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Community-Based Communication Technologies and Environmental Disinformation: Digital Resilience Under Far-Right Threats

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Abstract

Amid the polycrisis of Covid-19 pandemic and disinformation, rural Traditional Peoples and Communities in Brazil demonstrated remarkable resilience. This article examines the social mobilization strategies developed by 33 communities between 2020 and 2022, highlighting the community-based communication technologies used for collective action. Traditional Peoples and Communities are local groups with territorial ties and empirical knowledge who are recognized as key actors in environmental and natural resource protection. Although they play a crucial ecological role, there is a research gap on how these communities developed communicative strategies to strengthen resilience against disinformation during the pandemic. Guided by participatory and action research epistemology, the study involved 274 family representatives across nine Brazilian states from the Atlantic Coast, combining a multi-method approach. Data collection included questionnaires quantifying media access and internet usage alongside conversation circles and community mapping documenting communication practices. The results make explicit that Traditional Peoples and Communities faced two main types of disinformation: regarding Covid-19 vaccination and related to land use and speculation. In a context of limited digital connectivity, they developed communal internet practices—such as broadband sharing—that supported collective organization and information exchange. Besides, two experiences stood out: community health workers' efforts to counter vaccine disinformation, and community leaders' use of online meeting platforms to promote social mobilization in the face of environmental disinformation. Findings underscore how community-based communication technologies can foster political agency and strengthen resilience against disinformation.

Keywords

Brazil; community-based communication technologies; Covid-19; disinformation; environmental disinformation; far-right; Traditional Peoples and Communities

1. Introduction

Our article analyzes the social mobilization strategies and community-based communication technologies employed by 33 rural Traditional Peoples and Communities (*Povos e Comunidades Tradicionais*, hereafter TPC) during the Covid-19 crisis in Brazil (2020–2022). TPCs are diverse local groups that maintain strong ties to the territory and hold empirical knowledge, widely acknowledged as key actors in environmental and natural resource protection (Food and Agriculture Organization, 2024). Their contributions to sustainability are formally recognized in Brazilian law, specifically in Decree 6.040/2007, which established the national policy for the sustainable development of TPCs. Since TPC territories are rich in natural resources, these communities have been targets of land use speculation and are exposed to disinformation threats (Figueira & Távora, 2025; Laia, 2025; Medeiros et al., 2023).

Disinformation strategies are well documented (Bennett & Livingston, 2018; Quandt et al., 2025; Wardle & Derakhshan, 2017), but little research has examined how rural communities affected by disinformation use communication technologies to foster resilience against it. To address the gap, our article investigates the following research question: How did TPC along Brazil's Atlantic coast structure community-based communication technologies, both online and offline, in response to the pandemic and disinformation polycrisis (2020–2022)? A total of 274 family representatives from 33 TPCs across nine Northeastern states participated in the project for two years.

Section 2 begins by outlining how we conceptualize disinformation (Bennett & Livingston, 2018; Quandt et al., 2025; Wardle & Derakhshan, 2017) and how these phenomena manifested in the Brazilian context during the pandemic with the prominence of far-right politics (Albuquerque et al., 2024; Ferreira & Alcântara, 2023; Hunter & Power, 2019). Particular attention is given to the prominence of environmental disinformation and information disorder on land use, a defining feature for the Brazilian case (Figueira & Távora, 2025; Medeiros et al., 2023, 2024; Rajão et al., 2022; Recuero & Soares, 2020; Regattieri, 2023; Santini et al., 2025)

Section 3 examines the Latin American scholarly debate on community-based communication technologies (Freire, 2021; Paiva, 2003, 2022; Peruzzo, 2021, 2022; Sodré, 2014). This body of work conceptualizes communication as extending beyond media devices to encompass practices oriented toward political agency and social mobilization in the face of vulnerabilities, across different loci of interaction, either digital or analog.

In section 4 we set out the premises of the participatory approach and details the data collection. The research is epistemologically grounded in participatory and action research methodologies, guided by an ethical commitment to fostering social change (Fals Borda, 1987; Freire, 2021; Peruzzo, 2021). Within this framework, community representatives are involved in research design and data collection, co-producing knowledge as "activist-researchers" who conceptualize, design, and implement the research process. In total, 40 women acted as activist-researchers.

Section 4 also outlines the multi-method approach to data collection. Quantitative data on device use for internet access and on community internet practices were obtained through questionnaires (see Supplementary File). Qualitative data, focused on documenting experiences with community-based

communication technologies, drew on two methodologies: facilitated conversation circles and community mapping of communication practices.

In Section 5, we present quantitative data on internet use alongside qualitative findings showing that participants faced two main forms of disinformation: (a) disinformation about the Covid-19 vaccine; and (b) disinformation related to land use, particularly concerning the expansion of energy projects during the pandemic. Among the community experiences mapped, two stood out as especially significant and coherent with our investigation: (a) the role of community health workers (CHWs) in countering vaccine-related disinformation, and (b) the use of online meeting platforms to mobilize the community in response to threats related to land-use and environmental disinformation. Finally, we reflect on the limitations of the research and outline potential next steps for scholarly debate on the topic.

2. Far-Right Disinformation During the Pandemic in Brazil

In the context of the current polycrisis, disinformation has become a key instrument worldwide, intensified by an opaque, hypermediated, and hybrid media ecosystem. According to disinformation scholarship (Bennett & Livingston, 2018; Quandt et al., 2025; Wardle & Derakhshan, 2017), the concept refers to the intentional dissemination of false, distorted, or manipulated information with the purpose of causing harm. It may involve fabricating content, using misleading contexts, or manipulating real data to create confusion, shape perceptions, and influence social or political decisions. It intertwines true and false elements in contexts that appear credible. A disinformation scenario is characterized by overlapping flows of falsehoods and the strategic orchestration of information designed to deceive or confuse populations.

Disinformation has been a defining feature of the Bolsonarist far-right in Brazil (Albuquerque et al., 2024; Regattieri, 2023). As evidenced by Albuquerque et al. (2024), Ferreira and Alcântara (2023), and Hunter and Power (2019), the far-right in Brazil combines radical right-wing ideology, conservative values, illiberal agendas, populism, and authoritarian tendencies. It consolidates power through personalized leadership rather than institutional parties and is marked by militarism and anti-establishment rhetoric. Jair Bolsonaro, Brazil's president from 2019 to 2022, is their main leader, and his project expresses nostalgia for the 1964–1985 military regime as well as hostility toward minorities, environmentalists, and human rights activists.

Analyzing the landscape in Latin America and the Caribbean, Urbano et al. (2024) identified the relevance of environmental disinformation. This finding is highly relevant to our study as it often involves manipulating information about territories and resources belonging to TPC. In Brazil, environmental disinformation is marked by the strategic production and circulation of misleading narratives and attacks against environmental social movements and Indigenous and local communities, alongside historically manipulated official data on territorial occupation, environmental impacts, and development projects, aimed at legitimizing land grabbing and the expansion of energy and agribusiness ventures in the country (Figueira & Távora, 2025; Laia, 2025; Medeiros et al., 2023, 2024).

Brazilian scholars have documented the prevalence of environmental content within disinformation narratives during the pandemic. Santini et al. (2025), for example, demonstrate how far-right political actors used WhatsApp and Telegram to amplify anti-ecological narratives that co-opt the notion of sustainability, promoting direct attacks against TPCs, including Indigenous groups, and rural social movements. Likewise,

Távora (2024) and Medeiros et al. (2024) show how the Meta Ads Library has been employed to propagate hate speech against ecological social movements—portrayed as obstacles to "national progress"—and to disseminate greenwashing narratives. Regattieri (2023) and Recuero and Soares (2020) document the far-right's use of environmental disinformation during crises such as the firestorms in protected areas, like the Amazon and Pantanal, identifying the deployment of artificial intelligence through social bots on Twitter and coordinated behavior on Facebook. Rajão et al. (2022) also examine the extensive use of manufactured environmental controversies by major far-right political actors.

In the context of Covid-19, Brazil became a hotspot for disinformation campaigns that affected public perceptions of the virus, vaccines, and government measures. Disinformation circulated widely across social media platforms, with WhatsApp playing a prominent role, and exploited political polarization, fear, and uncertainty. Key narratives included downplaying the severity of the virus, promoting unproven treatments (e.g., hydroxychloroquine), and questioning the safety and effectiveness of vaccines. These campaigns also targeted Indigenous and vulnerable communities, compromising public health interventions and contributing to higher infection and mortality rates in rural areas (Ferreira & Alcântara, 2023; Ricard & Medeiros, 2020).

Although far-right strategies are well documented, as discussed above, there is still a research gap regarding how local communities facing disinformation during the pandemic engaged with, developed, and deployed digital technologies and communicative practices to foster resilience. Communities across Latin America remain vulnerable due to limited technological infrastructure and restricted digital access, yet they also inherit deep traditions of strength, resilience, and resistance (Freire, 2021; Peruzzo, 2021). These communities perceive and practice communication as both a tool for mobilization and a mode of civic participation, an understanding that constitutes the epistemological foundation of this article, as elaborated below.

3. Community and Communication: Epistemological Foundations and Practices

TPCs in Latin America have a long-standing tradition of agency in resisting communication monopolies and land-related conflicts. They have consistently employed diverse communication strategies for self-organization, integrating digital and infrastructural activism with traditional modes of community engagement, mobilization, and conflict resolution (Freire, 2021; Paiva, 2003, 2022; Peruzzo, 2021, 2022; Sodré, 2014).

Communication experiences in territories with limited technological infrastructure and digital access, such as TPC in Latin America (Comissão Econômica para a América Latina e o Caribe, 2018, 2020), underscore the need to research communication as a process of sociability and interaction rather than solely as a functional or informational activity mediated by devices. Sodré (2014) conceptualizes communication as a cohesive community bond and a condition for organizing collective life, framing it within the epistemology of the "commons." This perspective conceives of communication not merely as information transmission but as a dynamic process that generates and sustains social ties. The notion of the commons denotes a symbolic, ethical, and political space, collectively constructed through in-person community practices and engagements with communication technologies. As such, communication is not confined to media or digital platforms; it emerges as a foundational act that underpins diverse forms of social coexistence.

According to Sodré (2014, p. 191), restricting the scope of communication to media systems or digital devices constrains the epistemological breadth and overlooks its inherent complexity. This reductionist approach tends to center scholarly attention on monopolistic media markets, thereby marginalizing more diverse and communitarian forms of communication. In contrast, the epistemological perspective adopted here embraces communicative processes rooted in local communities, resonating with the communitarian epistemology of communication (Paiva, 2003, 2022), and with pedagogical approaches to popular and community-based communication (Freire, 2021; Peruzzo, 2021, 2022). Paiva (2003) argues these communicative practices are shaped by the interests of local actors in narrating their own realities and are defined not by the services provided, but by their underlying social project, articulated through a clear commitment to mobilization and the active exercise of citizenship (Paiva, 2003, p. 126).

In line with Sodré's perspective, such an approach also challenges the sender-receiver binomial as the basis of communication. Community communication, by contrast, refers to locally embedded modes of organization and relationality, where participants are not senders or receivers, but co-producers of meaning. Therefore, it transcends alternative uses of media, manifesting instead through interaction in community life.

The emphasis on community communication beyond the realm of media is reinforced by Peruzzo (2022), who comprehends the communicative process as intertwined with dynamics of consciousness–organization–action. These dimensions are rooted in structural bonds like community associations and social movements, where participatory protagonism serves as the core methodological approach. At the same time, this form of communication embodies struggles for human and citizenship rights as well as efforts to transform lived realities (Peruzzo, 2022, p. 57). By fostering collective, interpersonal, and intergroup relations—cultivating bonds and coordinating initiatives—community communication unfolds through direct, face-to-face interaction and mediated formats, bridging ancestral knowledge with contemporary digital technologies (Peruzzo, 2022, p. 69).

The theoretical and conceptual contributions of Sodré, Paiva, and Peruzzo materialized in a variety of community-based communication initiatives during the Covid-19 pandemic, which generated and disseminated content across multiple platforms and media. By mapping these activities in different regions of Brazil, Terso and Melo (2021) identified similar features among them: a critical stance toward individualism as a dominant value, the affirmation of the commons as a guiding organizational principle, and the integration of offline and online practices aimed at decentralization and expansion of informational access.

Communities across the country mobilized a range of strategies: Offline tactics, such as posters affixed to the walls of Rio de Janeiro's *favelas*, boats with loudspeakers navigating Amazonian rivers, and motorcycles outfitted with sound systems in city centers, were combined with digital tools such as WhatsApp audio messages, Instagram live streams, and videos uploaded to YouTube. As Terso and Melo (2021) note, the aim was not to replace existing communicative practices but to engage with and build upon the traditions already present in those territories.

The article was developed based on this epistemological framework, and the Section 4 outlines the methodologies employed.

4. Methods and Premises

We applied a participatory methodology rooted in the tradition of participatory action research in Latin America and were informed by reflections on conscientization, organization, and action (Fals Borda, 1987; Freire, 2021; Peruzzo, 2021, 2022). A key methodological choice was the incorporation of activist-researchers, conceptualized by Fals Borda (1987) as *investigadores populares*, in which research participants take on the role of researchers themselves. In the project, this role was filled by 40 women from the TPC who acted as multipliers and educators, engaging as local focal points, and participating in every phase of research from planning to implementation, assuring community members were protagonists in systematizing their own knowledge and practices.

The research design was developed to ensure the communities' active and leading role—from design and content to language and desired outcomes. This approach ensured active collaboration between community members and academic researchers, seeking to foster participation throughout the process, challenge structural inequalities in knowledge production, and reinforce civic engagement, consonant with Fals Borda's (1987) vision of research as a praxis oriented toward social change.

From an ethical standpoint, the research design explicitly rejected extractivist practices that have historically characterized academic work in these territories, particularly in Latin America (Freire, 2021). Extractivist research involves practices in which data and findings are unilaterally gathered without meaningful communication with participants and where the benefits of the research are not equitably shared with the communities that contribute their knowledge and labor (Gorman, 2024).

4.1. Data Collection

The data collection combined qualitative and quantitative strategies. It included questionnaires designed to quantify media access and internet use (see Supplementary File), as well as conversation circles and community mapping to document community-based communication practices. The questionnaires and the application methodology were co-created in partnership with the activist-researchers. This co-creation took place specifically during a conversation circle titled Popular Methodologies in Times of Pandemic, which was dedicated to this purpose.

The questionnaires comprised four sections: (a) general household information; (b) internet access and use; (c) access issues during the pandemic; and (d) consumption of other media and broader relationships with technology. The first section gathered data on the number of household members, age groups, education levels, and income (optional question, to preserve household autonomy). The second section, on internet access and use, asked participants about the technological devices available in the household, the presence of a home internet connection, frequency of use, service costs, and the websites and applications most frequently accessed. The third section addressed problems encountered during the pandemic including connection quality, digital access to government benefits, and access to information on prevention measures. Finally, the fourth section asked about access to other media (such as television and radio) and the types of content most consumed.

The questionnaires were answered by 173 people from 33 rural communities in the nine states of Brazil's Northeast region: Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, and Sergipe. Prior to administration, the activist-researchers read and recorded the informed consent statement, which detailed the research objectives and guaranteed participants' anonymity and right to withdraw at any time without justification. Data collection prioritized women respondents and employed a hybrid format: Some participants completed a digital version via the open-source platform RIOS, while others filled out printed questionnaires in person with the support of activist-researchers. The quotes presented here were translated by the authors.

Below (Figure 1) is a photographic record taken by one of the activist-researchers during the interview process.

Figure 1. Questionnaire administration by activist-researchers. Source: Intervozes (2022).

Qualitative data were gathered through six conversation circles, engaging 40 women from the 33 communities, with participants rotating across sessions. Each circle employed a methodology of discussing challenges related to a focal point—such as the pandemic, disinformation, or environmental justice—and mapping the online and offline community-based communication technologies used to build resilience against such threats. The circles were envisioned as spaces for learning, exchanging, and capacity building in territorial governance and research methodologies. The topics addressed were:

1. Experiences and methodologies for mapping territories and the internet;
2. Popular methodologies in times of the pandemic;
3. Community internet networks: definition and construction;
4. Between the ancestral and the digital: the transformation of technology and implications;
5. Communication and territory: public policies on ICT access and video as evidence of rights violations;
6. Technologies, women, and territory: which technological pathways and forms of internet access are possible to support women and the self-determination in TPC?

To ensure broad participation and territorial representativeness, online conversation circles were supported by community leaders who helped to relocate participants from areas with limited digital access to venues with more robust ICT infrastructure. This approach aimed to connect groups separated by social distancing measures promoting integration, mutual learning, and collective reflection on pandemic-related

disinformation. Nonetheless, the online format posed significant challenges to participation due to persistent limitations in internet access and varying levels of media literacy.

The pedagogy of the conversation circles fostered culturally rooted dialogue, integrating local storytelling and cultural references as core components of the learning experience. Each session followed a three-part structure. Firstly, each woman would bring material objects or symbolic references from their territories related to the topic. This was followed by an open dialogue where experiences, challenges, and potential solutions were shared and co-created. Finally, after the circle, a graphic visual representation of the conversation was produced and shared with the wider community to visualize key themes, register participants' perspectives, and consolidate the discussions.

Figure 2 depicts Conversation Circle 4, titled Between the Ancestral and the Digital: The Transformation of Technology and Implications, which was led by women from the city of Alagoa Grande in the state of Paraíba. At its center, symbolic objects are arranged on a cloth: drums, plants, harvested food, flowers, footwear, and everyday items. These objects evoke memorial practices and embody the communicative dimensions experienced by TPC. The drum, for instance, represents an ancestral technology that signifies rhythm and memory; the plants and food anchor the dialogue in territory, care, and subsistence; and the circular formation of the participants expresses principles of collective decision-making.

Figure 2. A conversation circle with the TPC. Source: Intervozes (2022).

In this circle, a participant pondered on the relationship between ancestral and digital technologies, acknowledging the role of her religious community as a broker for internet use:

> It became clear that owning a computer was insufficient without appropriation. Despite possessing the device, I encountered operational barriers. This led me to bring it to the *terreiro* [an Afro-Brazilian religious temple] to acquire the necessary skills together with other members of the community. (S.B., community member, Paraíba)

Such considerations emerged across all six circles and were discussed among the groups, who shared different strategies for overcoming structural barriers. A graphic visualization of Circle 4 is presented in Figure 3.

Figure 3. Graphic visualization of conversation Circle 4. Source: Intervozes (2022).

The use of graphic visualization sought to synthesize the conversations visually, supporting communities in recalling key discussions and enabling the dissemination of outcomes to a wider audience. This approach operated as a tool for constructing collective memory and social meaning, reinforcing shared learning and extending the dialogue beyond the immediate encounter. As such, graphic visualizations form part of the broader repertoire of community-based communication technologies developed by TPC in Brazil (Trombini & Motta, 2025).

Quantitative and qualitative data were gathered concurrently, and the research design did not intend for these data to directly inform one another. The quantitative component sought to delineate general patterns of technology access and usage by the communities, thereby establishing an evidence-based framework for future public policy advocacy on internet access. Conversely, the qualitative component sought to map community-based communication technologies through an iterative process, wherein the very act of systematizing and documenting experiences fostered critical reflection on their inherent potentials and limitations. This way, the participatory premise ensured that the data collection process itself functioned as a mode of knowledge production, capacity building, and community mobilization.

Having outlined the methodological approach and premises, Section 5 presents our findings. First, we analyze the quantitative data on internet access and use followed by an exploration of two key community-based communication experiences mapped during the conversation circles.

5. Results

The results are situated within a broader context of threats and inequalities deeply informed by the 274 families from 33 communities who contributed to data collection.

5.1. Quantitative Overview of Internet Use Among Research Participants

On average, families spend up to USD 40 per month on connectivity. For many households living on a minimum wage income (USD 278/month), this represents around 15% of their monthly earnings. In remote or mountainous regions, costs can exceed USD 100 due to additional expenses for equipment installation and maintenance, like towers and technical support. These amounts far surpass the levels recommended by the International Telecommunication Union (2025) which stipulate that internet services should not cost more than 2% of a family's per capita monthly income, highlighting the socioeconomic barrier these communities face in accessing digital connectivity.

Wi-Fi and mobile broadband data plans were the most common forms of internet access, reported by 59% of families. In 28% of cases, connectivity infrastructures had been installed as compensatory measures associated with large projects in their territories, such as wind farms or railways. Among households without a home connection, 27% improvised access by capturing neighbors' signals. Fixed broadband (Wi-Fi) was particularly prevalent in households with a stronger presence of women, suggesting their leading role in debates and decisions about digital access in families and communities.

In Figure 4, results show that among households with internet access, the primary device used was the mobile phone (70,7%) followed by computers and/or mobiles (7,1%). Mobile phones were typically shared within the family, with most households owning just two devices, one reserved for use at home and the other for activities outside, such as selling goods in urban markets.

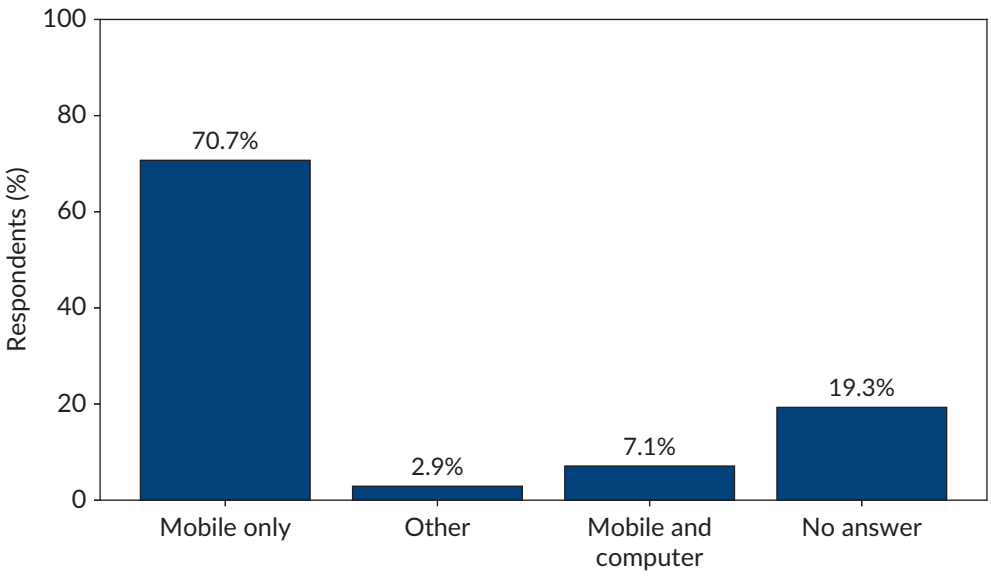

Figure 4. Devices used for internet access.

The predominance of mobile phones as the main means of internet access posed significant barriers to the use of more complex applications and services. During the pandemic, 61% of families reported an increased need for digital tools to support remote education and 54% to access health information. However, limited media literacy and the ergonomic constraints of mobile devices often impeded effective use. These challenges led to exclusion but they also gave rise to community-based support networks. More experienced individuals and CHW acted as facilitators, coordinating collective strategies to help others navigate digital

services through practices of solidarity and mutual learning. Given the strong link between digital access, education, and community engagement, women stood out as the most frequent and active users of connectivity services.

During the pandemic, 74% of households reported having daily internet access, using it at least five days a week, while 26% lacked reliable connectivity. This uneven pattern indicates that, although the internet became part of everyday practices, infrastructural limitations and financial costs constrained consistent use. In many cases, access was intermittent or mediated through collective arrangements, reflecting a hybrid digital environment in which connectivity functioned not only as a resource but also as a limitation in community life.

Besides, environmental factors were identified as challenges to connectivity. Over 60% of households reported occasional or frequent internet disruptions during rainfall, underscoring the need to distinguish between nominal access and meaningful connectivity. Signal availability was affected by geographic and meteorological conditions while usage was further constrained by data caps in the case of mobile broadband.

In terms of platforms, everyday use was dominated by messaging applications (92%), social media (88%), and search engines (84%), followed by streaming services (67%) and e-learning platforms (44%). Messaging applications, particularly WhatsApp in Brazil, often replace traditional telephony and serve as essential communication tools in areas with weak infrastructure.

Work-related applications were used by 26% of respondents, while videoconferencing applications reached 36%. These figures likely express the low level of digitalization in local work activities as well as the technical and ergonomic limitations of mobile devices and unstable connectivity, which remain persistent challenges in TPC territories. Regarding social media, as presented in Figure 5, Facebook (80%) was the most frequently mentioned platform, followed by YouTube (74%), Instagram (63%), and TikTok (30%).

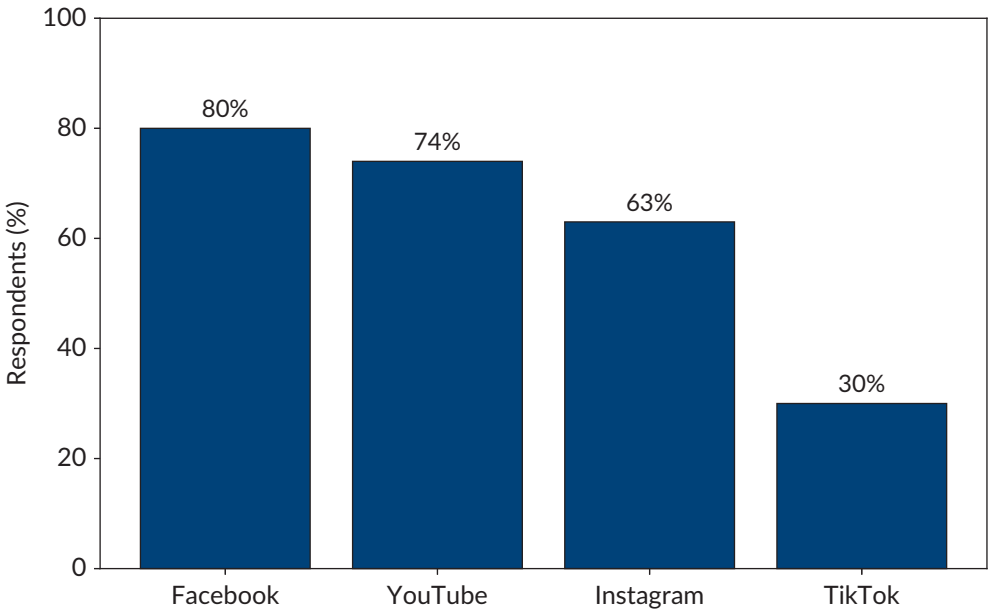

Figure 5. Social media applications used by families.

Facebook is well consolidated in rural territories, possibly due to its lower data consumption, ease of use, and multifunctional design that combines news, community groups, and interpersonal communication. YouTube gained relevance as both an entertainment and educational resource offering tutorials, religious services, and cultural content that proved valuable during periods of social distancing. By contrast, Instagram (63%) and TikTok (30%) appeared less central, perhaps because of their emphasis on visual aesthetics, influencer culture, and rapid trends that appeal more to younger audiences than to intergenerational, community-oriented practices. Overall, this distribution suggests that families gravitated toward platforms offering the broadest mix of accessibility and multifunctionality, integrating them into everyday routines in line with local practices and infrastructural conditions.

Figure 6 indicates that a substantial share of families relied on emergency strategies to secure internet access.

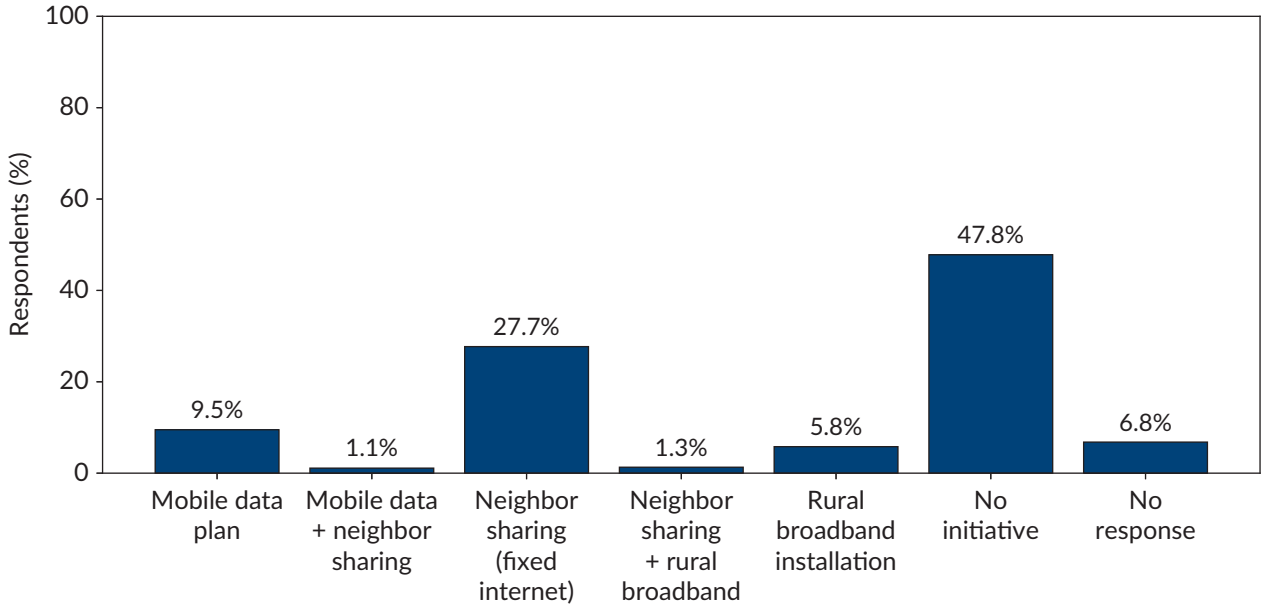

Figure 6. Emergency strategies for internet access adopted by TPC.

The most notable emergency strategy was sharing fixed broadband internet with neighbors, adopted by 27.7% of families. The fact that more than a quarter of households depended on neighbors for connectivity stresses the urgent need to expand equitable internet access and the vital role of local solidarity networks in compensating for gaps left by public policy and market-driven infrastructure.

Despite the adoption of diverse strategies for internet use, a digital divide persists in TPC territories, most visibly in the limited availability of devices. In some communities, such as the *quilombola* territory of Sumidouro in the state of Piauí, there is not a single computer available. This infrastructural deficit poses a serious obstacle to remote education, access to digital platforms, and participation in virtual meetings and public debates, which have become essential forms of mobilization in contemporary information societies.

Communitarian strategies remain a defining feature of life in TPC territories: Only 7% of respondents reported not engaging in any form of collective activity. Most communal practices are tied to cultural and political representation, signaling high levels of social organization and agency. The use of digital

infrastructure is likewise oriented toward creating safe, self-determined spaces, grounded in diverse knowledge and practices, to counter disinformation, racism, misogyny, and environmental injustice.

5.2. Community Mapping

Community mapping consisted of gathering and systematizing information about communication experiences already developed by the communities. Through the community mapping, we identified four principal domains of practice: (a) the use of WhatsApp communities and open-source mapping tools to strengthen "houses of seeds," where non-transgenic seeds are stored for food production; (b) agroforests and kitchen gardens that sustain healthy diets, organize self and collective care, and allowed limited in-person interaction while observing social distancing measures; (c) the use of digital devices to commercialize food in local markets and fairs, where goods and information circulated across the wider community; and (d) the recording and online sharing of ancestral dances, such as *coco de roda* and *ciranda*, as a form of interaction and communication for those unable to attend in-person cultural events, helping to meet ongoing cultural needs during periods of distancing.

Furthermore, two experiences illustrate our argument on the Covid-19 polycrisis, marked by disinformation about vaccines, land use, and the environment. The first experience concerns the role of CHWs in combating vaccine disinformation; the second involves environmental disinformation and the mobilization of local communities to advocate for better communicative practices around the implementation of renewable energy projects in a context of misleading narratives about risks and opportunities.

5.2.1. CHWs and Reliability of Vaccine Information

Embedded in the territory through Brazil's Unified Health System (*Sistema Único de Saúde*, which guarantees universal healthcare access for the entire Brazilian population), particularly the Family Health Strategy, CHWs sustain continuous face-to-face contact with households, know local leaders and routines, and translate technical instructions into locally meaningful terms. For many TPCs in rural Brazil, they are the first point of contact with the Unified Health System and the primary way communities access and relate to the system (Lotta et al., 2022). This territorial reach and relational trust made CHWs frontline brokers during the Covid-19 crisis when vaccine disinformation spread via messaging applications (Ferreira & Alcântara, 2023; Hunter & Power, 2019).

Through community mapping, we documented how CHWs mitigated the impact of vaccine-related disinformation circulating via WhatsApp voice memos. Recurrent false claims raised in conversation circles included that "two elderly people died because of the vaccine," that "the vaccine would dry up breast milk," and that "the vaccine causes infertility in young people." A key practice identified was the organization of collective listening sessions in which CHWs played the memos together with families to unpack inaccuracies and manipulative cues. Efforts to counter distrust went beyond debunking: CHWs combined these explanations with day-to-day follow up on post-vaccination effects and active monitoring via offline communication networks, fostering a form of media literacy that strengthened confidence in vaccination.

During the pandemic, when digital channels assumed outsized importance, the in-person presence of CHWs opened spaces for contestation, mediation, and dialogue around circulating information. Doorstep visits,

front yard conversations, and small meetings in community venues enabled residents to voice doubts, negotiate meanings, and cross-check what they "had heard on WhatsApp" against clinical protocols and local epidemiological data.

Amid pervasive disinformation, information sharing among CHWs became a form of care and collective support grounded in critical uses of online media and offline practices—evidence of the localized appropriation of community-based communication technologies. These interactions prebunked rumors and reconfigured information flows by bringing evidence-oriented dialogue into everyday life and coupling explanations with concrete services (appointments, transportation, vaccination cards), which improved accountability and follow-through. In territories with limited connectivity, this face-to-face, trust-based work within the Unified Health System framework proved decisive for effective communication and social mobilization. As a result, reliable information reached places that would otherwise have been hard to access.

5.2.2. Environmental Disinformation and Mobilization Over Land Use for Renewable Energy Projects

The abundance of natural resources in Brazil—particularly in TPC territories rich in land, sun, wind, and water—makes these areas highly attractive for energy-related industries while simultaneously increasing their vulnerability to economic land speculation. This dynamic is further shaped by the implementation of International Labor Organization Convention No. 169, which requires free, prior, and informed consultation with affected communities before any project is undertaken (Food and Agriculture Organization, 2024). Although this safeguard is essential for participatory decision-making, it has also become a point of dispute as economic and political actors often seek to bypass or manipulate the consultation process (Rojas Garzón, 2009). Such projects have been widely associated with conflicts in TPC territories (Cavalcante et al., 2025), while community leaders and social movements have become targets of disinformation campaigns designed to undermine mobilization and facilitate corporate land use (Laia, 2025; Medeiros et al., 2023, 2024; Santini et al., 2025).

Rajão et al. (2022) demonstrate that the far-right government relaxed environmental regulations during the pandemic, facilitating the expansion of extractive projects into protected territories without proper technical assessment. In the states of Piauí and Sergipe, participants reported that renewable energy initiatives, including green hydrogen production and wind farms, continued to advance despite pandemic restrictions, creating overlapping crises between the health emergency and the need to participate in territorial decision-making. Through community mapping, we documented how local leaders mobilized families affected by these projects which moved forward amid the spread of disinformation circulating by word of mouth and via WhatsApp.

Two dynamics stood out among the forms of disinformation identified. The first was the circulation of contradictory information about the risks and benefits of renewable project expansion, involving deliberate efforts to confuse public opinion by blending overly technical data with false claims about the threats posed to the communities. The second dynamic involved influential local actors who, through privileged access to government bodies or corporate representatives, used distorted information to advance their own interests, often spreading confusing narratives about the projects' opportunities with little regard for their broader impacts on local populations and biodiversity.

In response, community leaders established commissions to circulate reliable information, considering restrictions on in-person activities. These commissions, which included representatives from the community, government, and industry, organized a series of hybrid meetings via Zoom and Google Meet to advocate for improved information practices and to expose the disinformation they were facing. One participant noted that the notion of "development" was consistently invoked to downplay the risks associated with the projects and to portray their cultural practices as obstacles to progress: "What we experience, from our territories, is that most technologies designed by the energy corporate sector violate ancestral practices of community and socio-environmental coexistence. And all of this happens under the discourse that it is something "necessary for development" (V.S., member of a rural community in Sergipe).

Participants emphasized that the establishment of the commission and the use of digital platforms facilitated reflection on the information circulating about project expansion. This, in turn, helped strengthen territorial and cultural bonds and increased transparency in negotiations. Another participant observed that:

> Many wind farms appropriate our land and cause various forms of disturbances affecting animals, plants, and the physical and mental health of our families. Dominant discourses present these projects as producers of sustainable energy, but this claim does not hold in our lived experience, since they have not been sustainable for us. (A.C., member of a rural community in Paraíba)

The creation of the commission and the use of digital meeting platforms thus served to clarify false or misleading content and also to share and collectively construct local perspectives on sustainability and clean energy.

6. Discussion

During the pandemic, when TPC faced overlapping crises, they responded by developing a range of community-based communication technologies to build resilience. The collective dimension was a defining feature of internet and communication technologies use among the TPC that participated in the research, characterised by an emphasis on sharing rather than individual use or access: for instance, families temporarily moving to neighbors' homes with better internet connections in order to take part in digital training sessions and mobilizations.

These findings are consistent with previous research on community communication (Freire, 2021; Paiva, 2003, 2022; Peruzzo, 2021, 2022), which demonstrates that communities' collective practices long predate digital devices and become intertwined with communication technologies, online and in person. Participants also recognized these features, describing the sharing of devices or internet access as a tradition passed down through generations.

Our results align with the TIC Domicilios 2021 survey (Centro Regional de Estudos para o Desenvolvimento da Sociedade da Informação, 2022) which quantifies internet access in rural areas and found that 27% of rural households in Brazil share internet connections with neighbors, compared to 16% in non-rural areas. While sharing can be seen as positive in a context of low connectivity, the findings suggest that sharing is shaped not only by cultural or ethical preferences but also by persistent digital inequalities experienced by TPC, despite improvements in national connectivity indicators during the pandemic (Centro Regional de Estudos para o Desenvolvimento da Sociedade da Informação, 2022; Melo, 2023).

According to the TIC Domicilios 2021 survey (Centro Regional de Estudos para o Desenvolvimento da Sociedade da Informação, 2022), internet use in rural areas increased from 53% in 2019 to 73% in 2021, yet 30% of rural households still lacked a connection, mainly due to cost (28%) and limited digital skills (26%). However, the project data reveal a more nuanced reality: Only 7% of households have a computer, and over 60% reported occasional or frequent internet disruptions during rainfall. These results provide evidence that digital exclusion overlaps with historical marginalisation. To overcome limitations, our findings call attention to the importance of policies that address not only connectivity gaps but also the socioeconomic and territorial inequalities that shape technology access and appropriation.

Solidarity networks also emerged in the role of the CHWs as digital brokers, confirming the hybrid use of online and offline communication, as well as the importance of traditional forms of social mobilization where state provision fails. In this regard, communication combines the transmission of information with a cohesive social bond, as argued by Sodré (2014). CHWs served as frontline brokers against vaccine disinformation through home visits and collective listening sessions, rebuilding trust in scientific information and vaccination. While previous evidence has shown that prebunking strategies might reduce discernment between reliable and unreliable information (Guess et al., 2020) and diminish general trust in media (Hameleers et al., 2022), our findings indicate that, when prebunking is tied to context-specific measures and rooted in local mediators, it is perceived as useful.

Regarding practices to build resilience against environmental disinformation, leaders criticized false narratives that framed energy project expansion solely as "development," thereby obscuring associated risks. This aligns with Santini et al. (2025) and Medeiros et al. (2023), who point to how "development" narratives and portrayals of TPC practices as "obstacles to progress" are mobilized in environmental disinformation. It also aligns with Figueira and Távora (2025), who showed that information disorder around land use has historically shaped its exploitation in the country. In response, leaders organized communicative commissions to confront them, discuss, and build perspectives on sustainability that take into account local culture and empirical knowledge. This is consistent with Laia's (2025) argument that TPCs build resilience against disinformation not only by correcting false content but also by consolidating local and contextual knowledge.

In line with the ethical premise of the participatory and action research methods (Fals Borda, 1987; Freire, 2021; Peruzzo, 2022), the project went beyond data gathering to catalyze political participation and digital rights advocacy as instruments for securing other fundamental rights. Tangible outcomes included support for the election of a rural worker affiliated with Rural Working Women's Movement of the Northeast to the Brazilian Council for the Universalization of Telecommunications Services, and the participation of a *quilombola* woman leader from the National Coordination of Black Rural Quilombola Communities as a facilitator at the 11th Brazilian Internet Forum in 2021. These results underscore that digital rights constitute a core dimension of wider struggles for justice, autonomy, and democracy in Brazil.

7. Conclusions

The project mapped TPCs' use of community-based communication technologies and systematized the forms of social mobilization both online and offline. Grounded in Latin American communication studies, its epistemological lens understood communication not as mere information transmission but as a community

bond, a mediation of political agency, a space for exercising citizenship and self-organization amid conditions of vulnerability.

Overall, the findings reveal sustained resistance and resilience by TPC during Brazil's recent far-right federal government (2019–2022). In a context marked by disinformation and pandemics, TPC developed practices to consolidate mobilization and deepen collective self-awareness. They adapted digital tools to meet everyday needs, blending older and newer technologies in hybrid, flexible, and creative ways to build resilience.

This article addresses a critical gap by examining how rural communities developed resilience strategies in the face of far-right disinformation and has shown that, in Brazil, digital rights are inseparable from broader struggles for justice, autonomy, and participation. Communities' capacity to innovate and adapt, braiding the ancestral with the digital, underlined their central role in confronting the polycrisis and challenging disinformation. Much like an ecosystem's interdependence, our findings suggest that the resilience of TPC rests on dense communication networks that act as a social immune system, fortifying communities against threats while sustaining their cultures and claims to sovereignty. Future research could build on our results by incorporating these perspectives into structured quantitative analyses or by deriving insights that enable a more granular exploration of the qualitative processes described here.

Our study presents limitations that should be considered. First, regarding the representativeness of the studied population, despite a high response rate among participants (173 out of 274 families involved), the use of non-probabilistic sampling limits the generalizability of the findings, so the results should be understood as context-specific. A second limitation concerns the scope of the community mapping. Although the study was able to document important communicative practices, these represent only a fraction of the experiences carried out by TPC. Constraints related to time and the broader polycrisis restricted the possibility of compiling a larger and more comprehensive set of practices developed in these territories.

Finally, the interview results, together with the observations derived from community mapping, reveal a tension between the private model of digital connectivity—centered on individual or household access—and the collective practices observed in TPC territories. As previously discussed, in the absence of sufficient financial resources to pay for private internet plans in each household, families organized networks of solidarity to ensure that as many people as possible could access the internet. This situation stresses the need for a more critical discussion on national internet penetration indicators and points to the potential for a public digital connectivity policy that, inspired and informed by TPC practices, is grounded in collective access. In other words, beyond merely granting private companies the right to provide internet services, public policies could provide connectivity plans that include, for example, the installation of community hotspots.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

The data used for this research can be requested via email.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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