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WELL-BEING IN POST-DISASTER SHELTERS: THE PERCEPTION OF THE INDIGENOUS COMMUNITY, SANTA CATARINA, BRAZIL

BEM-ESTAR EM ABRIGOS PÓS-DESASTRE: A PERCEPÇÃO DA COMUNIDADE INDÍGENA, SANTA CATARINA, BRASIL

BIENESTAR EN ALBERGUES POST-DESASTRES: LA PERCEPCIÓN DE LA COMUNIDAD INDÍGENA, SANTA CATARINA, BRASIL

Figure 0: Example 2 of material and shape. Source: ArchDaily Brazil, 2017.

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RESUMO

Este estudo analisa os impactos decorrentes de desastres naturais em comunidades vulneráveis, com ênfase nos abrigos temporários como espaços de proteção física, restauração psicossocial e reconstrução identitária. O objetivo foi identificar os atributos ambientais que influenciam o bem-estar e formular recomendações de projeto baseadas na percepção ambiental. A pesquisa foi desenvolvida com a comunidade indígena Xokleng, em José Boiteux/SC, afetada por inundações recorrentes e pelos impactos negativos da Barragem Norte, por meio de uma abordagem qualitativa que incluiu entrevistas com lideranças indígenas e a técnica da fotografia como modelo. Os resultados indicam que o conforto e a segurança não se restringem à materialidade, integrando dimensões simbólicas, culturais e sociais. Destacam-se o uso da madeira como material identitário, as configurações morfológicas que simbolizam a coletividade (estrela e colmeia), a ventilação cruzada, a iluminação natural e uma organização espacial que equilibra privacidade e vida comunitária. Também foram valorizadas a convivência em grupos familiares extensos e a participação ativa no planejamento, em contraposição à adoção de soluções padronizadas. Conclui-se que os abrigos pós-desastre devem ser concebidos como espaços restauradores, culturalmente contextualizados e participativos, capazes de fortalecer a resiliência comunitária e a recuperação integral de populações indígenas vulneráveis.

Palavras-chave: apropriação do espaço, arquitetura pós-desastre, comunidades tradicionais, percepção ambiental, vulnerabilidade socioambiental

ABSTRACT

This study analyzes the impacts of natural disasters on vulnerable communities, with emphasis on temporary shelters as spaces for physical protection, psychosocial restoration, and identity reconstruction. The objective was to identify environmental attributes that influence well-being and to propose design recommendations based on environmental perception. The research was conducted with the Xokleng Indigenous community in José Boiteux, Santa Catarina, Brazil, which is affected by recurrent flooding and the North Dam, using a qualitative approach that included interviews with Indigenous leaders and photography as a model. The results indicate that comfort and safety/security extend beyond material aspects, integrating symbolic, cultural, and social dimensions. The use of wood as an identity-related material, forms that symbolize collectivity (stars and beehives), cross-ventilation, natural lighting, galleries, and a spatial organization that balances privacy and community life, stand out. The findings also highlight the value of extended family living arrangements and active participation in planning, in contrast to standardized solutions. It is concluded that post-disaster shelters should be conceived as restorative, culturally contextualized, and participatory spaces that strengthen community resilience and promote the comprehensive recovery of vulnerable Indigenous populations.

Keywords: environmental perception, post-disaster architecture, socio-environmental vulnerability, space appropriation, traditional communities

RESUMEN

Este estudio analiza los impactos de los desastres naturales en comunidades vulnerables, con énfasis en los albergues temporales como espacios de protección física, restauración psicosocial y reconstrucción identitaria. El objetivo fue identificar atributos ambientales que influyen en el bienestar y formular recomendaciones de diseño basadas en la percepción ambiental. La investigación se desarrolló con la comunidad indígena Xokleng, en José Boiteux, Santa Catarina, Brasil, afectada por inundaciones recurrentes y por la Presa Norte, mediante un enfoque cualitativo que incluyó entrevistas con líderes indígenas y la técnica de fotografía como modelo. Los resultados muestran que el confort y la seguridad no se restringen a la materialidad, integrando dimensiones simbólicas, culturales y sociales. Se destacaron el uso de la madera como material identitario, formas que simbolizan la colectividad (estrella y colmena), ventilación cruzada, iluminación natural, galerías y una organización espacial que equilibra privacidad y vida comunitaria. Asimismo, se valoraron la convivencia en grupos familiares extensos y la participación activa en la planificación, en contraposición a soluciones estandarizadas. Se concluye que los albergues posdesastre deben concebirse como espacios restauradores, culturalmente contextualizados y participativos, capaces de fortalecer la resiliencia comunitaria y la recuperación integral de poblaciones indígenas vulnerables.

Palabras clave: apropiación del espacio, arquitectura posdesastre, comunidades tradicionales, percepción ambiental, vulnerabilidad socioambiental

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INTRODUCTION

According to the National Institute for Space Research (INPE, 2020), disasters are adverse events that have a major impact on society and are classified by the natural or technological nature of the underlying phenomenon. In the case of natural disasters, their occurrence arises from the interaction between environmental processes and human vulnerability. Hence, their effects are socially produced and unevenly distributed (Wisner et al., 2004).

In Brazil, severe hydrometeorological events have exacerbated social, territorial, and institutional vulnerabilities, especially for traditional populations. In Santa Catarina, flood- and landslide-associated disasters extend beyond the phenomenological dimension and are linked to historical processes of territorial occupation, socio-spatial inequalities, and shortcomings in risk management (Wisner et al., 2004; Acselrad, 2014; Intergovernmental Panel on Climate Change [IPCC], 2022). This scenario became patently clear in October 2023, when intense rainfall in the upper Itajaí Valley culminated in the unprecedented opening of the Norte Dam in the municipality of José Boiteux, affecting access roads, flooding homes, and directly impacting Ibirama-Laklãnõ's Indigenous villages. The episode aggravated historical socio-environmental vulnerabilities, highlighting the disproportionate exposure of indigenous peoples to disasters and the territorial injustices associated with containment infrastructures.

In that context, emergency shelters and temporary housing have become fundamental structures in the post-disaster phase. However, scientific research highlights a significant historiographical gap. Although there is extensive debate about risk management, infrastructure, and emergency logistics, studies addressing the well-being, environmental perception, and psychosocial attributes of these spaces remain scarce, especially in specific cultural contexts. The state-of-the-art underscores the need for shelters that transcend the merely provisional, incorporating principles of adaptability, identity, environmental comfort, and community participation (Gordillo Bedoya, 2004; Caia et al., 2010; Gibbs et al., 2017; Félix et al., 2013; Delgado, 2022; Sukhwani et al., 2021). These authors emphasize that standardized solutions often overlook ways of life, symbolic values, and cultural practices, which can compromise feelings of protection, well-being, and psychological rehabilitation.

Given this scenario, this study aims to characterize the environmental attributes that affect well-being in post-disaster shelters from users' perspectives, to provide design recommendations based on environmental perception principles. This is a qualitative, exploratory study, conducted as a single case study, with the Xokleng indigenous community in the municipality of José Boiteux (Santa Catarina). The choice is justified by the group's vulnerability in disaster situations and the urgency of considering cultural and identity aspects

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for housing solutions that are more sensitive, inclusive, and consistent with their way of life.

THEORETICAL FRAMEWORK

VULNERABILITY

The term vulnerability comes from the Latin *vulnerabilis*, which denotes susceptibility to injury and refers to the exposure to physical, social, and environmental risks shaped by historical and unequal social protection processes (Meerow & Newell, 2019; Rufat., 2013). In the 1980s, Hewitt (1983) argued that vulnerability structures the distribution of damage, a perspective exacerbated by recent research showing that it arises from the interplay of environmental, territorial, and institutional factors (United Nations Office for Disaster Risk Reduction [UNDRR], 2022). Thus, different population segments experience uneven levels of exposure and response capacity, influenced by socioeconomic conditions, public policies, and geographical location (Rufat., 2013; IPCC, 2022).

This understanding is exacerbated in contexts marked by historical and territorial processes, where Indigenous peoples' adaptive capacity is constrained by rights violations, territorial restrictions, and persistent institutional weaknesses (Fleuri & Okawati, 2021). Vulnerability is further aggravated by mobility limitations, a dependence on external infrastructure, and the intensification of extreme events associated with climate change, in addition to substandard public policies, which transform each new disaster into a mechanism for deepening historical inequalities (IPCC, 2022; Instituto Socioambiental [ISA], 2023; UNDRR, 2022).

In this sense, the vulnerability of Indigenous Peoples is marked by the combination of environmental risks and territorial injustice. The fragility of consultation and participation mechanisms limits their capacity to prevent and protect, increasing exposure to disasters (Fleuri & Okawati, 2021). In the case of the Laklãnõ/Xokleng, land conflicts, environmental degradation, impacts of the Norte Dam, and extreme hydrometeorological events have created a contemporary scenario of accumulated vulnerability (ISA, 2023).

Indigenous area in José Boiteux / Santa Catarina

The region traditionally occupied by the Laklãnõ-Xokleng, Kaingang, and Guarani peoples was first explored in 1920 by German settlers from Rio do Sul. The state-imposed occupation generated land conflicts and the forced displacement of Indigenous communities to reservations. In 1926, the Ibirama-Laklãnõ reservation was created, which includes the main flood-control dam in Santa Catarina. This structure reduces the level of the Itajaí-Açu River in Blumenau by up to 2 meters. Figure 1 indicates the location of José Boiteux, where the reservation is inserted.

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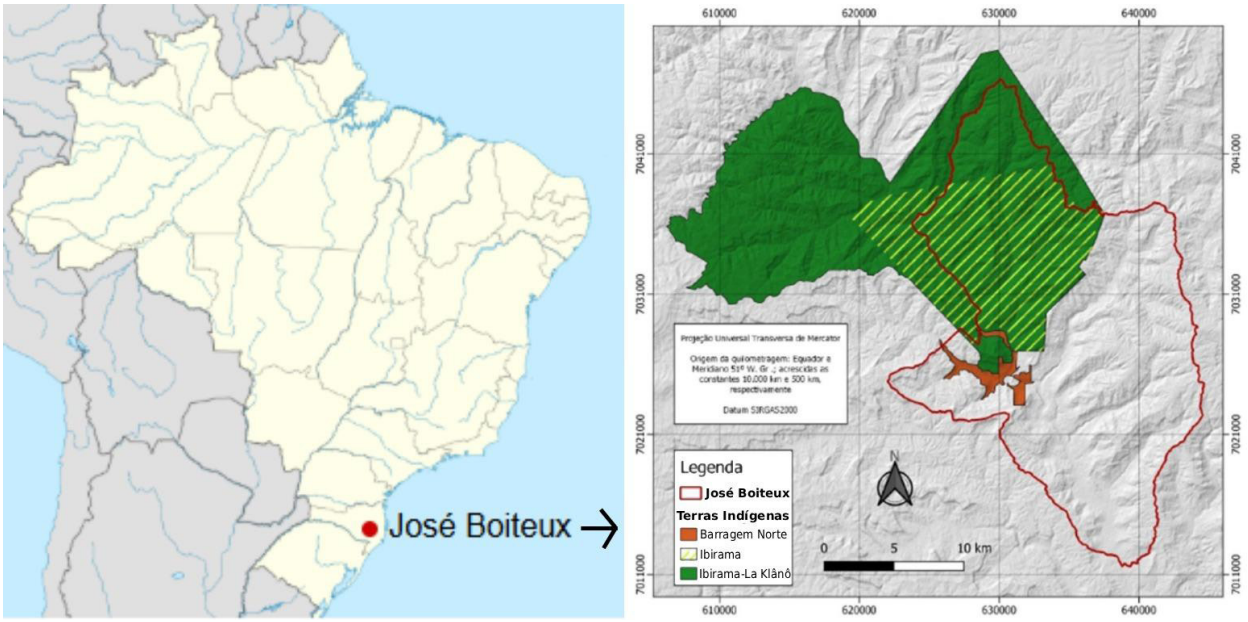

Figure 1: Map of José Boiteux. Source: Prepared by the authors based on Wikipedia.

Figure 2: Flooding in the indigenous area of José Boiteux. Source: Kienen (2023).

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According to the cadastral survey report (Center for Studies and Research in Engineering and Civil Defense [Ceped] - World Bank, 2020), the massif for the Norte Dam was erected from 1972, downstream of the confluence of the Dollmann and Itajaí do Norte Rivers and near the limits of the Xokleng/Laklãnõ reservation (ISA, 2023). The rock structure, with its clay core, which is integral to the system of three dams in the upper Itajaí Valley, significantly altered the landscape and environmental dynamics. At 60 meters in height and with a capacity of more than 357 million m^3, its construction affected lands traditionally occupied by Indigenous Peoples, isolating villages during floods (CEPED, 2020). According to Costa et al. (2024), there are records of material losses, damage to community facilities, and deaths associated with the floods. However, the reparatory measures judicially outlined in 2003 have not been complied with (Figure 2).

Natural disasters pose a recurring threat to traditional communities, exposing them to loss of life, material damage, and disruptions to daily life (Nogueira, 2002). In 2023, heavy rainfall caused the Norte Dam's first overflow, damaging homes and access roads in the community. Hence, given this socio-environmental vulnerability framework, it is essential to consider not only material risks but also psychosocial impacts of disasters and forced displacement. Studies on environmental attributes have indicated that the quality and layout of shelters are determinants of the well-being and physical and emotional recovery of affected populations.

Post-disaster architecture: shelters and temporary housing

According to the State Secretariat for Protection and Civil Defense (SEDEC, 2024), an emergency shelter is an adapted, organized structure that hosts people and families displaced by adverse events for a given period. It relies on public support due to the absence of alternative housing. It must be an adequate, safe, habitable, and private structure, away from risk areas and adapted to local culture, climate, and regional characteristics, guaranteeing access to basic services and users' dignity. These shelters can reuse pre-existing structures, such as clubs, churches, hotels, and gyms. However, using school buildings should be avoided to preserve the return to normality (SEDEC, 2017).

According to Carbonari (2021), several authors draw a distinction between the terms "shelter" and "housing" in emergency scenarios. While "shelter "refers to a place of immediate stay during and shortly after the disaster, where regular daily routines are suspended, the term" housing" indicates the return to domestic activities, responsibilities, and daily routines. Based on this distinction, four distinct phases can be identified: *emergency sheltering, temporary sheltering, temporary housing*, and *permanent housing*. The boundaries between these are often gray, and their duration depends on overlaps of two or more stages.

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Figure 3: Stages of post-disaster shelter and housing provision. Source: Adapted from Carbonari (2021).

Table 1: Literature review: authors, countries, disciplines, and focus. Source: Prepared by the author.

Authors	Year	Country	Area	Focus
Gordillo Bedoya	2004	Colombia	Architecture	Elements that minimize the feeling of transience in temporary housing
Caia et al.	2010	Italy	Psychology	The psychological effects of the characteristics of temporary housing
Félix et al.	2013	Portugal	Engineering	State-of-the-art survey on the inadequacy of post-disaster temporary housing
Gibbs et al.	2017	Australia	Urbanism	Impact of post-disaster relocation on wildfire homeless
Sukhwani et al.	2021	Japan	Geography	Cultural adequacy in temporary housing
Delgado	2022	United States	Psychology	Importance of "home" for disaster survivors

In Brazil, the Secretariat of State for Protection and Civil Defense [SEDEC] – the government agency responsible for coordinating civil protection and defense actions in the country- also adopts this conceptual distinction between "shelter" and post-disaster "housing" (Simon, 2006). However, the institution recognizes only three phases: temporary emergency shelter, temporary housing, and permanent housing, as illustrated in Figure 3.

Integrative literature review

The aim of this review was to identify environmental attributes that support the well-being of homeless people in temporary shelters and housing. The bibliographic review, conducted on May 28th, 2024, yielded 33 articles in the Scopus® (4) and Web of Science® (29) databases, without applying filters, due to the scarcity of studies on the subject. After analyzing titles and abstracts and excluding works that did not focus

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on welfare in temporary housing, six articles were selected for in-depth analysis, as shown in Table 1.

The studies analyzed converge in stating that effective temporary shelters and housing must go beyond minimum emergency response, incorporating environmental features that help reestablish a sense of home and promote the physical, psychological, and social well-being of those made homeless.

In brief, the literature indicates that the main environmental attributes associated with well-being in temporary housing are: (1) flexibility and personalization; (2) cultural and symbolic integration; (3) physical comfort and environmental protection; (4) balance between privacy and collective spaces; and (5) community participation in the project. Although few studies explicitly address specific environmental variables, the findings reinforce the need for holistic, human-centered approaches in the design and development of post-disaster shelters and temporary housing.

METHOD

The research is a qualitative, exploratory, survey-based field study that aims to understand perceptions of well-being in post-disaster shelters from the perspective of Xokleng Indigenous leaders affected by the 2023 floods in José Boiteux/Santa Catarina. Exploratory research is particularly apt for phenomena that are still poorly investigated or require in-depth qualitative analysis (Sampieri et al., 2013).

The sample was intentional and not probabilistic, comprising two Indigenous leaders directly affected by the floods of October 2023 – an event associated with the critical rise within the Norte Dam and the temporary displacement of the population. The exploratory nature of the study justifies selecting participants, their ethnic-territorial specificity, and their representative role. The results are not generalizable and are interpreted strictly in the context investigated.

The methodological procedures included: an integrative literature review; definition of the central concepts (vulnerability, shelters, and temporary housing); conducting field interviews; and analysis and discussion of the results.

The semi-structured interviews were conducted in person on January 28th, 2025, at Casa Indígena in São José/Santa Catarina. They lasted 20 to 30 minutes, after approval by the Research Ethics Committee (CAAE nº 79748324.00000.0121). The instrument addressed environmental attributes of shelters, comfort, stressors, emergency reception, and suggested improvements. The photo-elicitation technique (photography as a support tool) was also used, using images of temporary housing, to facilitate participants' articulation of their perceptions of well-being. By way of illustration, the following Figures are presented: Figure 4 and Figure 5.

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Figure 4: Example 1 of material and shape. Source: ArchDaily Brazil, 2017.

Figure 5: Example 2 of material and shape. Source: ArchDaily Brazil, 2017.

The data were collected through audio recordings of interviews, complemented by notes in a field diary and by documenting the visual choices made during the photo-elicitation technique. The interviews were then fully transcribed and submitted to a qualitative analysis process, with organization and thematic categorization of the responses, linking the empirical findings to the theoretical framework adopted. This step allowed data systematization and supported the discussion of the results and the study's final considerations.

To systematically summarize the procedures adopted, Table 2 presents the methodological stages of the research from the conceptual definition and review of the literature to the collection, processing, and analysis of empirical data.

Organizing the methodological path into successive phases helps explain the coherence among the study's objectives, the techniques used, and the results obtained, thereby demonstrating the scientific rigor of the field

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Stage	Methodological phase	Objective	Data collection, processing, and systematization procedures	Products / Results
01	Conceptual definition and delimitation of the subject	Theoretically substantiate the research and delimit the main analytical concepts	Conduct exploratory searches on scientific bases to identify the concepts of vulnerability, shelters, and temporary housing,	Consolidation of the conceptual framework that guides the research
22	Integrative literature review	Identify approaches, methods, and gaps in welfare in post-disaster shelters	Review and critical analysis of relevant national and international literature on the subject	Theoretical basis to interpret empirical data
33	Field research-data collection	To investigate the perception of well-being in post-disaster shelters from the Xokleng Indigenous perspective	Conduct semi-structured interviews with two Indigenous leaders, victims of the 2023 floods, applying the photography technique as a model, with presentation of reference images of materials, form, implementation, lighting, layout, and furniture	Interview records (audio and annotations), visual selections, and verbal and graphic descriptions of participants
44	Data processing and systematization	Organize and prepare data for analysis	Transcription of interviews; thematic categorization of responses; Organization of visual choices based on reference images	Qualitative data organized into analytical categories
55	Analysis and interpretation of results	Understand the environmental attributes associated with well-being and stress in shelters	Interpretative qualitative analysis, relating empirical data to the theoretical framework	Discussion of results considering the literature
66	Summary and final considerations	Reach the research goal and present study contributions	Consolidation of findings, final discussion, and preparation of final considerations	Project recommendations

Table 2: Methodological procedures of the research. Source: Prepared by the authors.

survey. Thus, systematization contributes to the method's transparency, helping to understand the investigative process and facilitate the study's replicability in analogous contexts.

DEVELOPMENT

RESULTS OF INTERVIEWS

Interviews with Xokleng leaders reveal key aspects of Indigenous perceptions of post-disaster shelters. The discourse is marked by recurrent flooding, criticism of Civil Defense performance, and appreciation of culture as a structuring element of community organization. It is evident that there is a need to understand the shelter not only as a contingency measure but also as a space that combines the Xokleng's cultural identity and social

practices. This perception confirms that well-being in this Indigenous context arises from the interplay of physical space, culture, and community bonds.

The content analysis identified central themes: culture and identity; safety and dignity as pillars of well-being; institutional shortcomings; demand for a minimum level of health, education, and social infrastructure; and the valorization of extended family organization, with up to three nuclei (8 to 12 individuals). The relevance of the shelters' spatial configuration and the preventive implementation in villages susceptible to isolation during floods, as seen in 2023, was also highlighted. The recurrence of these extreme events directly shapes how the community perceives the risk and the demand for adequate housing solutions.

The results suggest that well-being in the context of shelters extends the building's tectonic dimension, linking it to symbolic, social, and cultural aspects. The emphasis on Xokleng culture shows that post-disaster architecture must dialogue with Indigenous ways of life, rejecting standardized solutions that neglect collectivity. On the other hand, criticism of the Government (Civil Defense) for non-compliance with agreements highlights institutional vulnerability and a sense of helplessness. Thus, these factors accentuate perceptions of insecurity and the need for assertive public policies. These findings reiterate the importance of Indigenous community leadership in defining emergency reception strategies.

The allusion to the extended family model indicates that the shelter, to be fully functional, must allow extended coexistence and consolidate a sense of belonging. The shelter assumes a dual role: physical and symbolic protection, linked to the guarantee of rights, cultural recognition, and the preservation of community dynamics. In summary, the data demonstrate that, from the Indigenous perspective, well-being in post-disaster shelters depends on the integration of culture, safety, basic infrastructure, social organization, and institutional recognition– elements that should guide future design guidelines. It should be noted that these results are situated and are not generalizable to the cultural and territorial heterogeneity of Indigenous peoples.

RESULTS - TECHNIQUE

Using the photo-elicitation technique, presenting reference images of temporary shelters with different materiality, morphological configurations, layouts, and modes of implementation allowed participants to concretely articulate their perceptions and preferences regarding housing well-being. The results show the preeminence of the Xokleng cultural tradition in the choice of materials: although bamboo is acknowledged as a traditional element, its semantic association with

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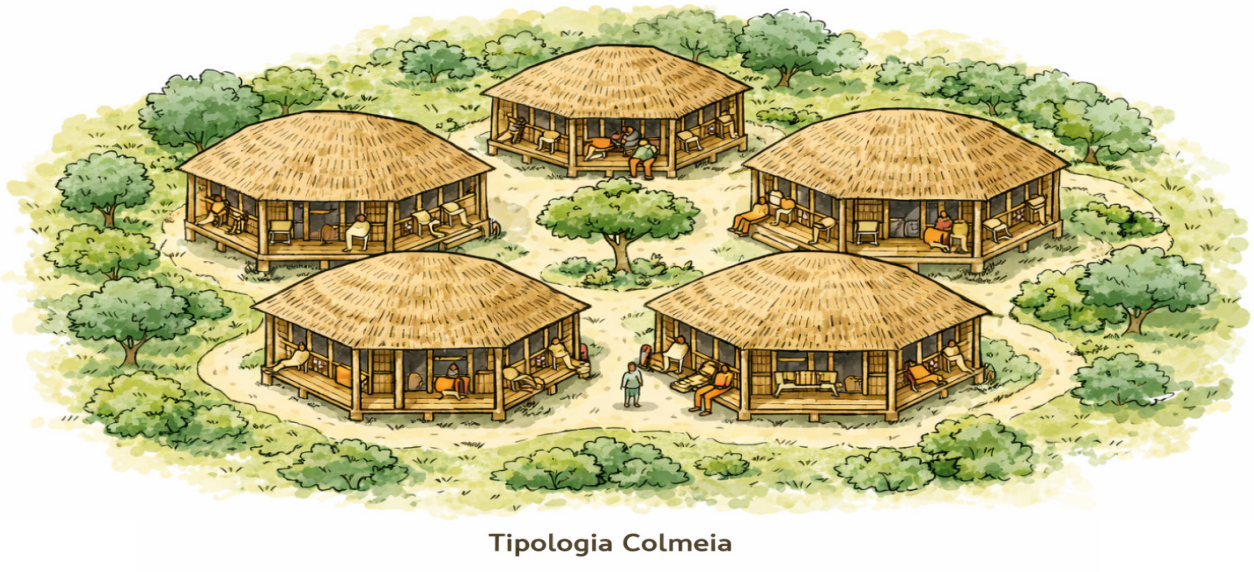

Figure 6. Representation of the suggested hive typology. Source: Preparation by the authors, with support of a generative artificial intelligence tool (ChatGPT / DALL·E – OpenAI), used for conceptual representation.

Figure 7. Suggested housing unit layout. Simple diagram showing the spacing of units, verandas, and community circulation. Source: Preparation by the authors, with the support of a generative artificial intelligence tool (ChatGPT / DALL·E – OpenAI), used for conceptual representation.

other ethnicities, such as the Guarani, makes wood emerge as the most legitimate and identitarian option. This choice ratifies the relevance of materiality as a cultural and symbolic expression of Indigenous living.

Regarding the shape, the preferences for the star geometry and the "hive" typology stand out (Figure 6), which evoke the idea of collectivity, preserving the necessary spatial organization.

Regarding implementation, the emphasis fell on the degree of distance between units, revealing the search for privacy and individualization of the family nuclei – an aspect mentioned as essential by the leaders. This data reinforces the importance of considering not only the functionality, but also the symbolic and relational dimensions of community life (Figure 7).

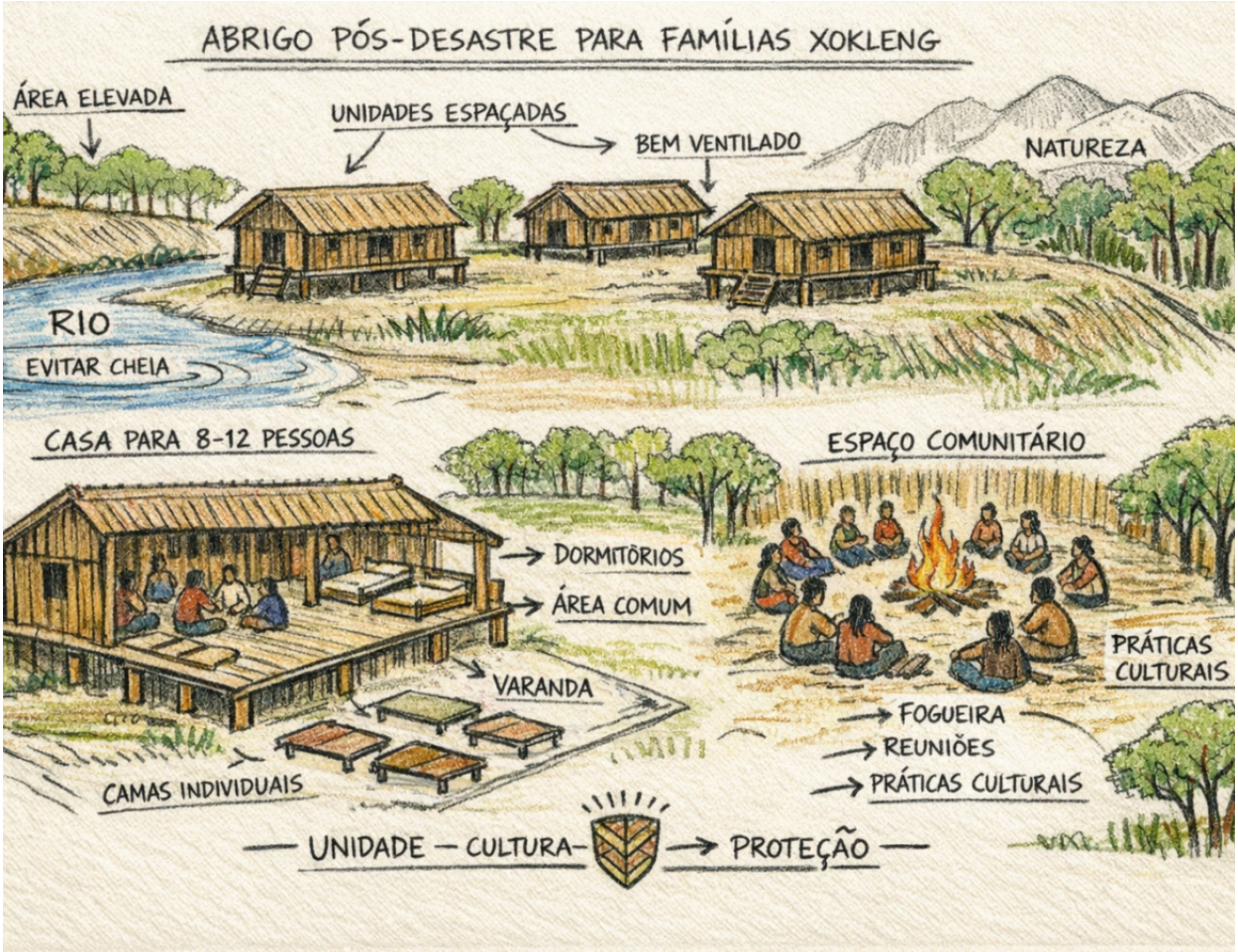

Figure 8. Conceptual outline of post-disaster shelters for the Xokleng people, based on socio-cultural and territorial design recommendations. Source: Preparation by the authors, with support of a generative artificial intelligence tool (ChatGPT / DALL·E – OpenAI), used for conceptual representation.

Regarding environmental comfort (ventilation and lighting), preference was given to solutions that favor daylight transmission and integration with the external environment through openings and verandas. This choice reflects the appreciation of contact with nature, a predominant factor for Indigenous well-being. In the internal layout, preferences focused on the sectorization of spaces, with segregated bedrooms and single beds, which demonstrates an appreciation for intimacy and domestic organization.

Thus, the analysis of the results indicates that the Xokleng's perception of well-being regarding temporary housing is not limited to technical determinants but is also linked to identity and cultural elements that reaffirm specific ways of living. The housing solutions must include both performative requirements, such as ventilation, lighting, and spatial organization, and socio-cultural values that ensure belonging, cultural continuity, and quality of life, as illustrated in Figure 8. Such recommendations should be understood as set in the specific context of the Xokleng community and should not be uncritically transposed to other Indigenous realities.

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CONCLUSIONS

The integrated analysis of the theoretical framework and the empirical results demonstrate a close correlation between the attributes discussed in the literature and the perceptions of the indigenous Xokleng community. Studies reiterate that the personalization and adaptability of shelters are fundamental to mitigating a sense of temporariness (Gordillo Bedoya, 2004; Caia et al., 2010; Sukhwani et al., 2021). This aspect is confirmed in the results, where the interviewees reinforce the importance of culturally legitimate material choices– such as wood, to the detriment of bamboo associated with other ethnicities –and the preference for star and hive morphological layouts, which allow spatial organization and symbolize collectivity.

Cultural identity and belonging, pointed out by Félix et al. (2013), Caia et al. (2010), and Sukhwani et al. (2021) as essential elements for rebuilding well-being, emerge clearly in the discourses, especially in the criticism of standardized solutions that neglect the *modus vivendi* value of cohabitation in extended family groups (comprising up to twelve individuals).

In the field of physical protection associated with environmental comfort (Gordillo Bedoya, 2004; Delgado, 2022), the results reveal the precedence given to cross-ventilation, daylighting, verandas, and visual permeability to the external environment, reinforcing connections with nature, a core element for well-being in the Xokleng worldview.

The literature also highlights the need for a balance between privacy and collectivity (Gordillo Bedoya, 2004; Gibbs et al., 2017; Félix et al., 2013), an aspect identified in the preference for layouts with a higher distance coefficient between units and for sectorized internal layouts, with independent bedrooms, which guarantee intimacy without compromising community sociability. The participation of communities in the design process, advocated by Gordillo Bedoya (2004), Sukhwani et al. (2021) and Félix et al. (2013), also appears as a central demand, expressed both in the criticism of institutional performance (Civil Defense) and in the demand for shelters built preventively in the villages, reinforcing autonomy and a sense of agency.

Finally, the vulnerability dimension, discussed as a historical and social process that accentuates risks for specific groups, is confirmed by the interviewees' reports of institutional failure to assist and non-compliance with agreements, which exacerbate feelings of insecurity (Table 3). In this sense, the findings corroborate the literature, pointing out that post-disaster housing solutions must combine protection, cultural identity, and restorative attributes, transcending materiality to address symbolic and social dimensions.

Thus, the research shows that, from an Indigenous perspective, well-being in temporary shelters depends on integrating technical, cultural, and environmental factors, confirming the convergence between theoretical

Attributes	Theoretical findings	Perceptions of the Xokleng community	Project recommendations
Customization and adaptability	Adaptive shelters reduce the feeling of transience (Gordillo Bedoya, 2004; Caia et al., 2010; Sukhwani et al., 2021).	Preference for culturally legitimate materials (wood) and symbolic morphological configurations (star, hive).	Allow the self-determination of materials and typologies; provide functional versatility and morphologies that evoke a sense of collectivity.
Cultural identity and belonging	Belonging and identity are essential for well-being (Félix et al., 2013; Sukhwani et al., 2021).	Criticism of standardized solutions; valuing the cohabitation of extended families (up to 12 people).	Avoid standardization; design for extended family groups; encourage symbolic and affective appropriation of space.
Environmental comfort and connection with nature	Natural elements favor restoration and well-being (Gordillo Bedoya, 2004; Delgado, 2022).	Improvement of cross ventilation, daylighting, verandas, and visual permeability to the surroundings.	Ensure environmental comfort by designing wide openings and open spaces, and by integrating with nature.
Privacy and collectivity	A balance between privacy and community life is essential (Gordillo Bedoya, 2004; Gibbs et al., 2017).	Preference for more spacious units and separate bedrooms.	Adopt degrees of distance between units and internal sectorization (intimate + collective spaces).
Community involvement	Participation strengthens autonomy and a sense of control (Gordillo Bedoya, 2004; Félix et al., 2013).	Criticism of Civil Defense: demand for preemptive construction of shelters in villages.	Ensure co-authorship of communities; invest in preventive planning; promote participatory processes.
Protection and security	Vulnerability stems from social and historical processes.	Perception of institutional lack of assistance and non-compliance with agreements.	Ensure institutional trust; integrate physical and symbolic protection; honor commitments made.
Expanded well-being	Shelters must go beyond materiality and integrate social and cultural dimensions.	Well-being is linked to the restoration of the notion of home, identity, and collectivity.	Transcend a palliative /minimalist character; adopt culturally contextualized, restorative solutions.

Table 3. Theoretical findings, empirical insights, and practical recommendations. Source: Prepared by the authors (2025).

constructs and practical experience. The theoretical implications underscore the need to move beyond minimalist approaches, broadening the conceptual frameworks of post-disaster architecture to include identity and community dimensions. In practical terms, the results support the formulation of culturally contextualized, restorative, and participatory housing solutions that reestablish the sense of home, strengthen resilience, and promote the integral recovery of vulnerable populations.

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