ACIR) known as Propuesta Huipala is a working method to establish reparative factors, starting from situations in which the word and decision power are expropriated in the personal, family and community spheres - "because all these spaces are deeply fragmented by an economic model that prioritizes financial resources over people and nature" - to a proposed dialogue between academic knowledge and popular understanding. (Clínica Ambiental, 2018).

In Propuesta Huipala, "Health is dignity; behind every disease, there is always a reason for humiliation. However, health begins in the soil. When hope is in the earth, we must recover it so that it can sprout again." (Clínica Ambiental, 2024). Since 2013, this intervention proposal has served as a monitoring and control mechanism in a Participatory Guarantee System (PGS). Based on an evaluation

and management guide designed to promote agroecology integrated with permaculture, the Clinica Ambiental determines at which level of the RICA system the rural properties of associates or interested parties fall, and then issues the Huipala Certification (Clínica Ambiental, 2025).

THE CONTEXT

To boost economic development in Brazil's semiarid regions, especially in the Northeast, the government invested in water infrastructure projects to support agricultural modernization. These initiatives were part of a key strategy of the Growth Acceleration Plan (PAC), launched in 2007. The Tabuleiro de Russas Irrigation Perimeter (TRIP) covers the municipalities of Russas, Limoeiro do Norte, and Morada Nova and encompasses a viable agricultural area (Sau) of 14,365 hectares, with 10,765 in the first stage and 3,365 in the second. During the First Stage (1992 - 2004), there is a record of 22 rural communities fragmented by forced and uninhabited migrations resulting from pesticide contamination and engineering works for monocultures.

Even before the National Department of Works Against Droughts (DNOCS) issued the Public Utility Decree for expropriation purposes on April 4, 2007, the 782 families from the rural communities of Escondida, Bananeiras, Sítio Junco, Lagoa dos Cavalos, Córrego Salgado, Barbatão, Sussuarana, Peixe, Cipó, and Santa Terezinha had already voiced their deep concerns about the negative consequences observed from the First Stage of the project. This initial phase had a direct impact on their immediate surroundings. (Braga, 2010; Braga, 2020).

In 2008, the Resistance Commission was formed in the region by various individuals and local social organizations. Its purpose was to develop strategies to strengthen solidarity and mobilize support for families directly affected by the announcement of expanded irrigated fruit cultivation. These families viewed the expansion as a threat to their coexistence with the semiarid environment, as well as to food sovereignty, biodiversity conservation, and the agroecological transition.

From 2008 to 2010, communities demanded effective popular participation in decision- making actions in a legal and dialogical manner, with access to and the right to information and technical knowledge about the project. The inconsistency of the information provided regarding actions such as registration, the publication of the expropriation notice, and indemnity highlighted the existing conflict, revealing a power imbalance between the State and rural populations.

In a public hearing held in August 2009, the Public Prosecutor's Office suggested that the Resistance Commission file a lawsuit. To this end, the Commission complied with the collective elaboration of an autonomous territorial alternative proposal. On August 18, 2011, the Conduct Adjustment Agreement (Tac) was signed with the Federal Public Ministry and the National Department of Works Against Drought (Dnocs).

The preservation of a way of life in harmony with the semiarid region is upheld by the Cipó, Lagoa dos Cavalos, Peixe, and Santa Terezinha communities, which continue to advocate for their rights, particularly concerning access to land for family farming (Braga, 2020).

METHODOLOGICAL PATH

HEALTH, CLIMATE EXTREMES, AND COMMUNITY SOCIAL FABRIC

> The fight has not stopped since 2007. We were the articulators of these meetings, we were in charge of calling the families to meetings, we were in charge of the associations that needed to be founded. A tangle of things that women have been involved in and continue to be involved in. (Anna Keyle, farmer and educator, member of the Bem Viver Collective).

In Stage 1, "Opening Eyes," the Porfírio Nogueira da Costa Community Association recognized the health-disease issue as a crucial topic for community-based research. This recognition stemmed from

the expropriation of land by public utility decree for the construction of the second phase of the Tabuleiro de Russas Irrigated Perimeter Project that arose from public policies aimed at economic growth and drought relief in Russas, Ceará. The effects of these developments have significantly impacted social reproduction and ways of life associated with agroforestry systems, beekeeping, sheep farming, and family farming. As a result, there have been increased vulnerabilities and losses, including the destruction of social technologies for coexistence in the semiarid region, the reduction of native forests, and the contraction of communal spaces for social interaction. These changes have adversely affected food security, sovereignty, and overall community health. Concerns about local environmental issues, such as river silting, increased soil aridity, and intensive use of agrochemicals, add to the global dynamics of climate extremes, which may soon make the semiarid region even drier, with shorter and more intense rainfall periods and prolonged droughts (Braga, 2020; IPCC, 2023).

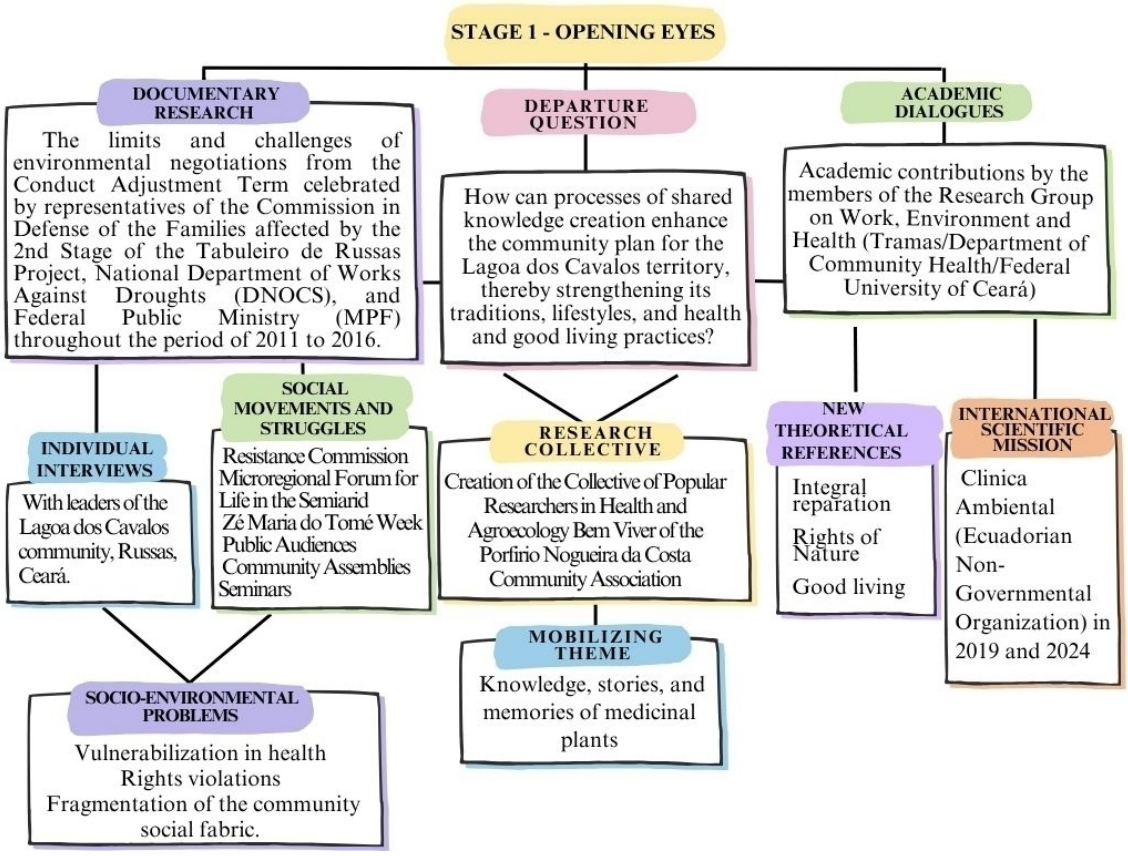

Figure 3 – Step 1: Opening eyes. Health, climate extremes and community social fabric - an integrative approach to socio-environmental repair of the Lagoa dos Cavalos community, Russas. Ceará. Source: Prepared by the authors (2025). Source: Prepared by the authors (2025).

> The theme of studies also brought women to the side of medicinal plants, and this enhanced encounters, especially of women in the field, through the memory of plants. [...] as in the past, women developed this [popular/traditional] medicine, our collective is also only women. This participation shows the protagonism - it is a female characteristic to fight and go after what is ours by right [...] (Edivânia, farmer and mathematics teacher, member of the Bem Viver Collective).

At this stage, a local group was formed following thorough dialogue between the Federal University of Ceará and the Porfírio Nogueira da Costa Community Association. This conversation focused on the legal violations identified through the analysis of the negotiations surrounding the Conduct Adjustment Term (TAC) for the Second Stage of the Tabuleiro de Russas Irrigation Project (2nd Stage/PITR) (Braga, 2020). The group, primarily composed of women, including mothers, farmers,

teachers, students, and community leaders, focused on the theme of using medicinal plant knowledge and practices to enhance local community health. In 2017, they evolved into the Collective of Popular Researchers in Health and Agroecology, known as Coletivo Bem Viver. This collective has since diversified its areas of activity, particularly in education, health, and agriculture, while exercising autonomy in socio- environmental projects within the community context.

AGROECOLOGY AND GOOD LIVING

In stage 2, Act, the group, primarily composed of women, including mothers, farmers, teachers, students, and community leaders, focused on the theme of using medicinal plant knowledge and practices to enhance local community health. In 2017, they evolved into the Collective of Popular Researchers in Health and Agroecology, known as Coletivo Bem Viver. This collective has since diversified its areas of activity, particularly in education, health, and agriculture, while exercising autonomy in socio-environmental projects within the community context. A series of interconnected actions was conducted, focusing on integrative health practices that emphasize popular knowledge and the use of medicinal plants. The experiences from the ethnobotanical study, along with the application of the Huipala Proposal repair tool, enhanced the quality of the participants' engagement in the study. Throughout the field phase of the study, partners and collaborators engaged at various stages of the work. As the experience progressed, several proposals for small projects and submissions to funding opportunities received approval. The study was a hands-on endeavor, allowing for the clarification of approaches and the development of collective strategies within the Bem Viver Research Collective.

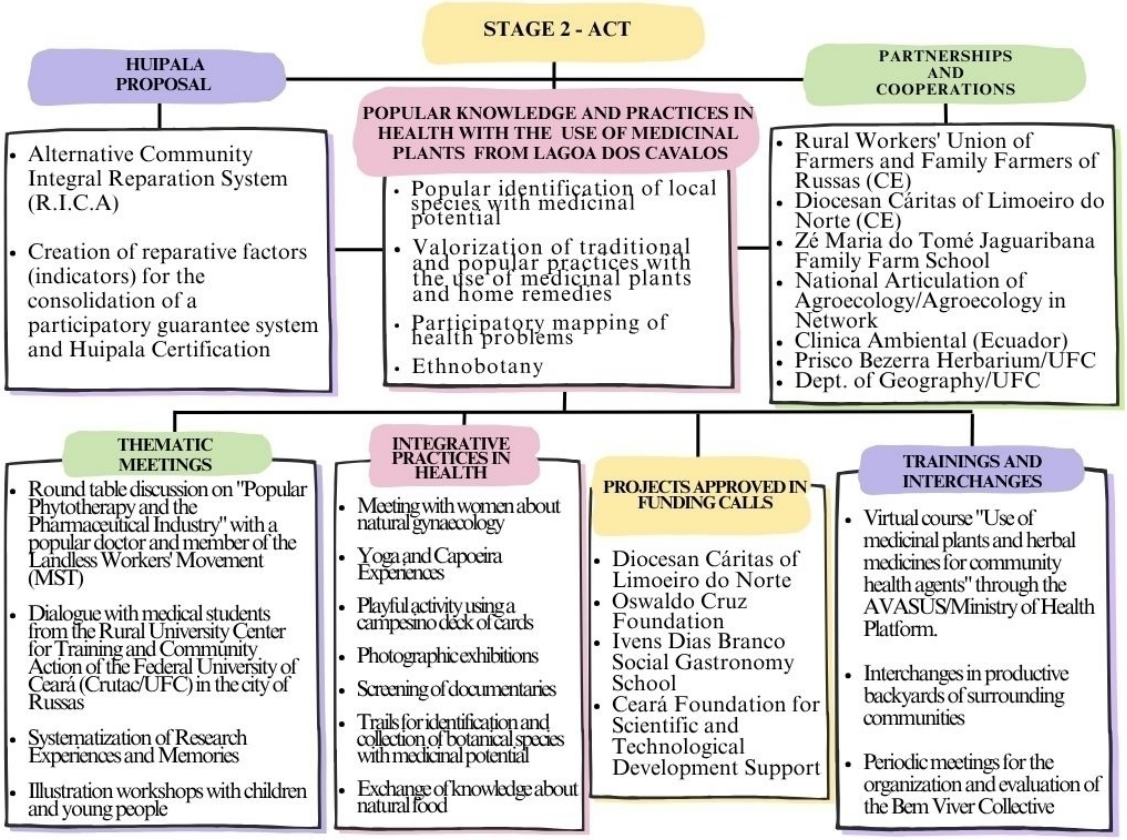

Figure 4 – Stage 2: Act. Agroecology and good living - an integrative approach to socio-environmental reparation of the Lagoa dos Cavalos community, Russas. Ceará. Source: Prepared by the authors (2025).

RESISTANCE, SOLIDARITY AND HOPE

> I love this [research] work! Because they had youthful moments with the children and the whole community! This at different times, because the community, despite having gone through this strong expropriation, which was an extremely big inconvenience, we can still make moments like this! (Dino, farmer and member of the community association).

Stage 3, Rejoice, is a set of practices aimed at fostering social engagement and mobilization, cultural activities, exchanges of experiences, cultural fairs, conversation circles, and celebrations that contribute to and continue to promote the spirit of solidarity and hope in the face of socio-environmental and health struggles. Since 2021, there has been a collective area called "Espaço Bem Viver" for agroecological production of medicinal herbs, traditional vegetables, fruits, and humus, where workshops, courses, training, and exchanges are held with visitors, student groups, neighboring rural communities, and collectives interested in agroecological, food, and health proposals in the countryside.

The dedicated efforts of the Bem Viver Collective have yielded remarkable results, including the booklet titled "Medicinal Plants, Popular Knowledge in Health, and the Struggle for Land: A Booklet in Defense of Life." Additionally, a thesis was defended with non- academic members on the Defense Committee, and two mini-documentaries were produced in collaboration with the Caroá Audiovisual Collective and the Ivens Dias Branco School of Social Gastronomy.

Some of the achievements were part of the project's overall objectives, while others are results of the project's relevance, rigor, and scope.

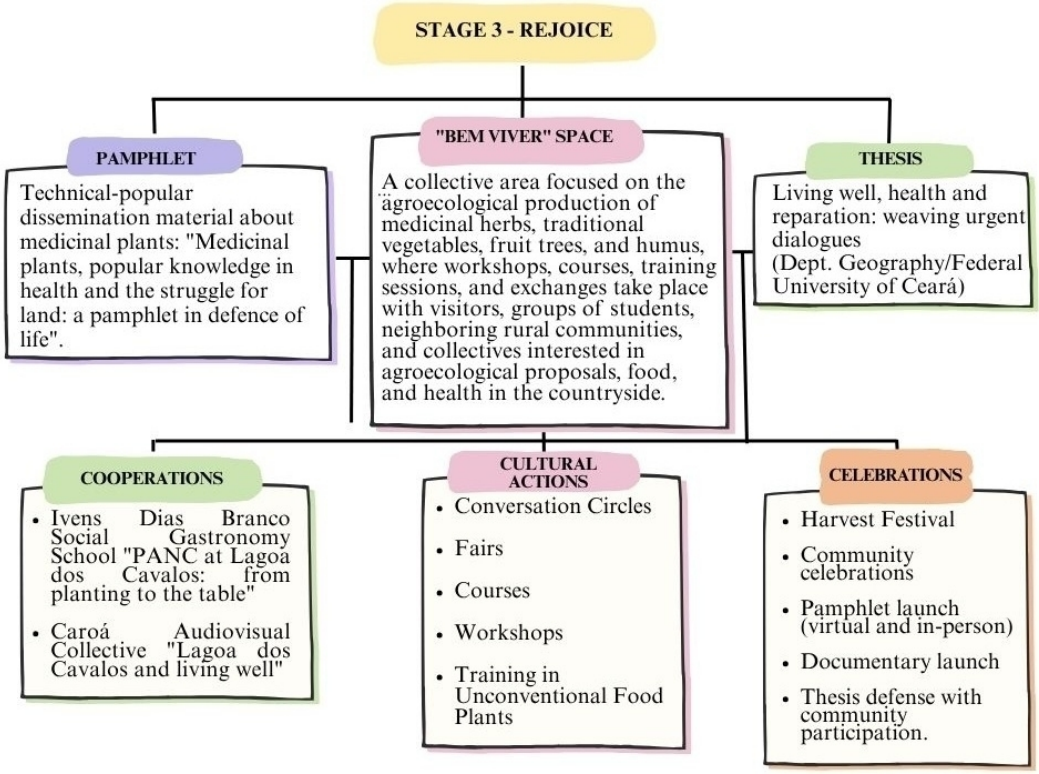

Figure 5 – Stage 3: Alegra-te. Resistance, solidarity and hope - an integrative approach to socio-environmental reparation of the Lagoa dos Cavalos community, Russas. Ceará. Source: Prepared by the authors (2025).

CONSOLIDATION OF STAGES

Figure 6 illustrates some key integrating aspects that have consistently permeated the research across the three periods: 1. Respect for individuals' time, collective agreements, and community decisions; 2. A commitment to conducting ethical and politically conscious science grounded in the local context; 3. Creativity in fostering deep perception and aesthetic experiences in the relationship between humans and nature. Additionally, this figure highlights key elements central to extending the methodological approach. The first stage focused on the health and social fabric of the local community, highlighting their relationship to the expansion of an agro-extractive production model and the environmental consequences stemming from global climate extremes. The second stage aimed to identify possible strategies for comprehensive reparation, based on the understanding that agroecology and "good living" are important theoretical frameworks for research. In the third stage, there were practical demands for healing at the community level, including support for soil regeneration and healthy food production to strengthen resistance, solidarity, and hope.

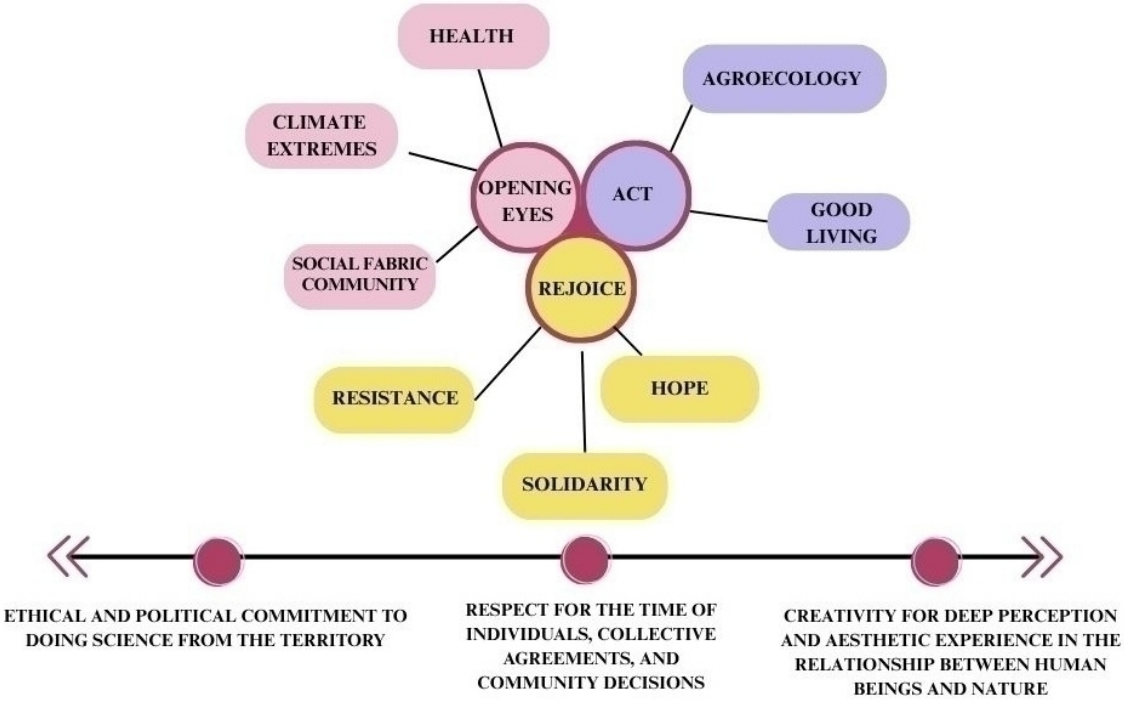

Figure 6 - Stages of the Comprehensive Reparation Proposal adapted to the reality of Ceará: Environmental Clinic and Collective Good Living. Source: Prepared by the author, adapted from Orange Alert No. 7, Clinica Ambiental (2013). Available at:https://www.clinicambiental.org/wp-content/uploads/docs/publicaciones/alerta7huipala.pdf. Accessed on 02.09.2019. Source: Prepared by the authors (2025).

RESULTS AND DISCUSSION

> There are countless ways in which populations, specialists, and researchers can articulate themselves. A central condition, from the perspective of environmental justice, concerns how professionals and scientists jointly respect the affected communities' demands, autonomy, and protagonism in the face of the conflicts in question. It is, therefore, a delicate process of forming bonds of trust that constitute the expanded communities of practices, epistemic or action research that, during a certain period, produce knowledge in a shared way (Porto, 2012, p. 1498).

Reflections on Community-Based Participatory Research (CBPR) informed by an integrative approach to socio-environmental reparation highlight the importance of decolonial epistemologies, especially in the context of global climate extremes. The results indicated that the democratization of knowledge involves social articulation, mobilization, and community organization; dialogue among different knowledge systems; systematization of experiences; and the popularization of science, all of which play a crucial role in consolidating restorative factors and enhancing the production of life. As Porto and Finamore (2012, p. 1,493) assert, "a constructivist, procedural and democratic perspective of confronting knowledge and practices can guide scientific production in favor of environmental justice."

According to the IPCC (2023), approximately 3.3 to 3.6 billion people reside in areas that are highly vulnerable to climate change. Currently, about half of the global population experiences severe water scarcity for at least part of the year, driven by a combination of climatic and non-climatic factors. Losses and damages are distributed unevenly across regions, sectors, and population groups. This includes access to water, food production, health, well- being, urban areas, infrastructure, biodiversity, and ecosystems.

Figure 7 shows a synthesis of this dynamic and interdependent system of the Bem Viver Collective's Comprehensive Community Reparation Proposal, in which central aspects of CBPR were unveiled, which are: a) Social articulation, mobilization, and community organization; b) Dialogue of knowledge and experiences; and c) Systematization of experiences and popularization of science.

Care for the historical and organizational context of the territory—encompassing people, groups, entities, and networks—has fostered a reliable relationship between the University and the Community Association. After establishing mutual respect, spaces for active listening granted legitimacy to the discussions of the local population affected by the direct and indirect impacts of the Tabuleiro de Russas Irrigated Perimeter (Stage 2). The systematization of experiences contributed to the Bem Viver Collective's reflexivity and identity, enhancing its visibility within the municipal context.

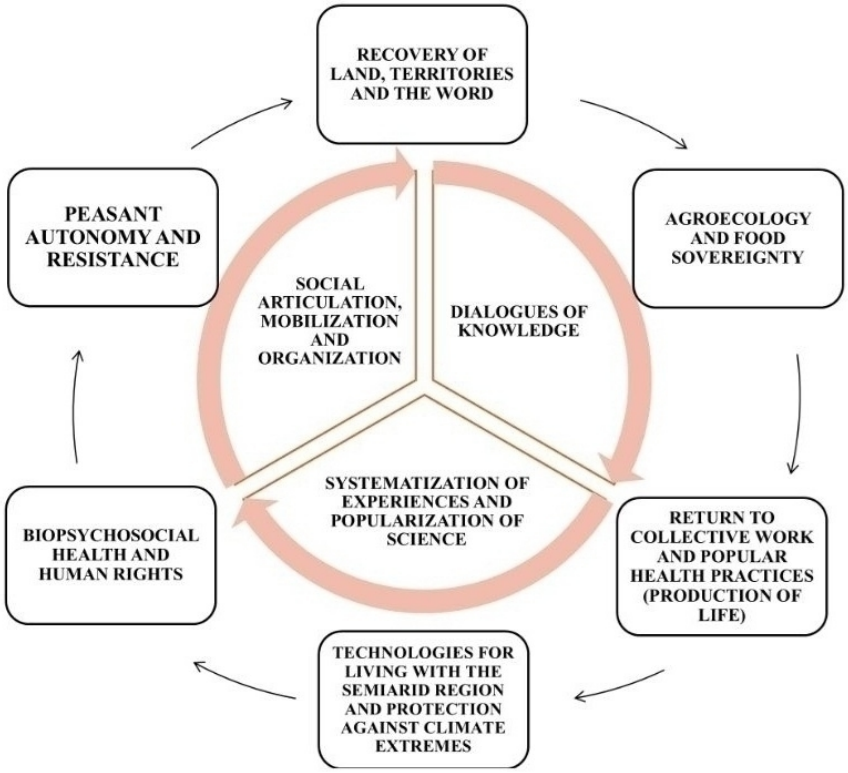

Figure 7 - Proposal for Integral Community Repair of the Bem Viver Collective (Lagoa dos Cavalos Community, municipality of Russas, Ceará). Source: Prepared by the authors. Source: Prepared by the authors (2025).

In the outer circle (Figure 7), horizons of care, hope, solidarity, and desirability (Maldonado, 2018) comprise the Socio-Environmental Repair Matrix of the Bem Viver Collective. An integrative synthesis of the dimensions of this Ecuadorian method—knowledge, skills, attitudes, production, commercialization, energies, joy, and organization—was transformed into a flowchart. This flowchart illustrates the interdependent processes at various scales, including local and global, individual and family, community, internal and external, and scientific and popular.

To achieve this goal and overcome violent imposition practices in the course of reparation, it is essential to reconstitute itself in an emancipatory process that presents exposure as a horizon of hope, transforms dispossession into a horizon of solidarity, and transcends the imposition of development models as a horizon of stability and utopia. (Beristain, 2010; Maldonado, 2019).

The members of the Bem Viver Collective saw themselves as both researchers and farmers, which, in turn, strengthened the local community identity, whose reflective- investigative potential regarding life, human beings, and nature in the sertão of Ceará already constituted the modus vivendi in the Lagoa dos Cavalos community. The following testimony is a good example of this:

> [...] this implies that we are not the object of study. We are subjects, protagonists of our own history! Of all the research [already carried out in the territory], this is the one that has left deep roots of organization or knowledge. Because many people have already passed through the community, who used our support, collected some of our knowledge, who have their master's or doctor's degrees today, but we do not know about it... [...] so, we feel like active subjects producing our [academic] work. That's why I said: yes, there is a Research Collective. [This research] has had a very important effect! Because how long has it been since we got together to think about something like this? (Jucélio Silva, HISTORY STUDENT, member of the Bem Viver Collective).

In-depth reflections on popular knowledge and scientific understanding informed individual care practices, family cultivation, and community experiences of solidarity, thereby strengthening social struggles amid rights violations. The following testimonies, in hoc sensu, clearly indicate how necessary they are for formulating knowledge in step with the care of the land and good living.

> So the Collective gradually provides this engagement. Because what we felt: that, with this process of expropriation, talking in a meeting was very tiring, which caused a lot of despair and conflict among the residents. [...] What I think is very good about the collective is that it creates organizational processes. I feel it. Strengthening. And I notice a concern in this moment of rescuing what we have lived, what we have been living - and it implies that we are overcoming the barriers placed by the [irrigation] project. And so: we feel like authors, at this moment: we are building a new story. (Jucélio Silva, History student, student of the Bem Viver Collective).

The knowledge/know-how-to-do/do/transmit cycle was a common concern for the Bem Viver Collective, which affirmed the value of knowledge, particularly in making it accessible to families. The organization and publication of the research were strategies to foster community reparation. With the visions, hands, and voices of these women, the weaving of "Medicinal plants, popular practices in health and the struggle for land: a booklet in defense of life" increased the demand to establish the inseparable interrelationships between nature and culture, which are crucial for the ongoing struggles in defense of the rights of nature and human rights. By highlighting ethnic diversity, life, and various perceptions of it, a strategy was established to break away from the disqualification of popular and traditional knowledge when absolute scientific truths are claimed.

The principle of solidarity serves as a means of decolonizing knowledge and challenges the limitations of cognitive-instrumental rationality in science. This approach disrupts the traditional distinctions between subject and object, human and nature, order and chaos, structure and action, scientific and popular knowledge, theory and practice, abstract and concrete, as well as spirit and body, and the ideal and the real (Santos, 2011).

> In this form of knowledge, to know is to recognize is to progress in the sense of taking the other from the condition of object to the condition of subject. This knowledge- recognition is what I call solidarity. We are

> so accustomed to conceiving knowledge as a principle of order over things and others that it is difficult to imagine a form of knowledge that functions as a principle of solidarity. [...] We need alternative thinking about alternatives (Santos, 2011).

This integrative and methodological approach of the Clinica Ambiental significantly enhanced the understanding of reparation and health, while also promoting a rigorous, relevant, and comprehensive methodology in community-based participatory research (CBPR). The research enhanced visibility and practices promoting solidarity, hope, and joy in addressing environmental injustices within an academic context.

Dialogues for reparation, from an Ecuadorian perspective, have generated affirmative propositions for life, recognizing that good living is not just an alternative to development but also a radical path to transformation. This can be accomplished through various methods, including permaculture, the arts, arboriculture, holistic therapies, medical care, cultural festivals, and ecological tourism. These approaches aim to restore the vitality of individuals, families, and communities impacted by environmental contamination and physical and mental illnesses, particularly those caused by the intensive extraction of oil in the Ecuadorian Amazon. Additionally, these initiatives serve as examples, provide incentives, and have a positive impact in Tabuleiro de Russas, Ceará, Brazil.

Here, a dialogue for reparation is opened to strengthen and collaborate on healing approaches in territories constantly affected by the destructive logic of neo-extractivism.

CONCLUSION

Recognizing the complexity of environmental issues, particularly the rise of environmental injustices in Brazil, it is essential to acknowledge the importance of Brazilian socio-biodiversity and its extensive territorial reach. This reflection extends from El Sur to the case of Ceará's Vale do Jaguaribe, within the context of the expansion of conservative agricultural modernization and climate change. It is evident that the epistemological foundations for knowledge production need to be updated to support the preservation of the right to life. The theoretical concept of socio-environmental reparation has significant potential for conducting participatory community-based research in areas affected by socio-environmental conflicts.

The research project 'Good living in the northeastern semiarid region: the experience of building the alternative community integral reparation system in a territory in socio-environmental conflict, municipality of Russas, Ceará' was approved by the Research Ethics Committee of the Federal University of Ceará (Cep/Propesq/UFC) (Opinion No.: 3.507.932/2019).

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DATA AVAILABILITY

Not applicable.

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