

Widespread urbanization and its impact on the development of children in the Ecuadorian Amazon

La urbanización extendida y su impacto en el desarrollo de las infancias en la Amazonía Ecuatoriana

A urbanização generalizada e seu impacto no desenvolvimento das crianças na Amazônia Equatoriana

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Abstract: Extended urbanization is understood as a phenomenon that impacts both physically and symbolically on the territory and society, expanding urban practices into territories that were previously alien to these processes. The focus is on parishes such as San Francisco de Chinimbimi, in Morona Santiago, where the majority of the population are children. In this context, the socio-spatial characteristics that favor or limit children's development are explored, showing how spaces in the Amazon are configured as marginalized in terms of infrastructure, meaning, and daily life. The objective is to establish strategies for inclusion in public policies that favor the integral development of children in indigenous territories. With a qualitative descriptive approach, quantitative data from the parish are analyzed, and survey and interview responses from the population are interpreted. The results show that the precariousness of the educational infrastructure and basic services generates a constant search for modernization. Thus, children are confronted with divided realities between tradition and the challenges of a changing environment. Although the advance of capital impacts these territories, local struggles and the vindication of children's rights allow us to question the narratives of urbanization.

Keywords: planetary urbanization; indigenous children; socio-spatial inequality; territorial rights; amazonian contexts.

Resumen: La urbanización extendida se comprende como un fenómeno que incide tanto a nivel físico como simbólico en el territorio y la sociedad, expandiendo las prácticas urbanas hacia territorios antes ajenos a estos procesos. El enfoque se centra en parroquias como San Francisco de Chinimbimi, en Morona Santiago, donde la mayoría poblacional es infantil. En este contexto, se exploran las características socio-espaciales que favorecen o limitan el desarrollo de las infancias, mostrando cómo los espacios en la Amazonía se configuran como áreas marginadas tanto en infraestructura como en significado y cotidianidad. El objetivo es establecer estrategias de inclusión en las políticas públicas que favorezcan el desarrollo integral de las infancias de territorios indígenas. Con un enfoque descriptivo se analiza información de la parroquia e interpretan las respuestas obtenidas en entrevistas y observaciones a la población. Los resultados muestran que la precariedad en la infraestructura educativa y en los servicios básicos genera una constante búsqueda de modernización. Así, los niños se ven confrontados a realidades divididas, entre la tradición y los desafíos que implica un entorno en transformación. Si bien, el avance del capital impacta estos territorios, las luchas locales y la reivindicación de los derechos de las infancias permiten cuestionar las narrativas de la urbanización.

Palabras clave: urbanización planetaria; niños indígenas; desigualdad socioespacial; derechos territoriales; contextos amazónicos.

Resumo: A urbanização ampliada é entendida como um fenômeno que impacta física e simbolicamente o território e a sociedade, expandindo as práticas urbanas para territórios que antes eram alheios a esses processos. O foco está em paróquias como San Francisco

de Chinimbimi, em Morona Santiago, onde a maioria da população é composta por crianças. Nesse contexto, são exploradas as características socioespaciais que favorecem ou limitam o desenvolvimento das crianças, mostrando como os espaços na Amazônia se configuram como áreas marginalizadas em termos de infraestrutura, significado e vida cotidiana. O objetivo é estabelecer estratégias de inclusão em políticas públicas que favoreçam o desenvolvimento integral das crianças em territórios indígenas. Com uma abordagem qualitativa descritiva, são analisadas as informações quantitativas da paróquia e interpretadas as respostas obtidas em pesquisas e entrevistas com a população. Os resultados mostram que a precariedade da infraestrutura educacional e dos serviços básicos gera uma busca constante por modernização. Assim, as crianças são confrontadas com realidades divididas, entre a tradição e os desafios de um ambiente em mudança. Embora o avanço do capital tenha impacto nesses territórios, as lutas locais e a reivindicação dos direitos das crianças nos permitem questionar as narrativas da urbanização.

Palavras-chave: urbanização planetária; crianças indígenas; desigualdade socioespacial; direitos territoriais; contextos amazônicos.

1. Introduction

This research analyses urbanization among indigenous communities in the parish of San Francisco de Chinimbimi, Santiago de Méndez, Morona Santiago, Ecuador. It examines the socio-spatial conditions that shape their development and the effects of the expansion of urban practices in an environment that has undergone abrupt modernity since the mid-20th century. Qualitative data are analyzed to understand how the precarious state of educational infrastructure and basic services reinforces modernization processes among the population. These processes are understood as integration strategies into urban dynamics, including formal education, basic services, technological connectivity, and new forms of economic integration (Monte-Mór, 2014; Barbieri et al., 2009).

Driven by precarious living conditions and discriminatory practices (Canessa, 2007; Ruiz Mantilla, 2000), these processes transform children's development and their relationship with the land. Tensions arise between the preservation of traditional practices and aspirations for urban integration, which reconfigure how Amazonian indigenous communities inhabit their space.

To address this, we begin with the conceptualization of sprawl, which originates from the urban-rural dichotomy and is understood as a process in constant transformation. This phenomenon arises from accelerated industrialization processes, which have led to the expansion of urban areas beyond their traditional boundaries, generating dynamics that modify not only the physical space but also social relations in previously rural territories (Monte-Mór, 2014; Wilson, et al., 2015; Castriota & Tonucci, 2018; González Comín, 2021).

In the Ecuadorian Amazon, extended urbanization assumes particular dimensions. Indigenous communities inhabit highly biodiverse territories, whose traditions have withstood the transformations imposed by current political and economic dynamics. This process has altered power structures,

social interactions, and ways of living, creating tensions between cultural preservation and globalization (Barbieri et al., 2009; Wilson, et al., 2015; González Comín, 2021). In this context, the indigenous child population represents more than half of the Amazonian population (National Institute of Statistics and Censuses, 2022). This group faces these transformations in a unique way. Their development is conditioned by the necessity to cope with an environment marked by inequalities in access to opportunities, as they explore and learn about the world (Ruiz Mantilla, 2000; Bayón & Nogales, 2021; González Comín, 2021).

This social, symbolic, and territorial conflict is exacerbated by a fracture in governance. While sectoral guidelines on children's issues are defined by the central government through its line ministries, the implementation of these policies at the local level depends on the Decentralized Autonomous Governments (GADs) through their Development and Land-Use Plans and their authority to provide infrastructure and services. In practice, this institutional duality creates a coordination gap where urban planning and social investment fail to address the specific needs of priority groups. Children in parishes such as San Francisco de Chinimbimi are thus left in a zone of regulatory and operational uncertainty, where urbanization processes advance without integrated state action across the different levels of government.

This research is positioned at the critical intersection of urbanization and inequality in rural contexts (Arboleda, 2016). First, it acknowledges that child development relies on centralized guidelines and policies that ignore local specificities, thereby exacerbating rural inequality (Gülgönen, 2019; González Comín, 2021). Second, it identifies the lack of disaggregated historical data, which hinders the understanding of territorial specificities. To address these structural gaps, a qualitative methodological strategy was adopted. This highlights the heterogeneity of children's experiences mediated by factors such as gender and age, aspects that remain invisible in official statistics. In this way, the study contributes to an emerging field by analyzing the tensions between modernity, infrastructure, and territory. The aim is to inform welfare strategies that, far from replicating imposed urban models, respect the cultural particularities and social demands of indigenous communities.

2. Methodology

To understand the specific realities of urbanization in the parish, given the lack of up-to-date census data, this study adopted a qualitative design that collected primary data. The qualitative phenomenological approach is particularly relevant to this study for three reasons. First, it captures the

symbolic and cultural dimensions of widespread urbanization processes, as well as the reconfiguration of identities and social practices (Bayón & Nogales, 2021). Second, it allows for the reconstruction of childhood experiences through the narratives of the actors who mediate their development. This addresses the ethical limitations of directly interviewing minors in vulnerable contexts (Morrow, 2008). Third, it responds to the statistical invisibility of peripheral territories, where the absence of disaggregated data makes qualitative fieldwork the only means of accessing local dynamics.

Data were collected through field visits combining structured observation and interviews. To ensure the validity and reliability of the findings, a rigorous process of multidimensional methodological triangulation was carried out, combining:

- a) the physical-spatial characterization of infrastructure through structured observation;
- b) the analysis of key actors' narratives; and
- c) cross-referencing with available secondary information.

This design allowed for the reconstruction of the categories of 'extended urbanization' and 'child development' from local empirical evidence, thereby overcoming statistical invisibility and enabling a comprehensive understanding of the phenomenon.

The selection of participants and key actors (mothers, teachers, and local leaders) was carried out using non-probabilistic purposive sampling. Criteria based on caregiving roles, management, and territorial impact were prioritized. The inclusion of mothers reflects their central role in childcare and their daily interaction with the local community. They experience firsthand the barriers to accessibility and the lack of services, a situation exacerbated by the prevalence of male labor migration in the area. Teachers, meanwhile, were selected as strategic observers of the cultural tensions and aspirations for modernity that manifest in the educational environment, as they serve as the primary link between state public policies and community reality. Finally, local leaders, who provide insights into political action and community organizing, are essential factors for understanding the dynamics of infrastructure demands in the context of the study.

The interviews were conducted according to the principle of theoretical saturation, with a sample size ranging from 15 to 30 participants, in strict compliance with ethical protocols. Specifically, minors were not interviewed, in accordance with child protection principles. Their well-being was prioritized over situations of vulnerability or exposure that might arise from documenting their testimonies in contexts of territorial marginalization. Instead, the decision was made to reconstruct childhood experiences through the accounts of the adult caregivers who play a

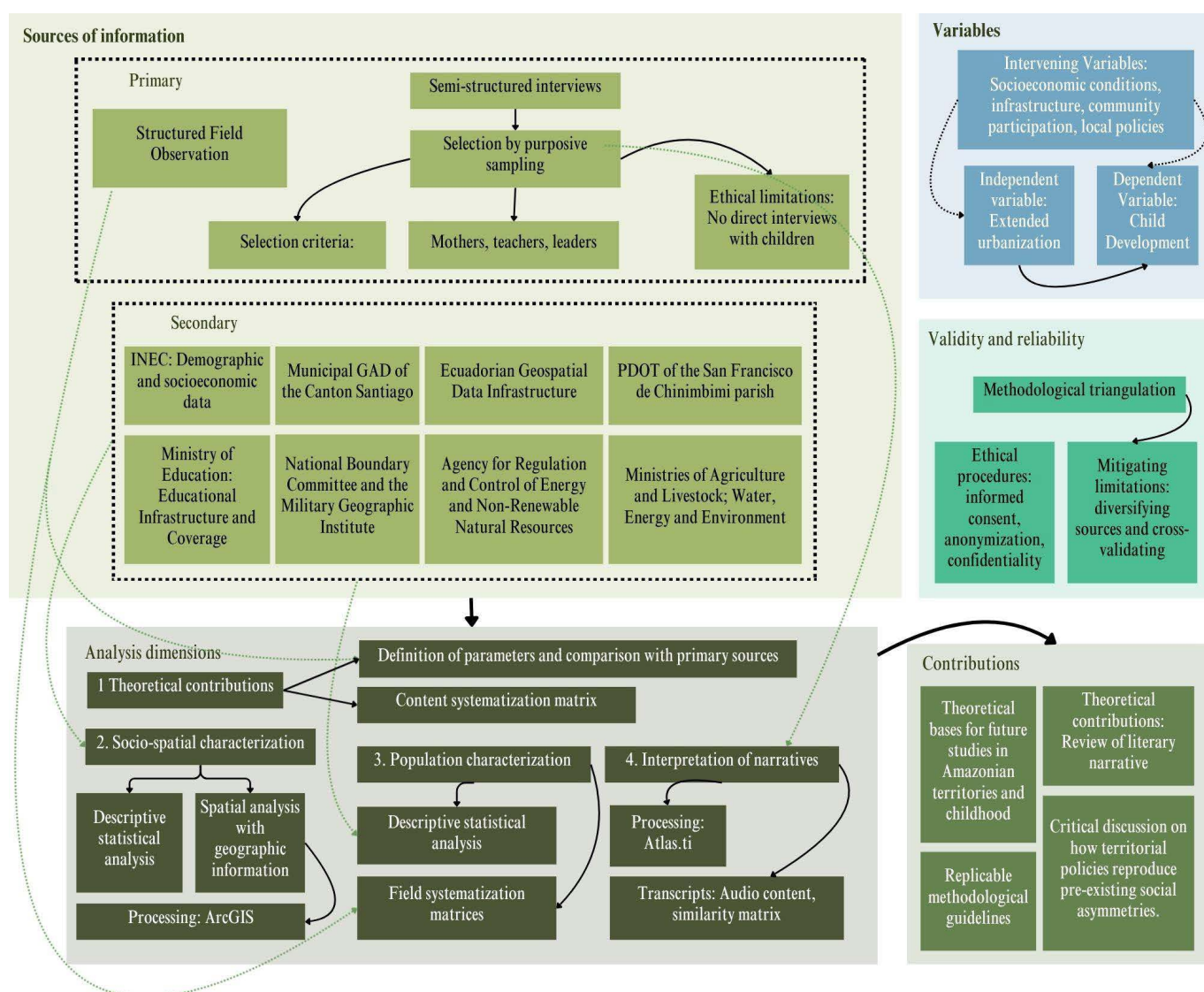
daily role in their development. Anonymity and informed consent were guaranteed for all participants.

The study identified two main categories: urban sprawl and child development, analyzed through variables covering infrastructure, education, culture, and social, community, and family aspects. Secondary sources include data from government institutions, such as statistical records from the National Institute of Statistics and Censuses (INEC), ministerial records, and official cartographic information for the initial territorial characterization. Data collection was structured into three consecutive phases: an exploratory phase based on descriptive analysis for socio-spatial characterization; a fieldwork phase involving immersion in communities to gather their testimonies; and a data consolidation phase dedicated to the transcription, systematization, and analysis of the data obtained (Figure 1). Data processing was carried out using tools such as ArcGIS and ATLAS.ti, following protocols for coding, validation, and drawing conclusions.

After the systematization, a qualitative analysis was conducted to

Figure 1

Methodological design of the research.



identify recurring thematic patterns. Dimensions such as infrastructure, community dynamics, family structure, and tensions between tradition and education were addressed. The validity and reliability of the study were ensured through the triangulation of sources and methods, cross-referencing with the core literature, and verification of interpretations with the participants. The study recognizes the logistical limitations: access to remote communities, potential biases in the representativeness of the actors, and the fact that children's experiences are mediated by adult narratives. This reflects interpretations of children's experiences rather than direct testimonies. Despite these limitations, the results constitute a solid empirical basis for guiding public policies and territorial planning strategies that take into account child well-being in contexts of cultural diversity.

2.1. Socio-spatial context of the study area

The current territorial configuration of San Francisco de Chinimbimi reflects the migratory patterns of the mid-20th century, driven by agricultural colonization policies (IERAC, 1964-1994). These regulations erroneously classified indigenous territories as “wastelands” to promote agricultural production, thereby legitimizing the processes of territorial dispossession of native peoples (Gondard & Mazurek, 2001). The parish spans 12,704.60 hectares with 1,157 inhabitants distributed across the parish capital and five communities. Its demographic profile is predominantly Indigenous, with 77.18% identifying as Shuar, compared to 22.39% of the mestizo population (INEC, 2022; Gobierno Autónomo Descentralizado de San Francisco de Chinimbimi [GADSFC], 2024).

In terms of land use, 66.65% of the area is subject to conservation measures, including the Kutukú Shaimi Protected Forest, which has limited the expansion of resource extraction activities such as mining and the exploitation of Oil Block 73 (Figure 2). The spatial organization is determined by the E45 Amazon Highway, which serves as a structuring axis for urbanization and concentrates public institutions (education, healthcare, and administration) in the municipal seat. This linear centrality leads to critical accessibility gaps: While municipalities such as Pania enjoy relative connectivity (a 20-minute drive), outlying municipalities such as Yakuan and Tintiuk Naint face spatial segregation, as travel times to the main transportation corridor exceed 45 minutes due to inadequate connecting infrastructure.

The parish exhibits a pronounced socio-spatial duality in which the urban area of the parish, characterized by mestizo influence and greater access to infrastructure, contrasts with the Shuar communities, which preserve their cultural identity and organizational systems but face structural poverty rates (unmet basic needs, UBN) exceeding 85%. This scenario of inequality is set against a predominantly young demographic and a

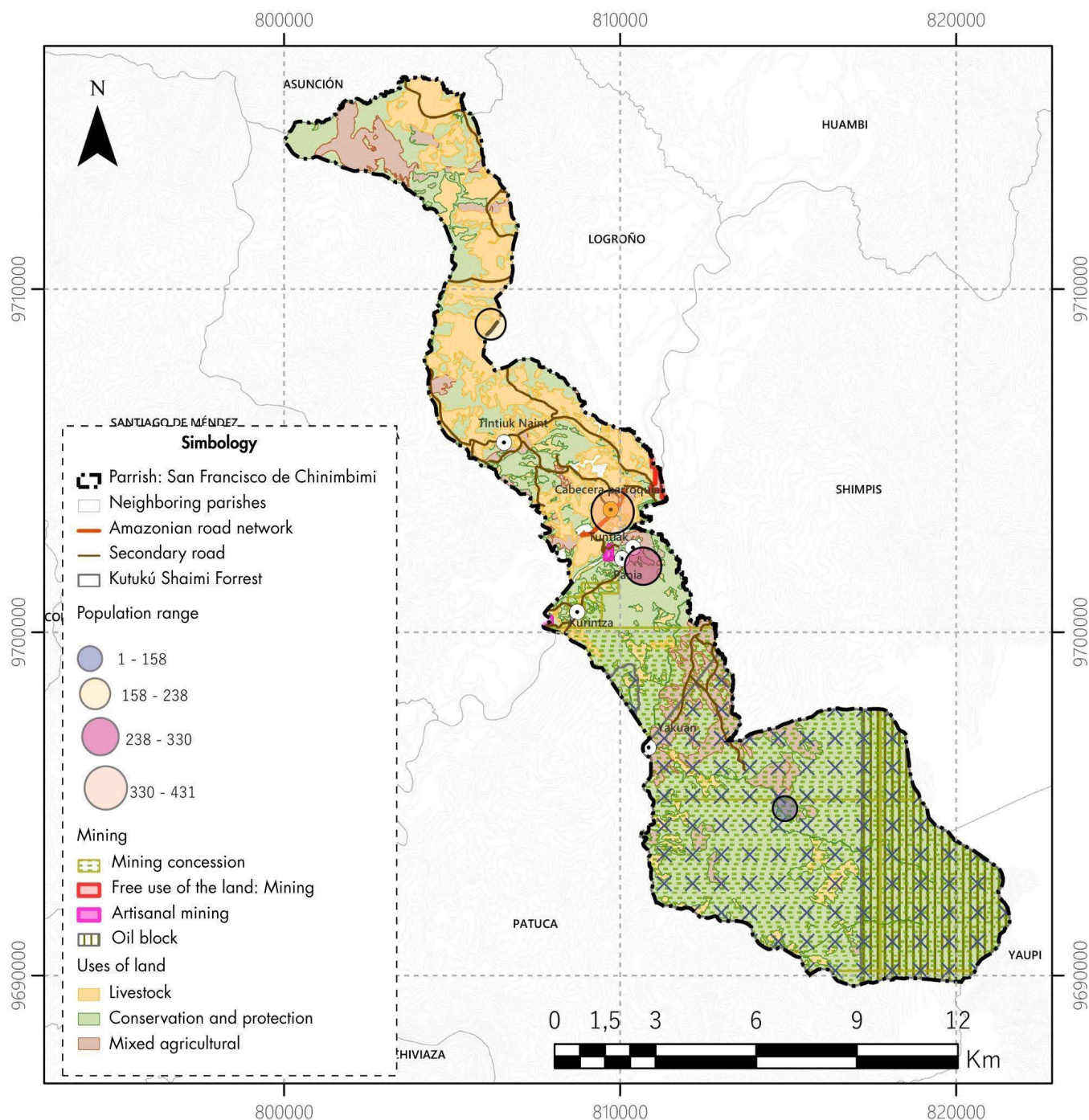


Figure 2

Spatial distribution of the communities in the study area and the road network connecting them.

poorly diversified subsistence economy, highlighting deep asymmetries in development and access to opportunities between the connected center and the rural periphery. As shown in Figure 3, the population is predominantly young, with more than 40% under 15 and only 6.9% over 65, indicating a high age dependency ratio. Regarding economic indicators, 46.5% of the economically active population is engaged in subsistence agriculture and livestock farming, with average incomes below the minimum wage, while 37.21% are engaged in basic household subsistence activities (INEC, 2022; GADSFC, 2024).

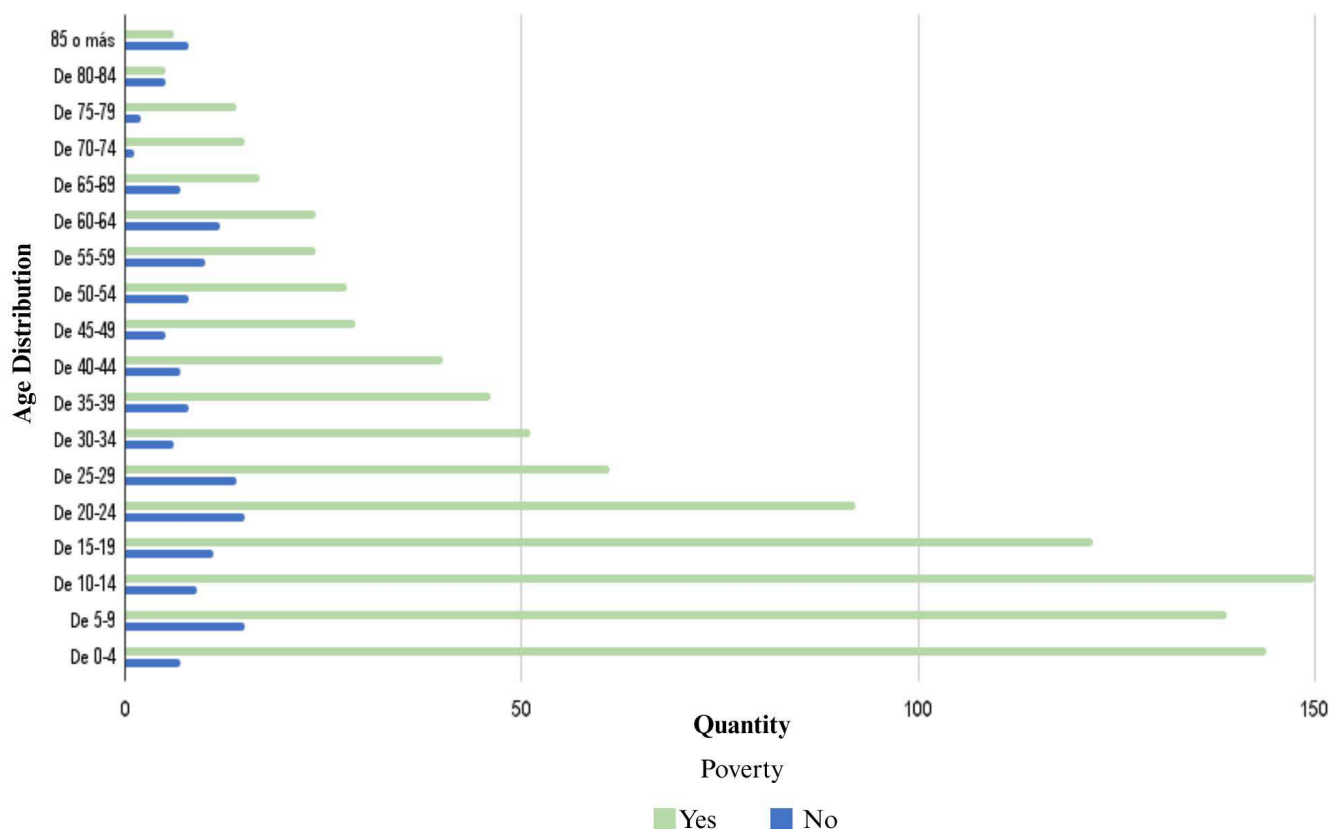


Figure 3

Age distribution of the population according to poverty based on unmet basic needs.

SOURCE: INEC (2022)

3. Theoretical Contributions to the Study

Urbanization has been approached predominantly from an adult-centered perspective, with limited attention given to children's lives in contexts of urban transformation (Gülgönen, 2019; Sen & Gredebäck, 2024). This omission is particularly significant in situations where urban processes not only reconfigure space but also impact living conditions and development opportunities. This study reviews the existing literature to explore the intersection between childhood and urbanization. Three fundamental dimensions are examined: urban expansion in Amazonian territories and its implications; the effects of these processes on the culture and traditional structures of indigenous communities (Bayón & Nogales, 2021); and the relationship between childhood and socio-spatial inequality (Sen & Gredebäck, 2024).

3.1. Extended Urbanization in Amazonian Territories

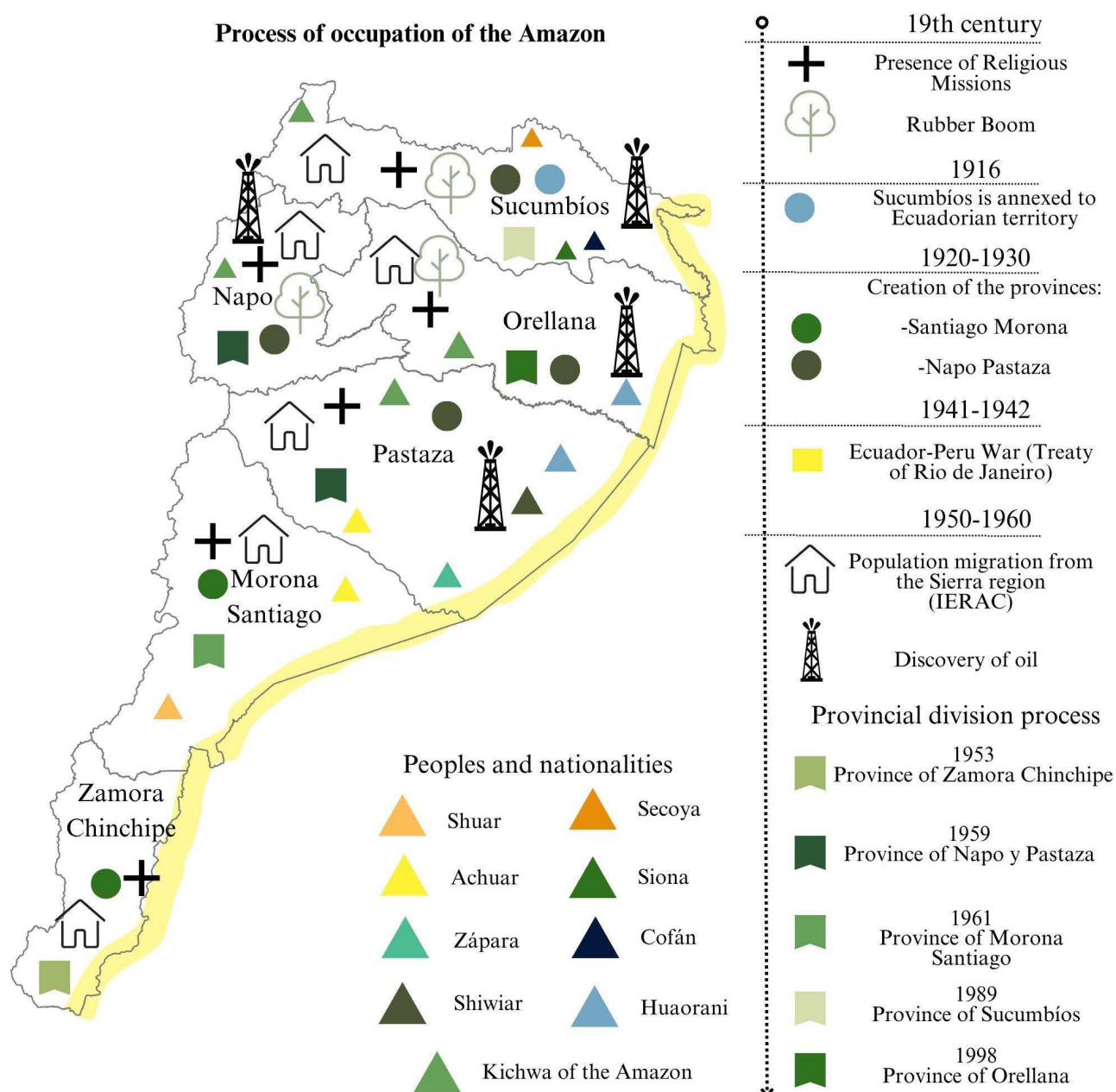
The impact of widespread urbanization on indigenous communities manifests itself in two ways. The first highlights the impact of urbanization and the displacement of people from their ancestral territories without taking their sociocultural structures into account (Gondard & Mazurek, 2001; Barbieri et al., 2009; Monte-Mór, 2014), which profoundly transforms

both the territory and its dynamics. The second reflects a desire for integration into the urban world, driven by adverse conditions such as poverty and discrimination (Ruiz Mantilla, 2000; Canessa, 2007). Figure 4 illustrates what Arboleda (2016) conceptualizes as the “political ecology of planetary urbanization”, in which infrastructure networks profoundly transform non-urban territories. While these interventions improve quality of life (Wilson & Bayón, 2017; Mejia et al., 2021) they highlight the incorporation of urbanization dynamics as an implicit form of urban domination over the rural.

Land-use change has a significant impact on spatial configuration. Barbieri et al. (2009) and Monte-Mór (2014) identify a recurring pattern: the progressive subdivision of large tracts of land into smaller parcels. This process stratifies activities and generates greater economic benefits, while

Figure 4

Timeline of the urbanization process in the Amazonian provinces.



promoting disorganized urban structures. Inostroza and Taubenböck (2024) delve deeper into this analysis by proposing that such transformations constitute the “DNA of urbanization”. They suggest that these subdivision patterns are not random consequences, but rather fundamental elements that reveal the structural logic driving territorial evolution under the pressures of urbanization.

This phenomenon exemplifies what Angelo and Wachsmuth (2015) term “methodological cityism”, a limited perspective that overlooks how urbanization processes transform territories traditionally considered non-urban. Likewise, Lynam et al. (2023) propose a multidimensional methodological framework for analyzing the socio-spatial inequality resulting from global urbanization. The authors offer relevant analytical tools for studying territorial transformations in indigenous communities. Complementing this, Durán et al. (2025) frame this phenomenon as “residual urbanization of the Amazon”, characterizing the formation of networks of populated centers that respond to specific regional dynamics as an indirect consequence of economic and extractive processes.

Based on the literature on urban sprawl in Amazonian regions, the study outlines five theoretical dimensions (Table 1). The physical and infrastructure dimension examines the reorganization of accessibility through road networks and basic services (Barbieri et al., 2009; Monte-Mór, 2014), while the technological dimension evaluates digital connectivity as a vector of urban integration (Lynam et al., 2023). At the sociocultural level, the study addresses linguistic, gender, and organizational transformations (Canessa, 2007; Bayón & Nogales, 2021), linked to an economic dimension focused on the transition toward monetization (Ruiz Mantilla, 2000). Finally, the experiential dimension of childhood analyses how these structural changes shape children’s concrete development (Gülgönen, 2019; Sen & Gredebäck, 2024). These theoretical dimensions guide both field observation and the construction of analytical parameters.

3.2. Modernization, tradition, and identity

The convergence of modernization, tradition, and identity in Indigenous communities is a complex and dynamic phenomenon. Urban expansion into traditionally Indigenous territories does not necessarily lead to the disappearance of their cultural values, but rather to an adaptive reconfiguration of their identities (Ecumenical Commission for Human Rights (CEDH), 1985; Bayón & Nogales, 2021). However, these communities face pressures to adapt to environments that alter their ways of life and threaten the sustainability of their ancestral territories. (Monte-Mór, 2014; Bayón & Nogales, 2021). This process of redefining identity does not occur without tensions. The struggle for indigenous territory transcends physical borders; it constitutes the recognition of its value as a social, legal, and political unit in which communities can exercise self-determination (Comisión Ecuánica de Derechos Humanos [CEDH], 1985). Despite

progress in the legal recognition of indigenous rights, these rights remain subject to negotiation with the actors who dominate urban development, who often perceive these territories as “backward” (Monte-Mór, 2014).

Table 1 Summary of the parameters that demonstrate the processes of extended urbanization in the territory.

Axis	Characteristics of extended urbanization	Evidence in the territory	Description
Physical			
Infrastructure	Road networks	Yes	Presence of the E45 trunk road network.
	Basic service networks	Yes	The parish seat possesses all basic services. The peripheral communities lack potable water, sewerage, and internet services.
Spatial	Growth and establishment of settlements	Yes	Residential buildings are evident across all communities. In the parish seat, mixed-use buildings (residential and commercial) have been established, primarily functioning as retail stores.
	Territorial planning and zoning	No	No clear territorial ordering or spatial planning is observed.
	Accumulation of assets	No	This practice is not clearly observed within the territory.
Ecological			
Environmental	Ecosystem transformation	Yes	Over time, the transformation of land and natural resources due to activities inherent to human settlements has been observed.
	Natural resource exploitation	Yes	Areas designated for timber extraction and, to a lesser extent, mining have been observed in the territory.
	Impact on resources		Within the Parish or Cantonal Territorial Development and Planning Plan (PDOT), no strategies or guidelines have been identified for the conservation and protection of resources, such as water sources, within the parish.
Social			
Structural	Organizational changes	Yes	Labor dynamics have compelled men, or heads of household, to commute daily to the parish seat or other parishes for work, while women remain to care for the home and family.
	Indigenous communities		Five indigenous communities are located within the parish; displacement from their ancestral territories is not clearly evident.
	In-migration from other territories to the Amazon	Yes	It is evident that the primary residents of the parish seat are individuals who have migrated from the Andean highlands (<i>sierra</i>).
Technologic	Access to technology and communication	Yes	According to the National Institute of Statistics and Censuses (INEC, 2022), internet access in the parish is limited. During interviews, it was noted that, since 2020, the COVID-19 pandemic has made internet access a fundamental necessity (GADSFC, 2024).
Economic	Economic modifications		In indigenous communities, interest in commercial activities has grown, evidenced by the formation of productive associations and autonomous commercialization.
Culture	Traditions and identity	Yes	They preserve ancestral traditions, such as the commemoration of festivities and rituals; however, the Parish PDOT notes a loss of traditions driven by a demographic decline and a lack of interest among the younger population (GADSFC, 2024).
	Desire for transformation	Yes	Members of indigenous communities demonstrate a desire to urbanize or to integrate into more highly urbanized territories.

In this context, intergenerational transmission faces fundamental challenges. According to Tonucci (1996), urban planning overlooks the needs of oral cultural transmission, forcing communities to create enclaves of resistance. While these enclaves allow traditional practices to survive, they compete with economic dynamics that erode family cohesion (Barbieri et al., 2009). This dialectical negotiation falls largely on the younger generations, who construct their identity “from within and from without” to navigate between cultural pride and social integration (Canessa, 2007). Far from being immutable vestiges, contemporary identities selectively integrate modernity, demonstrating that tradition and innovation are not diametrically opposed, but rather complementary facets of a dynamic strategy for cultural survival (CEDH, 1985; Canessa, 2007).

3.3. Childhood and the Right to the City

Childhood is a social construct whose definition varies across historical, cultural, and territorial contexts, rather than a universal stage with fixed content (Holloway & Valentine, 2000; Yarwood & Tyrrell, 2012). The United Nations Convention on the Rights of the Child defines it as extending from birth to age 18, encompassing stages that other frameworks distinguish as adolescence or youth (Organización de las Naciones Unidas [UN], 1989). However, acknowledging this normative range does not guarantee that childhood is fully experienced as such. In the Amazon, precarious conditions and the division of care work mean that many girls take on motherhood early and that children assume adult responsibilities, thereby restricting the very possibility of inhabiting childhood as a stage. Factors such as ethnic origin, social class, gender, and age thus shape the construction of childhood identity and the way children perceive and inhabit space (Evans & Holt, 2011; Gülgönen, 2019; Sen & Gredebäck, 2024).

In the Amazon, rural communities with limited access to education and technology have historically sustained collective values and their own forms of socialization (Greenfield, 2009). Extended urbanization and internal migration introduce processes of acculturation that fall with particular force on children (Berry et al., 2006; Ferguson et al., 2023). Given that children account for close to 60% of urban growth in the Global South (Fondo de las Naciones Unidas para la Infancia [UNICEF], 2018), understanding how these processes affect their well-being is a central concern of territorial planning.

The right to the city, understood as equitable access to the urban goods and spaces that all inhabitants collectively produce, has been formulated from an adult-centered logic that subordinates children’s experience to criteria of productivity (Tonucci, 1996; Catalán-Catalán, 2024). Tonucci’s (1996) proposal demonstrates that this logic can be inverted. Drawing on the Convention on the Rights of the Child, his project, *The City of Children*, implemented in more than 200 cities across Europe and Latin America,

positions childhood as a parameter of urban planning and restores children's autonomy of movement and their capacity to participate in decisions that affect their environment. Traditional planning, by contrast, excludes children from these processes (Sen & Gredebäck, 2024) and reduces them to subjects of protection rather than actors with a voice.

Understanding the relationship between childhood and the city as a socio-spatial phenomenon in which autonomy and participation converge means moving beyond mere guardianship (Catalán-Catalán, 2024). However, contemporary urbanization restricts these dynamics, since the fragmentation of public space and the prioritization of consumption-oriented infrastructure render children's spatial experiences reduced and supervised (Evans & Horton, 2016). An inclusive city, by contrast, enables children to participate in shaping the territory (Huchzermeyer & Misselwitz, 2016).

In Amazonian territories, reclaiming this right takes on a specific meaning. Indigenous children face the adult-centered exclusion common to all urban planning and, in addition, a territorial marginalization. The distance to services, the precariousness of infrastructure, and the disputed nature of cultural transmission configure a spatial experience in which access to the city and its opportunities is mediated by indigenous condition and geographic remoteness. Recognizing these children as active agents in the production of their territory means questioning the planning that renders them invisible.

4. Results

The results reconstruct childhood experiences in contexts of extended urbanization. Due to ethical considerations, minors were not interviewed directly; rather, their lived experiences were interpreted through the narratives of mothers, teachers, and local leaders. The findings are structured into three sections. First, the demographic characterization of the child population. Second, an analysis of infrastructure and mobility as material determinants. Finally, the interpretation of interviews reveals experiences of inaccessibility, early responsibilities, and identity tensions. Parents were not included in the interviews because the nature of their work at the parish requires them to travel daily to other districts or remote areas, which limited their availability during the fieldwork.

4.1. Characterization of the Child Population

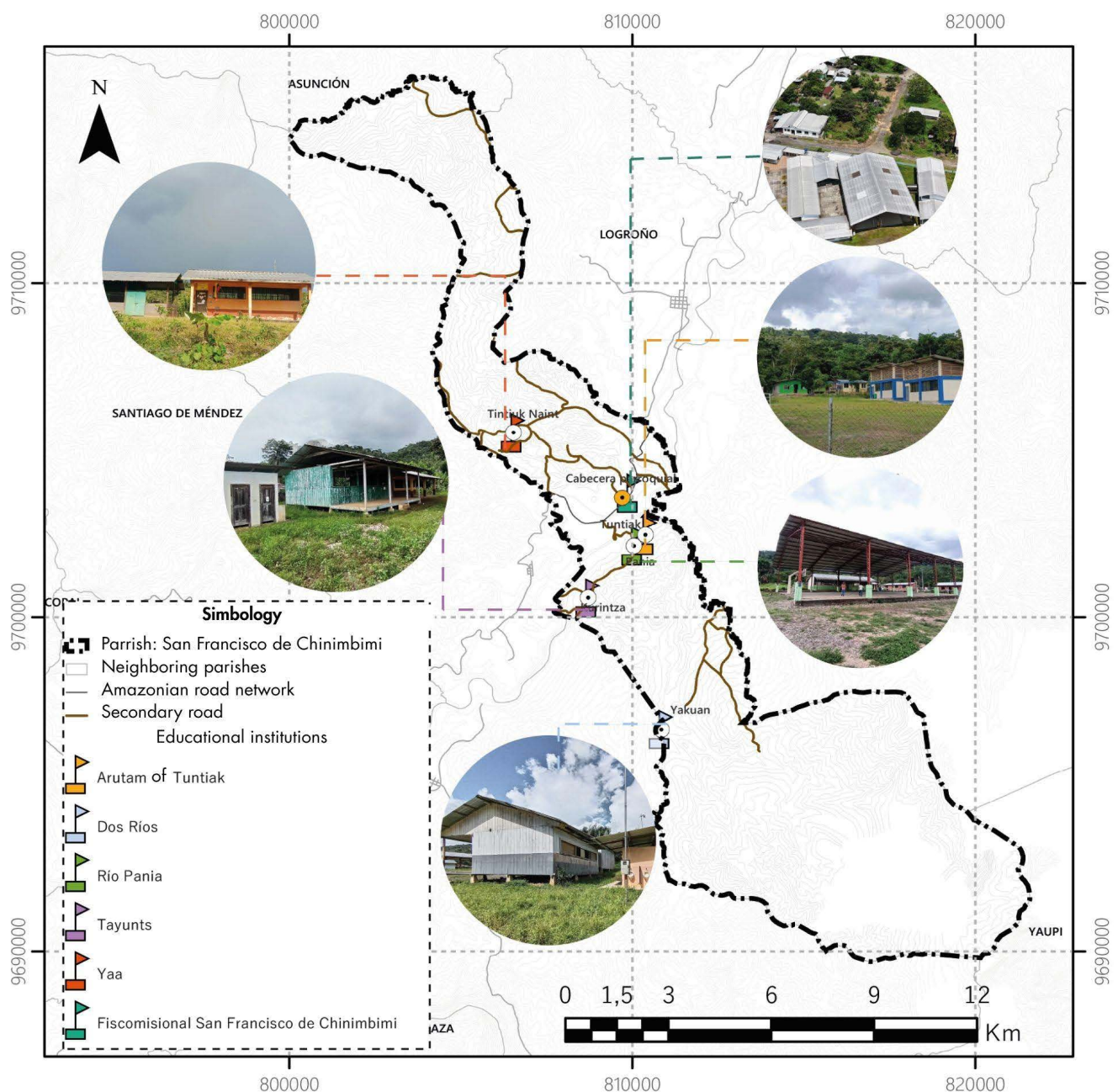
The parish's child population faces significant structural barriers to education, notably the absence of upper secondary (high school) education in local schools (GADSFC, 2024; Ministerio de Educación, Deporte y Cultura, 2025). This educational exclusion not only imposes forced commuting to other cantons but also exacerbates social vulnerabilities,

reflected in youth unemployment and a teenage pregnancy rate of 24.82%. In the sociocultural sphere, a process of identity erosion is observed: despite the intercultural educational model, 65% of the Shuar population prioritizes the Spanish language as a strategy for urban integration. This dynamic coexists with a growing trend of youth emigration in search of opportunities outside the region.

4.2. Infrastructure Conditions

Field visits conducted between June and November 2024 were used to assess the physical condition of the infrastructure in the parish's five communities. The assessment of educational infrastructure reveals serious deficiencies that affect child development. Of the six institutions visited (Figure 5), only

Figure 5
Location of educational units in the parish.



the school located in the parish capital has functional, gender-separated restrooms, a permanent electricity supply, and adequate recreational spaces. In contrast, the remaining five institutions have deficient infrastructure, completely lacking libraries, laboratories, play areas, and gender-separated restrooms that function optimally. Furthermore, it was observed that their classrooms are in poor condition, which significantly limits the learning and development environment for children in these areas.

An analysis of digital connectivity reveals that only 16.70% of educational institutions have a working internet connection, a service that is concentrated primarily in the parish capital. In this regard, a recurring theme mentioned by various stakeholders during the interviews was that the digital divide limits learning opportunities, especially for adolescents who need access to digital educational resources to continue their education. For their part, teachers note that this technological limitation forces them to adapt and simplify curriculum content, which creates significant educational disadvantages. Table 2 below presents data on the characteristics of the parish's educational institutions.

4.3. Perspectives of the key stakeholders in the study

An analysis of interviews with key stakeholders identified four fundamental elements that define the territory. First, the experience of inaccessibility and territorial exclusion manifests in restricted mobility for children in outlying areas. As described by the mothers and confirmed by the teachers, widespread urbanization has created physical barriers. Walking journeys of up to 45 minutes along unpaved roads affect school attendance, especially

Table 2 Population density according to the educational units and census sectors of the parish.

Educational Aspects					Demographic Aspects	
Community	Educational Institution	Total Number of Students	Total Number of Students by Census Sector	% of Students in Relation to Population	Inhabitants by Census Sector	Population Density (inhabitants/hectare)
Urban area	San Francisco Fiscomisional Basic Education School	233	233	54.06	431	14.00
Pania	CECIB Basic Education Río Pania	108	117	74.05%	158	0.02
Tuntiak	CECIB Fiscomisional Basic Education Tayunts	9				
Yakuan	CECIB Basic Education Dos Ríos	35	47	14.24%	330	0.85
Kurtinza	CECIB Fiscomisional Basic Education Arutam	12				
Tintiuk Naint	CECIB Basic Education Yaa	9	9	3.78%	238	0.05
Total educational population		406	406	35.09%	Total population	1157

SOURCE: INEC (2022); Ministerio de Educación, Deporte y Cultura (2024).

during the rainy season. This lack of road connectivity between outlying communities and the parish's urban area not only leads to absenteeism but also reinforces educational inequality, as proximity to the main road determines access to basic rights.

The second trend observed is a reconfiguration of childhood through caregiving, which is treated as invisible work. Leaders and teachers agree that parents' labor migration has intensified the domestic burden placed on mothers, who redistribute these tasks among their older daughters. This phenomenon of forced "parentification" of children, consistently documented in testimonies, forces girls between the ages of 8 and 12 to prioritize caring for their siblings over their own learning and play. This dynamic is reinforced by family structures characterized by paternal absence and high rates of teenage pregnancy, which fragment the traditional collective upbringing of children in favor of individualized and premature responsibility.

A third analytical component addresses the identity tensions between urban aspirations and cultural disconnection. The interviewees perceive a contradiction in which children are torn between a desire for modernity and a distancing from their roots. Teachers report that most students prefer Spanish to the Shuar language for social mobility, while mothers convey conflicting messages about the value of their territory. In this context, technology acts as a catalyst, replacing ancestral oral transmission with virtual connection. This creates an experience of alienation in which success is inevitably associated with distancing oneself from one's cultural heritage to integrate into the urban model.

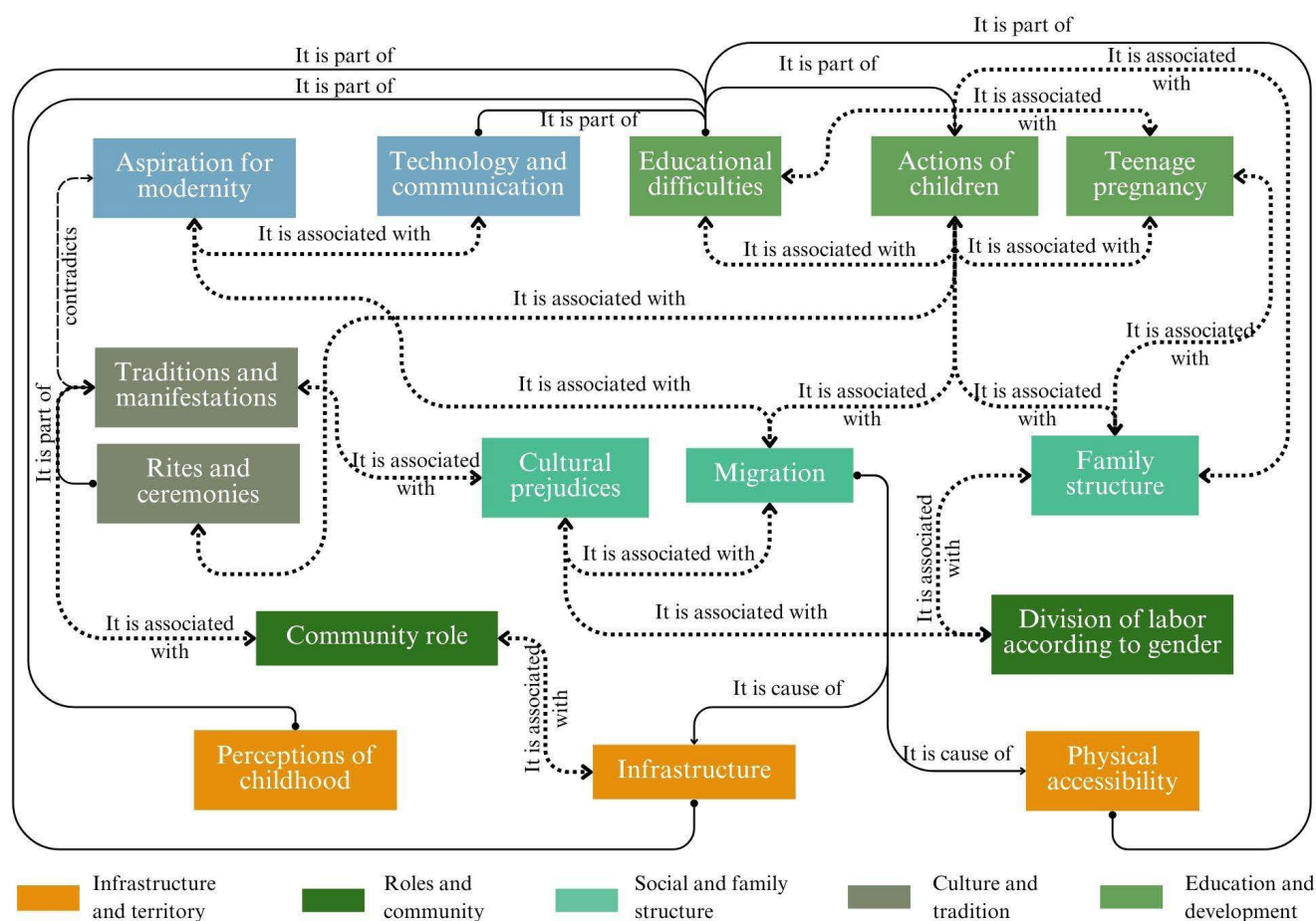
Finally, the digital divide is emerging as one of the main causes of educational exclusion, a situation exacerbated by the pandemic. Testimonies highlight that functional connectivity is limited to the parish capital, leaving students in remote communities at a structural competitive disadvantage. Teachers describe the need to simplify curricula due to a lack of tools, while mothers express frustration over the limited opportunities available to their children.

This analysis of perspectives reveals that, although mothers, teachers, and community leaders all agree that education is the primary driver of social mobility, their priorities differ depending on their roles within the community. While mothers focus their concerns on overcoming physical and economic barriers to ensure access to secondary education, teachers point to improved children's academic attitudes, despite the current scarcity of resources. For their part, community leaders advocate for community self-management through mingas (collaborative work efforts) to compensate for the state's shortcomings. This social structure, however, faces a critical cultural tension in which technology and young people's drift away from traditional practices create a scenario in which Shuar identity is torn

between cultural resistance and assimilation into the opportunities of the urban world.

Network analysis (Figure 6) allows us to reconstruct the childhood experience in San Francisco de Chinimbimi not as a static condition, but as a multidimensional lived experience marked by tension. First, a structural inaccessibility is identified, in which deficiencies in infrastructure and connectivity restrict children's spatial autonomy. Their socialization is restricted; it occurs only in supervised environments where the dominant discourse in these interactions positions migration as the only perceived pathway to modernity. Simultaneously, a process of premature adultification and a gender-based division of labor, stemming from phenomena such as migration, is set in motion. This forces children, particularly girls and adolescent girls, to assume caregiving roles that compromise their educational time and perpetuate cycles of vulnerability, such as teenage pregnancy. Finally, this material precariousness triggers an identity crisis, in which the tension between the ideal of "urban success" derived from migration and rural reality generates a symbolic distancing from their culture. This leads new generations to perceive their cultural heritage as an obstacle to progress.

Figure 6
Analysis of the relationship
between the factors identified
in the interviews.



5. Discussion

San Francisco de Chinimbimi exemplifies a process of widespread urbanization that functions not only as a physical-territorial phenomenon but also as a mechanism of profound sociocultural transformation. The parish exemplifies the “residual urbanization of the Amazon” (Durán et al., 2025), defined by the consolidation of population centers whose configuration is predominantly shaped by regional extractive dynamics. This phenomenon is not strictly limited to this parish but reflects a widespread structural problem throughout the southern Amazon, where a scarcity of employment opportunities and systemic economic stagnation drive significant migratory flows toward urban areas, or where extractive activities reshape demographic and territorial patterns.

The spatial analysis reveals a pattern of asymmetric development in which proximity to the E45 highway significantly determines access to services. This spatial configuration is not random but rather reflects what Inostroza and Taubenböck (2024) identify as the “DNA of urbanization”, where transformations follow patterns of land subdivision and hierarchy that prioritize specific nodes, thereby exacerbating preexisting inequalities (Arboleda, 2016). This particularly affects the most peripheral communities, such as Yakuan and Tintiuk Naint. In this context, indigenous communities are undergoing processes of identity reconfiguration that transcend simplistic interpretations of acculturation. The high percentage of the Shuar population that has abandoned its ancestral language reflects not only external pressures but also adaptation strategies in an environment that prioritizes the urban over the rural (Canessa, 2007).

The convergence of poverty and inadequate infrastructure creates structural barriers to child development. Faced with this problem, children’s ability to adapt is limited by environments that restrict their spatial autonomy (Evans & Horton, 2016). In this scenario, the school functions as an ambivalent hub: a potential cultural articulator, but a vector of inequality due to the digital divide. This dynamic highlights an unresolved tension between ancestral identity and urban aspirations, which, according to Bayón and Nogales (2021), should not be suppressed but rather channeled into the hybrid, intersectoral development model outlined in Table 3.

Table 3 Comprehensive strategies to promote inclusive territorial development in San Francisco de Chinimbimi.

Problem	Strategy	Specific actions	Stakeholders	Expected results
Unequal Distribution of Infrastructure and Services	Community-based service rotation system	-Establish a monthly schedule for teachers and health promoters to visit remote communities. -Provide integrated services (education, healthcare, and administrative procedures). -Implement a courier/messaging system utilizing local merchants and transporters.	Parish government; Ministries of Education and Public Health; Community organizations; Professionals and community leaders.	-Reduction in children's commute times, freeing up hours for play and rest. -Decrease in mobility costs that currently condition school attendance. -Children gain access to services within their communities, reducing the exclusion of those in peripheral areas.
Linguistic and Cultural Loss	Shuar linguistic and cultural revitalization	-Organize weekly meetings between elders and schoolchildren for oral transmission. -Create artisanal basic vocabulary notebooks using local materials. -Develop digital platforms for cultural dissemination. -Document ancestral knowledge.	Community elders; Educational institutions; Linguistics specialists; Cultural organizations.	-Children develop functional bilingualism without relinquishing their ancestral language. -Children build identity pride through adapted cultural practices. -Reduction of childhood identity tensions by articulating tradition and modernity.
Transformation of Productive Patterns	School and family gardens with native crops	- Establish local market days for the bartering of surplus goods. - Train the community in food preservation techniques that do not require refrigeration.	Families, schools, and local farmers.	-Children gain access to culturally appropriate, nutritious food. -Children learn traditional productive practices without engaging in child labor. -Reduction of childhood food insecurity.
Generational Fractures and Youth Mobility	Community mentorship network and vocational training	-Implement mentorship programs featuring university students. -Facilitate intergenerational cultural exchanges.	Educational institutions; Local university students; Local governments.	-Adolescents can envision viable educational trajectories within the territory, reducing forced migration. -Children gain access to local development role models who bridge cultural identity with contemporary education.
Educational Infrastructure Deficiencies	Participatory classroom improvement using local materials	-Organize quarterly community mingas (collaborative work efforts) for school maintenance. -Implement rainwater harvesting roofs using accessible materials.	Local communities, architects, Ministry of Education, and international cooperation agencies.	-Children gain access to dignified educational spaces with functional restrooms and safe play areas. -Reduction of school absenteeism caused by inadequate infrastructural conditions.

Problem	Strategy	Specific actions	Stakeholders	Expected results
Digital Divide	Rotating community library	-Establish small mobile libraries housed in wooden boxes. -Provide training in digital competencies (digital literacy). -Develop low-data-consumption applications.	Telecommunications cooperatives; Community network specialists; Ministry of Telecommunications; Educational institutions.	-Adolescents access digital educational resources to ensure academic continuity. -Children develop digital literacy, mitigating educational disadvantages compared to their urban peers.
Child Exclusion from Territorial Planning Processes	Children's collaborative mapping and participatory GIS (Geographic Information Systems)	-Conduct children's photography and spatial documentation workshops. -Implement adapted geographic information systems. -Incorporate children's perceptions into planning documents. -Engage in the participatory design of public spaces.	Children and adolescents; Planning specialists; Educational institutions; Parish government.	-Children actively participate in the design of public spaces that respond to their play, mobility, and socialization needs. -Children are formally recognized as active agents in territorial planning.
Weaknesses of Intercultural Education		-Collaboratively produce bilingual teaching materials. -Systematize ancestral knowledge.	Pedagogues; Community knowledge keepers (sabedores); Ministry of Education; Linguists.	-Children access an education that values their cultural identity as a pedagogical asset rather than a deficit. -Children develop intercultural competencies that allow them to navigate between different worlds without identity subordination.
Limited Child Participation	Children's territorial councils	-Institutionalize child representation. -Provide training regarding territorial and environmental rights. -Deploy adapted collaborative mapping applications. -Incorporate children into formal governance mechanisms.	Children and adolescents; Parish government; Mothers and fathers of the communities.	-Children exercise active citizenship by expressing their needs and perspectives in decision-making spaces. -Children develop political agency by being heard in policies that directly affect their development.
Limited Access to Secondary Education	Multimodal school mobility system	-Implement low-complexity route management applications. -Combine regular transport routes with on-demand services. -Adapt mobility solutions to local geographic conditions.	Transport cooperatives; Parish government; Ministry of Education.	-Adolescents successfully complete upper secondary education (high school) without necessitating forced family migration. -Reduction in school dropout rates and teenage pregnancies associated with educational truncation. -Children access academic continuity as a guaranteed right rather than an economic privilege.

6. Conclusions

This research takes a critical look at the processes of urban sprawl in Amazonian indigenous territories. Furthermore, it recognizes that this phenomenon represents a historical and geographical process of capitalist spatial occupation that is in a state of constant transformation. The critical territorial approach adopted challenges the ideologies and stereotypes that conceive of the urban as a predetermined formation, revealing instead a multidimensional phenomenon whose complexity cannot be reduced to isolated linear variables. In San Francisco de Chinimbimi, urban sprawl operates not only as the physical expansion of infrastructure but also as a profound mechanism of sociocultural reconfiguration that simultaneously impacts the material, symbolic, identity-related, and experiential dimensions of indigenous communities.

Child development emerges as a crucial field in which structural inequalities and the dynamics of cultural resistance converge. Limitations in educational infrastructure, digital connectivity, and mobility are not mere shortcomings but manifestations of a historically exclusionary development model that perpetuates cycles of social vulnerability. In this context, Shuar children and youth emerge as fundamental agents of transformation. They navigate the tension between preserving ancestral traditions and pursuing modernization. Their experience is a form of cultural agency that rejects both uncritical external influences and traditionalist rigidity, forging hybrid narratives that combine elements of the past and the present.

The gradual loss of the Shuar language, the migration of young people, and the desire for urban integration cannot be interpreted as mere cultural erosion but rather as complex strategies for survival and social mobility. These dynamics reveal the communities' ability to constantly redefine their relationship with the territory, culture, and dominant power structures. Inequalities in access to basic services serve as evidence of the inequality that concentrates opportunities in parish capitals while systematically marginalizing rural communities. This perpetuates the historical cycle that has excluded Amazonian communities from territorial planning and decision-making processes.

The research calls for a rethinking of public policies and agendas. To move toward models that recognize cultural, social, and environmental differences as fundamental aspects of policymaking, it is necessary to transition away from models that seek to homogenize the region. This involves designing participatory regional intervention strategies in which planning not only reduces poverty and unmet needs but also prioritizes the Amazon's biodiversity. These proposals must ensure a high-quality, culturally relevant educational infrastructure that promotes digital connectivity as a tool for inclusion and cultural dissemination.

In fulfilling the objective of formulating inclusive public policies, it is concluded that territorial intervention should not be oriented toward

static cultural preservation, but rather toward recognizing three ongoing structural dynamics: the emerging position of Shuar childhood as a cultural mediator, the resignification of infrastructural gaps as spaces for identity negotiation, and the hybridization of knowledge transmission between the ancestral and the contemporary. Consequently, the proposed strategies seek to provide children with the conditions to navigate these transformations with agency, preventing their holistic development from being subordinated to homogenizing urban logics that render their territorial specificities invisible.

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