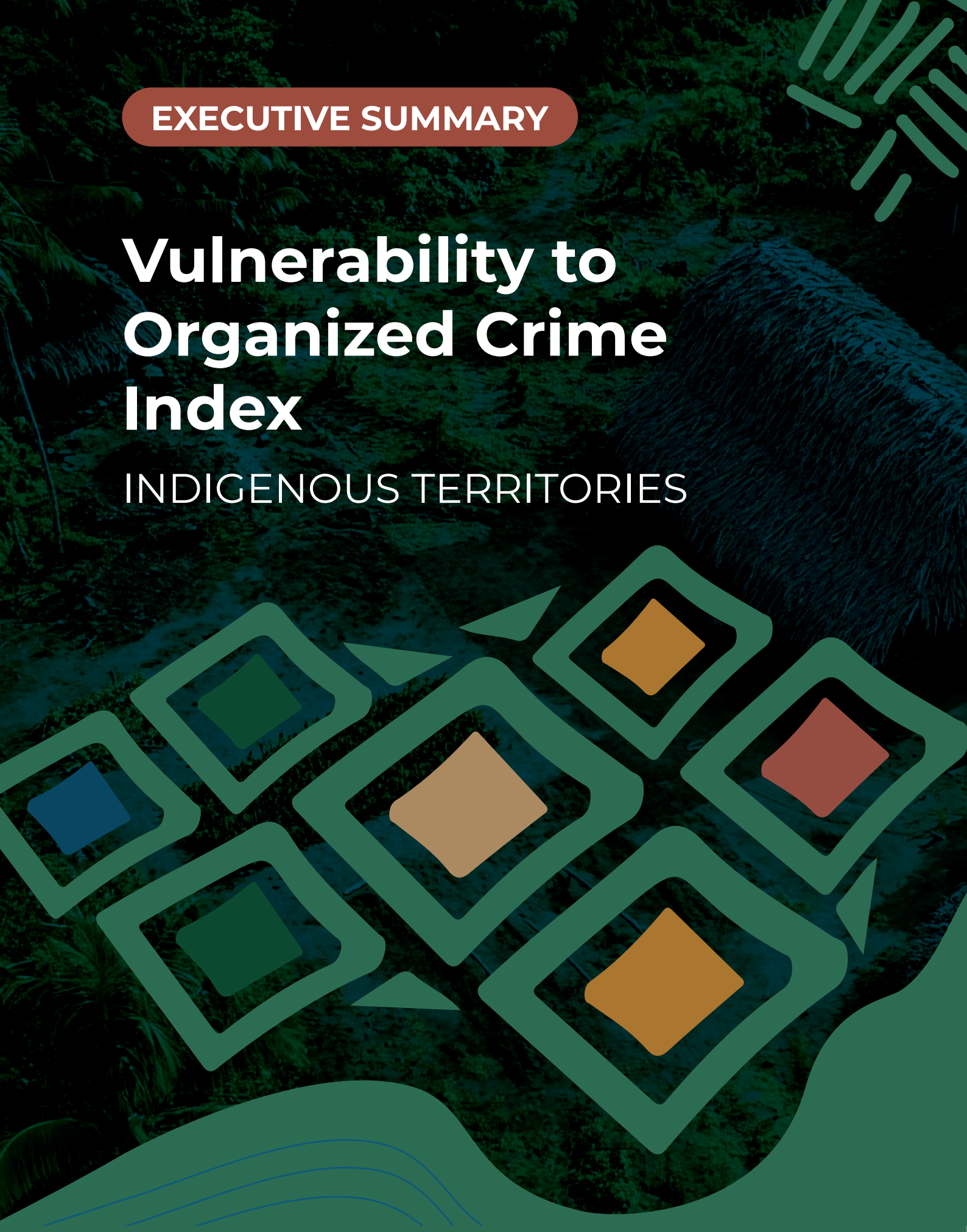
EXECUTIVE SUMMARY

Vulnerability to Organized Crime Index

INDIGENOUS TERRITORIES



CDESC

United Nations
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NATIONAL SECRETARIAT FOR
DRUG POLICIES AND
ASSET MANAGEMENT

MINISTRY OF
JUSTICE AND
PUBLIC SECURITY

CENTRE FOR STUDIES ON DRUGS AND
COMMUNITY SOCIAL DEVELOPMENT (CDESC)

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Vulnerability to Organized Crime Index

INDIGENOUS TERRITORIES

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PREFACE

PREFACE

Indices and social indicators are well--established tools in public policy, used to inform planning, budgeting, implementation, and monitoring of government action. At the same time, an index is a guide rather than a complete representation of reality: it works like a spotlight, bringing specific dimensions into focus while others remain less visible. For this reason, an index addressing vulnerability in the context of organized crime must clearly specify the territory under analysis and the population whose vulnerabilities are being assessed, as well as the dimensions it combines. In the present document, the unit of analysis is Indigenous Territories, and the index brings together social and structural determinants — such as poverty and inequality — with territorial and institutional conditions, as well as selected proxies of pressures associated with organized crime dynamics.

This index helps address persistent knowledge gaps at the intersection of Indigenous territories and organized crime. In Brazil, many Indigenous communities are affected by settings in which illicit economies intersect with environmental pressures, generating cumulative impacts on security, health, and traditional ways of life — a process commonly referred to in the literature as *criminal convergence*.

Against this backdrop, a territorial vulnerability index serves as a technical tool to assess exposure to organized crime dynamics and support policy design. It does not seek to capture the full complexity, resilience, or lived experiences of Indigenous peoples; rather, it recognizes that quantitative measures cannot replace narratives and community perspectives. By systematically organizing selected data, the index aims to strengthen territorial assessments and strategic planning and to increase the visibility of persistent historical inequalities.

In this context, the Centre for Studies on Drugs and Community Social Development (Cdesc), in partnership with the National Secretariat for Drug Policies and Asset Management of the Ministry of Justice and Public Security (Senad/MJSP), developed the **Vulnerability to Organized Crime Index: Indigenous Territories**. Cdesc[1] is an initiative established through a partnership between Senad/MJSP, the United Nations Office on Drugs and Crime (UNODC), and the United Nations Development Programme (UNDP) to support evidence-based drug policy in Brazil.

This index also aligns with the principles and mandates that guide UNODC's work in drug policy and Alterna-

1 www.cdesc.org.br

tive Development[2]. As the guardian of the three United Nations international drug control conventions[3] and the United Nations Convention against Transnational Organized Crime (UNTOC), UNODC has promoted approaches that place local development, territorial governance, and the protection of rights at the centre of efforts to mitigate the impacts of illicit economies. In Brazil, Alternative Development has been a policy priority of Senad/MJSP since 2023, providing an institutional impetus to strengthen evidence generation on territorial dynamics and convergent forms of criminality, including in Indigenous contexts. From this perspective, the vulnerabilities identified in this study highlight the relevance of integrated responses that combine socioeconomic, environmental, and human rights-based interventions, tailored to the specific conditions of Indigenous Territories affected by organized crime.

Finally, this index should be understood not only as a public management tool, but also as a contribution to research and policy debate, supporting more contextualized responses to the realities experienced by Indigenous peoples in Brazil. ■

2 The concept of Alternative Development (AD) seeks to promote and/or strengthen viable and sustainable alternatives for communities affected by drug-related illicit activities. It is grounded in the premise of addressing the underlying causes of illicit drug production and trafficking through the adoption of sustainable, human rights-based approaches (Cdesc, 2025a).

3 The 1961 Single Convention on Narcotic Drugs, the 1971 Convention on Psychotropic Substances, and the 1988 Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances

PURPOSE AND SCOPE

PURPOSE AND SCOPE

This index measures the vulnerability of Indigenous Territories to pressures associated with organized crime. It focuses on Indigenous peoples in Brazil and uses Indigenous Territories (*Terras Indígenas,* abbreviated in Portuguese as TIs) as the primary unit of analysis. This choice reflects both data constraints — particularly the limited availability of consistent individual-level data — and the fact that risk profiles differ substantially between Indigenous peoples living in Indigenous Territories and those in urban settings. Defining the scope in this way delimits what the index can measure and avoids overextending its explanatory claims. This approach aligns with an interdisciplinary understanding that vulnerability emerges from the interaction between intrinsic factors (sociodemographic characteristics) and extrinsic factors (territorial and institutional conditions) (Rogers & Ballantyne, 2008).

Demographic patterns further support this territorial focus. According to the 2022 Demographic Census, Brazil has 1,693,535 Indigenous people (0.83% of the national population), with 51.2% living in the Legal Amazon; the population is also notably young (median age 25 nationwide and 19 in Indigenous Territories) (IBGE, 2024).

1.7 MILLIONINDIGENOUS PEOPLE LIVE IN BRAZIL

0.83% of the national population (2022 Census)

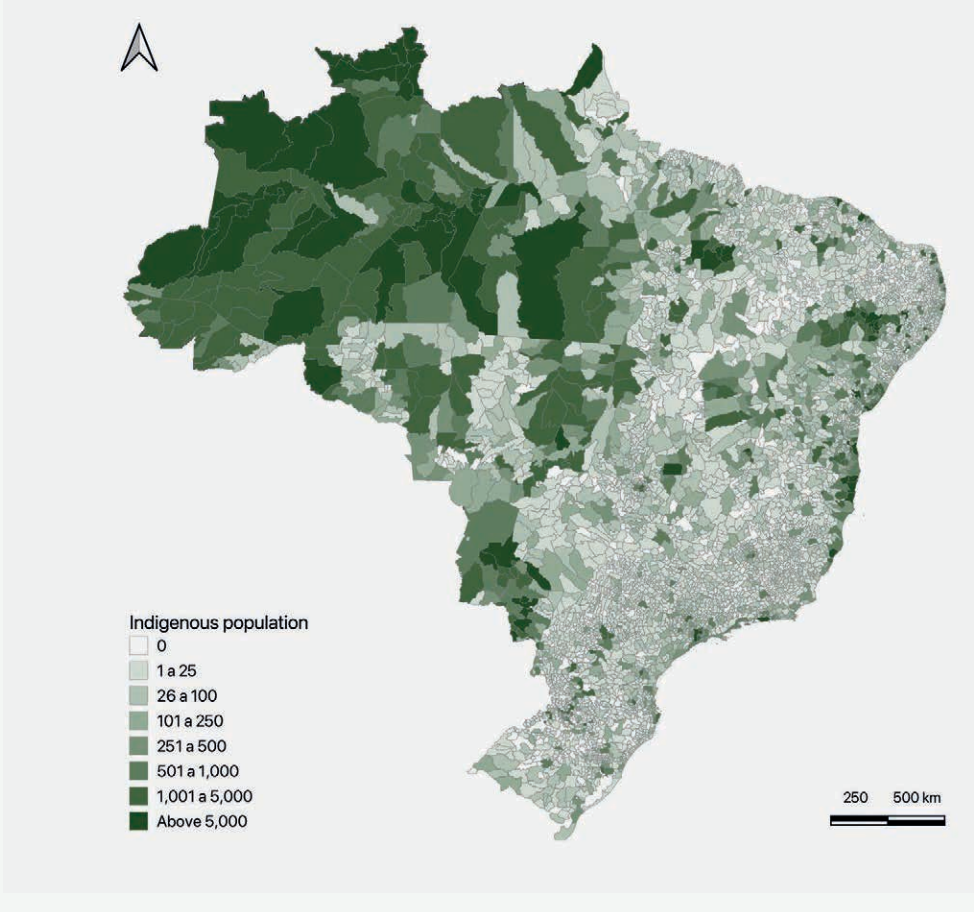
51.2%	Live in the Legal Amazon.
75.7%	Live in Brazil's North and Northeast regions.
AM and BA	Amazonas - AM (490,900) and Bahia - BA (229,100) have the largest Indigenous Populations.
56.1%	Of Indigenous people are under 30 years old.
796	Indigenous Territories (*Terras Indígenas*, TIs).
36.73%	Of Indigenous people live in Indigenous Territories.

Source: Funai (2025); IBGE (2022)

The territorial emphasis is also justified by long-standing vulnerabilities shaped by inequalities, institutional gaps, and uneven implementation of rights (Zema, 2022; Carvalho & Goyes, 2021; Lima, 2024). Brazil has established an advanced legal framework for Indigenous rights and has made important progress in recognition and protection. Nevertheless, implementation remains uneven across territories, and limitations on autonomy and self-determination still influence the conditions under which Indigenous peoples protect their territories and ways of life (Ramos, 2011; Baniwa, 2014). These dynamics are particularly visible in the territorial domain, where formal recognition has advanced but continues to coexist with recurrent invasions and pressures on land and resources.

FIGURE 1

Indigenous people acrossmunicipalities - Brazil, 2022



Source: IBGE, 2022 Demographic Census.

Map produced by the authors.

In the Amazon, Indigenous Territories also concentrate a socioenvironmental paradox: they preserve a high proportion of native vegetation, yet face intense pressures linked to land invasions, deforestation, illegal logging, mining, infrastructure projects, and the expansion of agricultural and other economic frontiers (ISA, 2009; CIMI, 2025). These pressures cluster in zones such as the "deforestation arc" and key river basins (ISA, 2009). Moreover, Indigenous Territories at earlier stages of recognition and regularization tend to experience higher levels of violence linked to land and property, suggesting that land governance can mitigate exposure to external risks (CIMI, 2025).

This territorial lens is essential to capture the combined effect of baseline vulnerability and organized crime-related pressures in Indigenous Territories. Available evidence from cases involving environmental crimes and trafficking dynamics suggests that criminal networks leverage geographic isolation and institutional fragilities — including uneven enforcement and limited access to public services — to intensify territorial pressures and produce direct threats to community cohesion and safety (Ardenghi, 2020; GI-TOC, 2023; CIMI, 2024). Accordingly, the index focuses on Indigenous Territories as sites where vulnerability is co-produced by structural constraints and illicit economies, rather than assuming that rights and protections are uniformly guaranteed and only later disrupted by criminal activity. ■

ANALYTICAL FRAMEWORK – OVERVIEW

ANALYTICAL FRAMEWORK – OVERVIEW

Within this framework, organized crime is treated as the index's primary pressure factor, rather than an isolated risk. It is understood as a structural force that exploits social, economic, political, and territorial fragilities, thereby intensifying pre-existing vulnerabilities, increasing exposure, and undermining adaptive capacity in Indigenous Territories.

CONCEPTUAL FOUNDATIONS

The index is grounded in vulnerability theory and draws on three core concepts: **vulnerability**, **risk**, and **adaptive capacity**.

Vulnerability: Following Brooks (2003), vulnerability refers to a group's susceptibility to harm when exposed to external risks. It is examined through three interconnected components (Gallopín, 2006): exposure to risks, sensitivity to potential impacts, and adaptive capacity — the potential to cope with risks. Vulnerability is multiscalar and varies across territories; in Indigenous contexts, it reflects both endogenous strengths (e.g., social cohesion, territorial management, and ancestral knowledge) and exogenous pressures (e.g., economic expansion, climate change, and criminal organizations), often interacting across domains such as land governance, security, and livelihoods. This framing supports measurement without reducing vulnerability to a "deficit" or naturalizing precariousness.

Risk: The probability of loss or harm associated with a specific hazard, considering both the nature of the threat and the conditions of the exposed group (Brooks, 2003). Impacts depend on how hazards intersect with exposure and pre-existing vulnerability (Cardona, 2012), and persistent threats can erode autonomy and quality of life (Castel, 2005; Janczura, 2012). In this index, risk provides the lens for interpreting impacts, while measurement focuses on the territorial conditions that shape how hazards translate into harm.

Adaptive capacity: The potential to adjust, reduce harm, and respond to risk-driven change (Brooks, 2003). It is associated with resources, support networks, infrastructure, education, and public policies, but depends on institutional and structural conditions and may be constrained by external restrictions. In Indigenous settings, it is expressed through social organization and traditional territorial management, and can be mobilized both proactively and reactively. As a core component of vulnerability (Gallopín, 2006), it is essential for assessing territorial vulnerability beyond exposure alone.

PRESSURE FACTOR: ORGANIZED CRIME

Within this framework, organized crime is the index's central driver of pressure rather than an isolated risk. It is conceptualized as a structural force that exploits social, economic, political, and territorial fragilities, thereby intensifying pre-existing vulnerabilities, increasing exposure, and undermining adaptive capacity in Indigenous Territories.

Organized crime can be understood as the sustained operation of groups engaged in illicit activities, supported by organizational and coercive capacities (Cepik & Borba, 2011). At the international level, the Palermo Convention (2000) defines a minimum core as a structured group of three or more people acting in concert to commit serious offences for material benefit (UN, 2000). In Brazil, Law No. 12,850/2013 defines a criminal organization as an association of four or more persons with an ordered structure and division of tasks, aimed at committing serious or transnational offences (Brasil, 2013).

Its transnational expansion is closely linked to globalization and technological change and tends to concentrate where institutional fragility enables growth (Cepik & Borba, 2011). In Brazil, organized crime consolidated from the 1980s in urban peripheries and border areas and has since expanded through major factions and regional groups, operating across local, national, and transnational networks while diversifying into multiple illicit markets. Estimates suggest that criminal networks may generate around **BRL 146 billion per year** by exploiting illicit schemes within the supply chains of legal products (fuel, beverages, gold, and tobacco). This refers to the illicit segment — linked to practices such as contraband, tax fraud, adulteration, falsification, and illegal extraction — and does not represent the total revenue of the legal markets involved (FBSP, 2025).

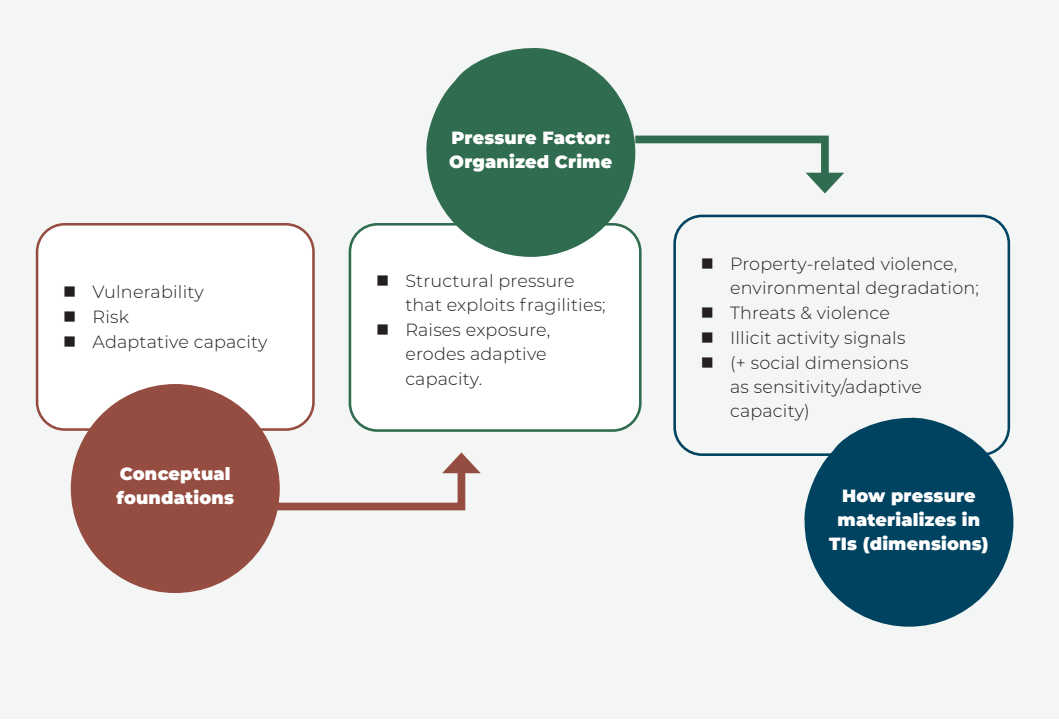
Territorially, the Amazon is a strategic hub where drug trafficking converges with illegal mining, timber trafficking, and other environmental crimes, sharing routes and infrastructure — so-called "criminal convergence" (UNODC, 2023; Cdesc, 2025b). These dynamics fuel violence, environmental degradation, and contested governance, including forms of criminal governance that erode community cohesion and leadership (Lessing, 2022; Werner, 2009; Cardona, 2012). This framing informs indicators designed to capture not only the presence of illicit dynamics, but also the mechanisms through which organized crime reproduces inequalities and constrains institutional responses.

POPULATION IN FOCUS
AND UNIT OF ANALYSIS

In this index, Indigenous peoples are understood as being exposed to organized crime pressures primarily through territorial mechanisms. These pressures unfold in contexts marked by structural inequalities and uneven rights implementation. In such settings, **institutional presence and enforcement may be limited due to factors** such as geographic remoteness, logistical constraints, limited operational capacity for sustained monitoring, and coordination gaps across agencies. This can allow external actors to impose control over land, resources, and circulation. **Illicit economies** may also translate into **local risk environments**, including the **circulation of alcohol and other drugs** and patterns of harmful use that can exacerbate existing vulnerabilities. Vulnerability is therefore understood not as an intrinsic condition of Indigenous communities, but as a territorial outcome produced by the interaction between pre-existing fragilities and coercive illicit economies.

A key expression of these pressures is **property-related violence (violence against patrimony)**, such as land invasions, illegal exploitation of natural resources, and damage to Indigenous assets. In 2024, 1,241 incidents of property-related violence were recorded, including 230 cases involving land invasions, illegal resource exploitation, and damage to Indigenous patrimony (CIMI, 2025). Available evidence suggests higher incidence in territories at less advanced stages of recognition and regularization, indicating that progress in land governance can mitigate exposure to external risks (CIMI, 2025).

Organized crime pressures also intersect with Indigenous Territories through recurrent dynamics such as illegal logging and mining, document fraud enabling illicit markets, and the consolidation of trafficking routes and recruitment in border areas. These dynamics intensify environmental degradation and territorial conflict while undermining community cohesion and governance arrangements. Accordingly, the framework prioritizes indicators that capture not only the presence of organized crime–related activities, but also the pathways through which they exploit institutional gaps, amplify inequalities, and constrain effective public responses in Indigenous Territories. ■


Pressure Factor: Organized Crime
Vulnerability
Risk
Adaptative capacity
Structural pressure that exploits fragilities;
Raises exposure, erodes adaptive capacity.
Property-related violence, environmental degradation;
Threats & violence
Illicit activity signals
(+ social dimensions as sensitivity/adaptive capacity)
Conceptual foundations
How pressure materializes in TIs (dimensions)

THE CONCEPT OF *VULNERABILIZED* TERRITORIES

THE CONCEPT OF *VULNERABILIZED* TERRITORIES

Vulnerability is not randomly distributed across space. It is produced and reproduced in specific contexts where historical, social, institutional, environmental, and economic factors intersect, generating areas marked by exclusion and significant gaps in the provision of services and fundamental guarantees. These spaces are often rendered invisible by limited policy provision and tend to become visible only in moments of crisis. Over time, precariousness can become entrenched and coping capacities sharply constrained (Kaztman, 2000; Ivo, 2006; Caldeira, 2001).

The notion of a *vulnerabilized* territory goes beyond administrative boundaries. It refers to a sociohistorical and socioeconomic construction in which concentrated disadvantages — poverty, insecurity, violence, lack of services, ethnic-racial discrimination, and consequential institutional fragilities — produce distinctive dynamics of marginalization and dependence. In this sense, space is not merely a setting but an active vector of inequality. The emphasis, therefore, is on territories being *vulnerabilized* through processes, rather than being intrinsically "vulnerable".

This concept places populations at the centre, since territories cannot be separated from the people who inhabit them. As Kaztman (2000) argues, the accumulation of disadvantages in a given space undermines individual and collective capacities to access opportunities, respond to shocks, and plan for the future. Individuals are not vulnerable only because of socioeconomic characteristics, but also because they live in places where risks concentrate.

This perspective underpins the approach adopted in this study. By taking territory as the unit of analysis, the index shifts attention from individual attributes to the social space in which vulnerability is produced, allowing the analysis of how risks and protective capacities are unevenly distributed and organized across space — including risks associated with organized crime.

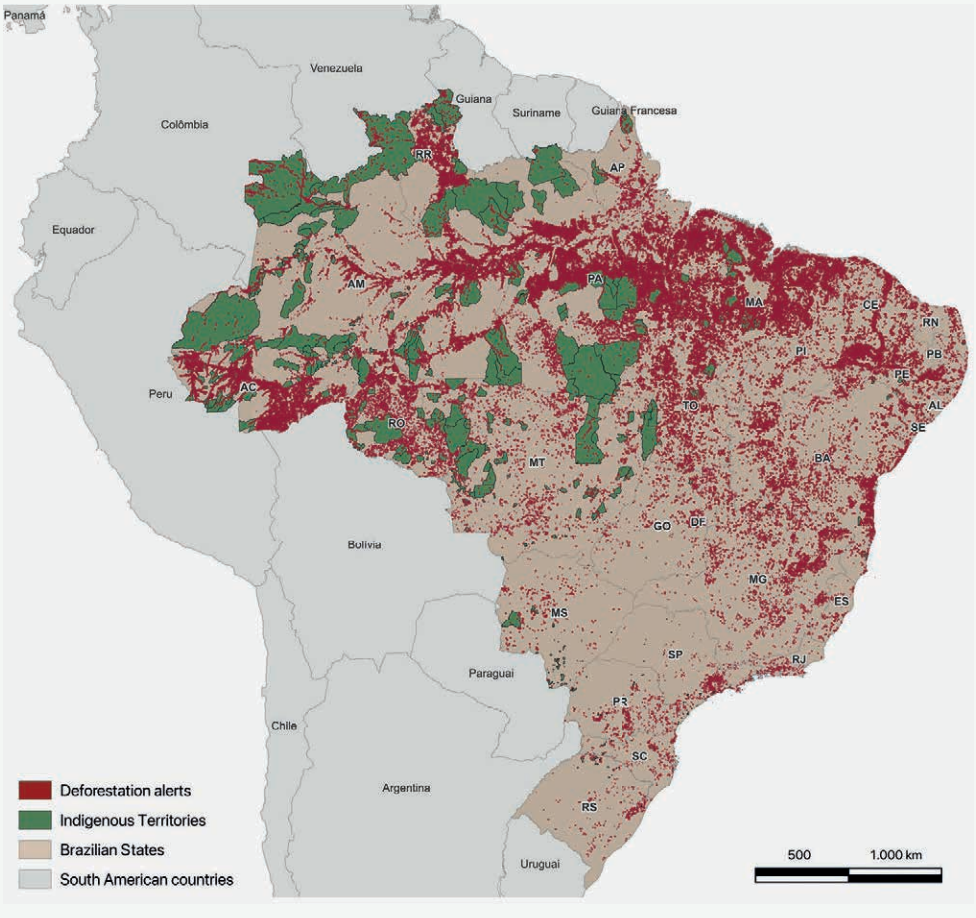
International literature reinforces this view: criminal organizations often operate opportunistically, exploiting areas of weak state presence where populations are more exposed to violence, coercion, recruitment, and economic exploitation. In such settings, organized crime can consolidate power over already disadvantaged populations and function as an informal mediator of social relations (Feltran, 2018; Paes Manso, 2020; GI-TOC, 2020).

In this index, the concept of *vulnerabilized* territory recognizes vulnerability as spatially structured and territorially reproduced. Operationally, it supports the use of measurable indicators to translate territorial vulnerability into comparable data while keeping attention on exclusion dynamics and the presence — or absence — of protective factors. Territorial vulnerability is thus treated as a synthetic expression of exposure, sensitivity, and adaptive capacity.

From this basis, organized crime is not viewed only as an external threat, but as a pressure that becomes embedded. This territorial approach is further illustrated by two consecutive maps that show how distinct pressures can concentrate in the same Indigenous Territory. The first map shows deforestation alerts across Brazil and indicates whether Indigenous Territories are already affected. The second map shows mining alerts, enabling a comparative reading of where mining pressures overlap with deforestation and where they follow different spatial patterns. Both layers are derived from satellite-based alert systems and, as such, they do not allow a definitive distinction between legal and illegal activities at the point level. Even so, the maps already make it possible to identify environmental pressures in the surroundings and, in some cases, within Indigenous Territories.

FIGURE 2

Deforestation[4] Alerts and Indigenous Territories in Brazil, 2025



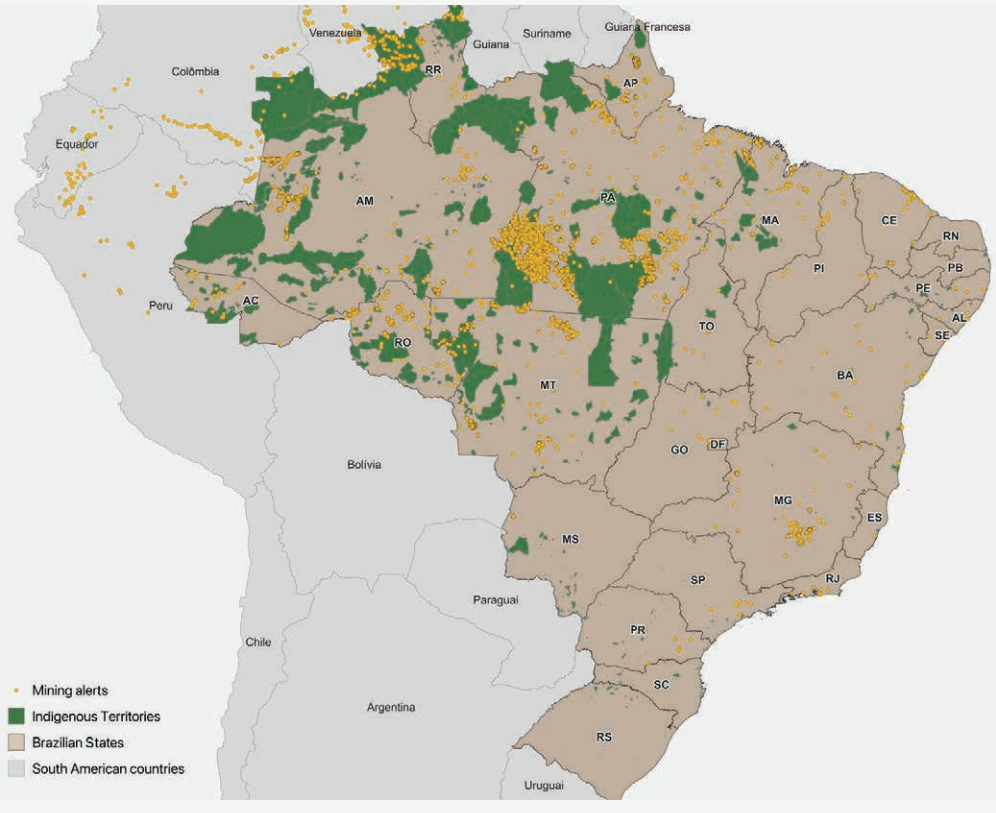
Source: Federal Police – *Brasil Mais* Platform (deforestation alerts, 2024–2025); FUNAI (TI boundaries, 2025).

Map produced by the authors.

4 Deforestation alerts are derived from satellite-based detection of clear-cut forest loss. These alerts do not, by themselves, allow distinguishing between legally authorized and illegal deforestation.

FIGURE 3

Mining[5] Alerts and Indigenous Territories in Brazil, 2025



Source: Federal Police – *Brasil Mais* Platform (deforestation alerts, 2024–2025); RAISG (2025); FUNAI (TI boundaries, 2025). Map produced by the authors.

In the territorial approach adopted by this index, drug trafficking pressures are understood not only through end-market demand, but through the spatial infrastructures and corridors that enable the circulation and concentration of illicit flows. In the Brazilian context, available evidence and the perceptions of public security professionals suggest that most of the cocaine entering the country originates in Peru and Bolivia, highlighting the importance of transboundary routes and border-adjacent logistics (Cdesc, 2023). To illustrate how these pressures materialize across space, this section is accompanied by two consecutive maps of drug seizures — marijuana and cocaine — which help identify areas where enforcement encounters are more frequent and where trafficking dynamics may be more intensely expressed.

Two routes are consistently highlighted in the literature and by prac-

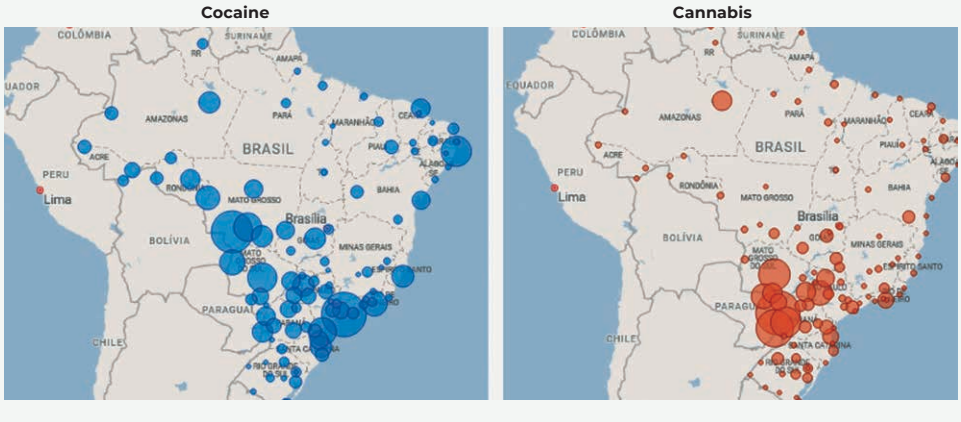
5 Mining alerts are derived from remote sensing and do not, by themselves, indicate whether detected activity is legal (authorized) or illegal.

titioners as structuring corridors. The first is the "Rota do Solimões" in the Legal Amazon, where extensive waterways, large border areas, complex oversight conditions, and limited institutional presence favour the use of the region as a transnational logistical corridor for cocaine — both for domestic markets and onward international flows (FBSP, 2022; Cdesc, 2023). Comparative evidence also indicates that, proportionally, cocaine seizures in the Legal Amazon exceed those observed in other parts of the country, reinforcing the interpretation of intensive use of the region as a trafficking corridor (Cdesc, 2023). Interviews conducted in the Cdesc study further point to the sharing of logistical infrastructure across illicit markets — such as clandestine airstrips, radio communication systems, and supply networks — linking drug trafficking with activities like illegal mining and increasing operational efficiency while complicating enforcement (Cdesc, 2023).

The second is the "Rota Caipira," widely referenced as a major entry and circulation axis for illicit drugs, connecting Brazil's borders with Bolivia and Paraguay through Mato Grosso and Mato Grosso do Sul toward São Paulo and Paraná (Abreu, 2017). The attractiveness of these destinations is associated not only with high consumption, but also with strategic logistics infrastructure used by organized crime for international cocaine trafficking, including São Paulo/Guarulhos–Governador André Franco Montoro International Airport and the Port of Santos (Abreu, 2017). Read together, the seizure maps support a comparative interpretation of how marijuana and cocaine pressures concentrate along distinct corridors — and where they overlap — helping to situate "vulnerable territories" as those where illicit circulation is facilitated by structural and institutional constraints and reinforced by strategic logistics. ■

FIGURE 4

Cocaine and cannabis seizures by the Federal Police – Brazil, 2023



Source: Brazilian Observatory on Drug Information, 2025

RESEARCH PHASES AND METODOLOGY

RESEARCH PHASES AND METODOLOGY

Institutional Meetings

Following initial discussions with Senad/MJSP on the purpose and analytical scope of the index, Cdesc conducted a set of technical consultations with institutional partners and subject-matter experts. These exchanges were designed to strengthen the conceptual design, assess coherence between the theoretical framework and feasible measurement strategies, and anticipate interpretive and operational risks in the public use of results. They were not deliberative and did not interfere with the statistical procedures used to compute the index.

From December 2024 onward, Cdesc held technical meetings with representatives from Ipea, UNICEF, GI-TOC, Sesai/MS, and the Brazilian Public Security Forum, as well as researchers from Cedeplar/UFMG and NEPO/Unicamp. Contributions supported the refinement of key concepts, the definition of variables and dimensions, and the identification of common data challenges and communication risks. In addition, three sessions were held with Senad to present preliminary findings and gather feedback from government bodies and Indigenous organizations (30 October 2025; 7 November 2025; and a workshop on 5 December 2025 within the interministerial working group led by Senad's Indigenous Strategy).

Cdesc also held a dedicated technical review with UNODC's Research and Analysis Branch (RAB). The discussion reinforced the importance of presenting results with analytical interpretation — rather than standalone numeric outputs — to reduce misreading and support responsible use by diverse audiences. Inputs were incorporated selectively, mainly informing the framing of dimensions, measurement strategies aligned with data availability and quality, and guidance on the public communication of findings, while core statistical choices (normalization, aggregation, weighting, and index structure) remained consistent with the methodology defined for the study.

Data Sources and Key Constraints

Persistent constraints: Producing statistics on Indigenous peoples involves conceptual, methodological, and political challenges; undercounting remains recurrent due to coverage errors, language barriers, and distrust in data-collection processes (Smith & Marks, 2020).

Identification and comparability: Estimates vary by identification method (self-identification, interviewer classification, or administrative records), which can introduce bias and limit comparability across sources (Jamieson et al., 2021).

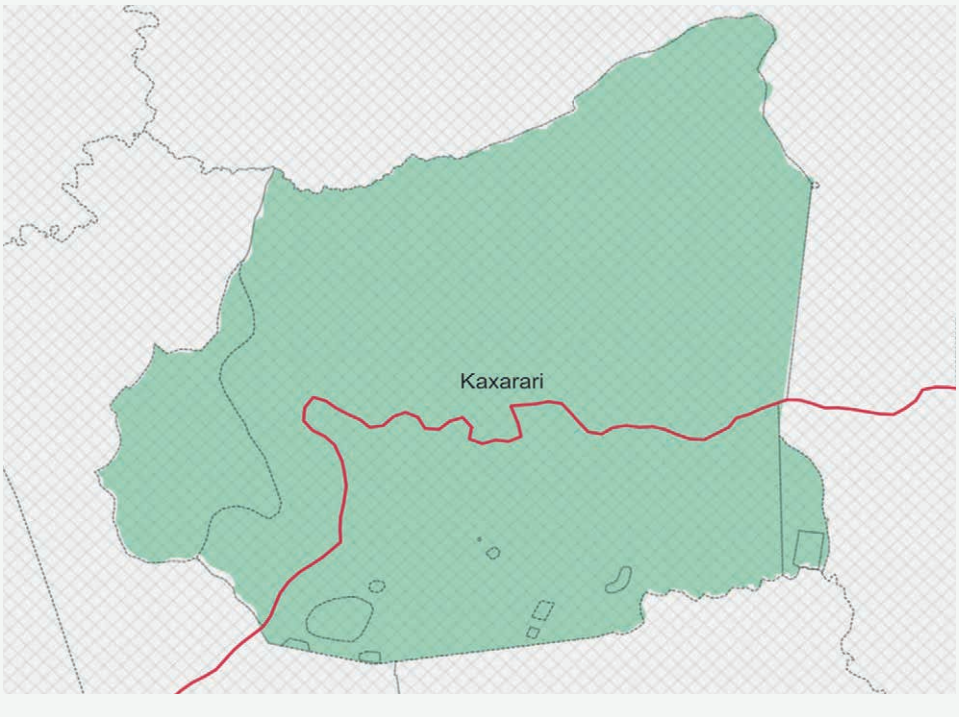
Census as the primary reference: In Brazil, the Demographic Census remains the main source for population denominators and territorial distribution; past misalignment between IBGE geographies and FUNAI-recognized Indigenous Territories has affected territorial estimates (IBGE, 2024).

Recent methodological improvements: Since 2010, IBGE has strengthened coverage through georeferencing and expanded self-identification tools; in 2022, the self-identification question was applied across all Indigenous localities, alongside targeted enumerator training and field support (IBGE, 2024).

Implications for the index: Despite advances, structural limitations and territorial diversity still affect data availability, granularity, and comparability. The index therefore integrates multiple sources — census data, administrative records, and institutional datasets — using explicit criteria for harmonization and spatial integration.

FIGURE 5

Example of Boundary Misalignment: Kaxarari Indigenous Territory across State/Municipal Limits and Census Tracts



Source: IBGE (state/municipal boundaries; census tracts, 2025); FUNAI (Indigenous Territory boundaries, 2025).

Map produced by the authors.

The map above illustrates a key data challenge for this study: territorial misalignment between Indigenous Territories and administrative and census geographies. The green polygon shows the demarcated Kaxarari Indigenous Territory. The red line marks state and municipal boundaries, and grey lines represent census tracts. The portion above the red line lies in Amazonas (municipality of Lábrea), while the portion below lies in Rondônia (municipality of Porto Velho). Because these spatial units do not fully overlap, the analysis relies on geospatial overlays and census tract aggregation and, where direct measures are unavailable, on proxy variables to approximate territorial conditions, with acknowledged limits in precision.

Data Mapping

The data mapping documented data sources, temporal coverage, units of analysis, derived variables, and key limitations. In total, 66 datasets were reviewed and 52 variables were selected for the first mapping round based on data quality and completeness.

Variables with spatial reference were mapped and linked to the official Indigenous Territory polygons provided by FUNAI. Variables without direct geospatial representation were compiled at the municipal or census-tract level using administrative areas that fully or partially overlap Indigenous Territories. In these cases, the mapping prioritized indicators disaggregated by Indigenous status (race/colour or Indigenous identification) to reduce distortion, while acknowledging underreporting and inconsistencies in administrative records.

The final set of variables was organized into seven thematic blocks — territorial organization, environmental degradation, threats and violence, indicators of illicit activities, income, education, and health — to support subsequent standardization and aggregation. Integration across sources was enabled through a master Indigenous Territories identification table, designed to ensure interoperability between FUNAI and IBGE references and to support crosswalks with municipalities, census tracts, and federal units.

Methodology

The index uses a continuous, relative 0–1 scale to represent gradients of territorial vulnerability, rather than assigning territories to discrete categories. This approach preserves empirical variability, avoids interpretive discontinuities created by arbitrary cut-offs, and is consistent with the conceptual framing of vulnerability as multidimensional and gradual (Price et al., 2025). It also enables cross-territory comparison and periodic recalculation to monitor change over time.

To operationalize the framework, indicators are grouped into thematic dimensions aligned with the analytical components of vulnerability (exposure, sensitivity, and adaptive capacity). All variables are normalized using Min–max rescaling to ensure comparability across units of measurement. Indicators in which higher values reflect better conditions are inverted so that higher scores consistently represent more adverse conditions.

Dimension subscores are computed as the arithmetic mean of normalized indicators within each dimension. The overall index is then calculated by aggregating dimension subscores with equal weights. Equal weighting increases transparency and allows patterns in the data to drive results, while also supporting decomposition of the overall score by dimension.

To support interpretation, a complementary decomposition analysis breaks down each territory's overall score into the relative contribution of each dimension. This step does not affect index computation; it is intended to improve interpretability and methodological transparency by clarifying which dimensions most shape each Indigenous Territory's vulnerability profile.

Although the metric is continuous, results are grouped into five vulnerability bands for communication and visualization using the natural breaks (Jenks) method. This classification is strictly descriptive: it does not constitute a ranking or an automatic prioritization tool, and it does not modify the underlying continuous scale.

Limitations

Although the index is an innovative analytical tool, its results are constrained by limitations common to composite measures and by the availability and quality of underlying data. The points below delimit the main constraints for interpretation and use.

Data quality and coverage. The index relies on multiple secondary public and institutional datasets. Gaps, delays, inconsistent reporting, and underrecording can affect reliability. In remote Indigenous Territories, irregular data collection may lead to underestimation of vulnerability. As a result, the index reflects not only observed territorial conditions but also asymmetries in institutional capacity to register and monitor events and services.

Simplification of complex phenomena. As a synthetic measure, the index necessarily compresses multidimensional realities into a single score, which can obscure local nuance, interactions among drivers, and specific territorial histories. It supports communication and comparison, but it does not replace qualitative, ethnographic, or detailed territorial analysis.

Methodological choices and residual arbitrariness. Variable selection, normalization, aggregation, and weighting choices — while guided by conceptual and technical criteria — can influence the final score. Small parameter changes may affect the relative position of territories, especially when scores are close. Results should therefore be read as a statistical approximation, not a precise measurement of vulnerability.

Interpretation and intended use. The index is designed for diagnosis and monitoring, not for hierarchical ordering. It is intended to indicate relative patterns and trends to inform contextualized, intersectoral responses. Using results to rank territories, make decontextualized comparisons, or support normative judgments exceeds the model's scope and is not methodologically recommended.

These limitations do not invalidate the index; they define its interpretive boundaries. For policy design and implementation, results should be used alongside qualitative evidence, community consultation and listening processes, and localized analyses, in order to incorporate sociocultural, historical, and institutional perspectives that are not fully captured by quantitative measurement. ■

INDEX STRUCTURE

INDEX STRUCTURE

The index is organized into seven dimensions. Four dimensions capture territorial pressures and mechanisms associated with organized crime (external risk phenomena), while three dimensions reflect social conditions that shape sensitivity and adaptive capacity (protective conditions) in Indigenous Territories.

Territorial Organization. Captures the legal-institutional and governance conditions that shape territorial protection and collective capacity within Indigenous Territories. It reflects the stage of land recognition and regularization, whether the territory is in international border areas, and governance-relevant contextual features (e.g., the presence of isolated peoples and ongoing removal of non-Indigenous occupants). Overall, it serves as a proxy for the stability of territorial rights and for the institutional conditions that enable — or constrain — effective protection.

Environmental Degradation. Measures exposure to environmental pressures within Indigenous Territory boundaries using georeferenced alerts from remote sensing and official monitoring systems, including deforestation and mining, standardized by territory size. Beyond environmental harm, these indicators also serve as indirect proxies of territorial control and governance capacity, given the frequent overlap between environmental degradation and illicit economies.

Threats and Violence. Captures direct and structural violence affecting Indigenous peoples and Indigenous Territories by combining records of interpersonal and lethal violence (including sexual violence and aggression) with territorially anchored threats linked to illegal economic actors (e.g., land grabbers). Despite underreporting and classification constraints in administrative data, it provides an important empirical signal of protection gaps and differentiated victimization patterns.

Indicators of Illicit Activities. Measures exposure to organized crime dynamics and illicit economies through territorial and logistical proxies, including trafficking corridors and infrastructure, estimates of criminal group presence in surrounding municipalities, and drug seizure volumes at relevant operational scales. These variables are interpreted as contextual signals of organized crime influence in the surrounding environment — not as evidence that illicit activities occur inside a given Indigenous Territory — and approximate the intensity and connectivity of illicit markets shaping territorial risk.

Income and Living Conditions. This dimension assesses socioeconomic deprivation and material living conditions among Indigenous populations associated with Indigenous Territories. It includes measures of income disparity between Indigenous Territory areas and surrounding municipalities, access to basic household infrastructure (e.g., water supply and sanitation), and markers of institutional exclusion and social protection coverage (e.g., civil registration gaps and administrative records related to poverty and benefits). The dimension captures structural deprivation that can increase sensitivity to shocks and weaken protective conditions.

Education. Reflects access, continuity, and outcomes in Indigenous education contexts, using indicators such as literacy, age–grade distortion, and school dropout in schools located within Indigenous Territories. It captures persistent inequalities and constraints faced by Indigenous schools, particularly in remote areas and — as an element of adaptive capacity — signals how educational exclusion can limit autonomy, mobility, and collective response capacity over time.

Health. Captures health vulnerabilities through indicators of nutritional status, mortality outcomes, and selected epidemiological risks affecting Indigenous populations in areas overlapping Indigenous Territories. It includes markers of food insecurity and malnutrition, critical mortality outcomes (including child and maternal deaths), and selected reportable conditions (e.g., preventable infections and exposure-related events). Together, these indicators signal unequal access to health protection and heightened sensitivity to environmental degradation and violence-related stressors. ■

RESULTS

RESULTS

How to Read the Results

The index produces a continuous score ranging from 0 (lower territorial vulnerability) to 1 (higher territorial vulnerability). For communication and comparative visualization, results are also displayed in five vulnerability bands, defined using the natural breaks (Jenks) method, which groups values to minimize within-band variation and maximize separation between adjacent bands.

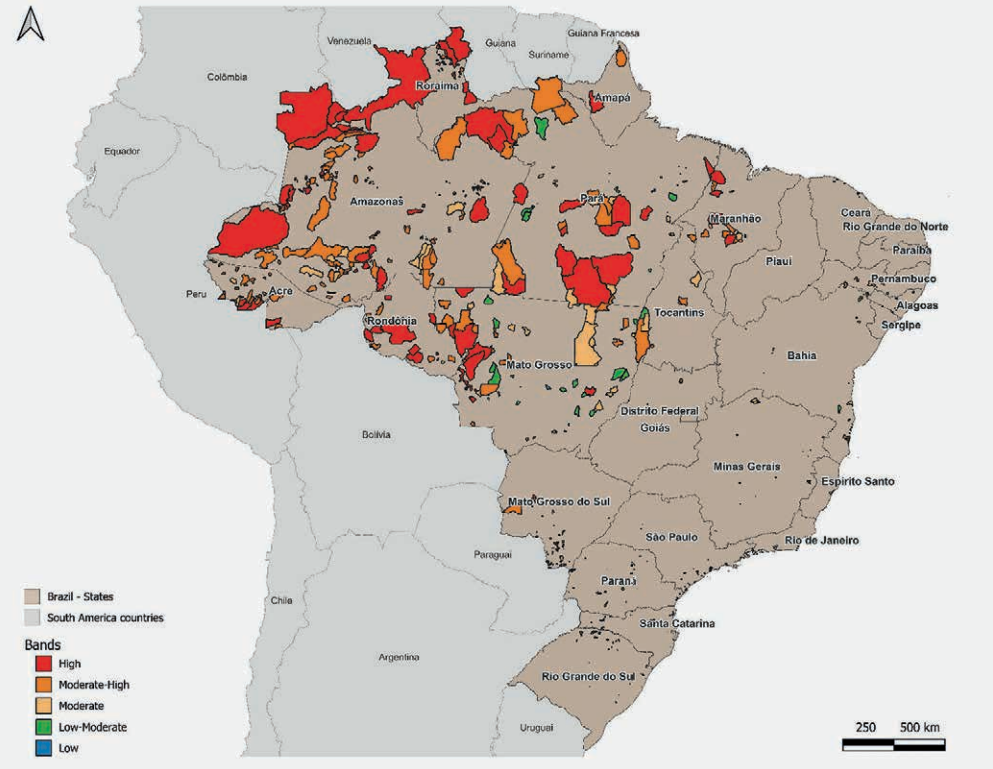
Band	Meaning
Band 1	Low vulnerability
Band 2	Low-Moderate vulnerability
Band 3	Moderately vulnerability
Band 4	Moderate-High vulnerability
Band 5	High vulnerability

These bands are strictly descriptive and should not be read as a ranking of Indigenous Territories or federative units, nor as a basis for automatic prioritization or normative judgments. The index remains a continuous composite indicator; banding is an auxiliary device to support interpretation, dissemination, and policy dialogue by highlighting territorial patterns and supporting monitoring over time.

Results are presented primarily through a set of thematic maps, which allow territorial patterns to be interpreted spatially and compared across regions and vulnerability bands. Mapping is the most appropriate format for this index because it highlights geographic clustering, border and corridor effects, and differences in exposure and protective conditions that are not easily captured in tabular summaries. The following map presents the overall index scores for Indigenous Territories.

FIGURE 6

Overall Vulnerability to Organized Crime in Indigenous Territories, Brazil



Map produced by the authors.

How to access the results

The index results are available on a public online platform at:

https://cdesc.shinyapps.io/app_eng/

Results are displayed visually using the five vulnerability bands (colour scheme), rather than numeric scores. Users can view: (i) the overall classification for each Indigenous Territory; (ii) classifications by dimension; and (iii) the decomposition view, which indicates which dimensions most shape the observed vulnerability profile in each territory.

While the index is a technical instrument, the platform has been designed to support use by diverse audiences, including Indigenous Peoples and organizations, government institutions, civil society, and the academic community. Instructions for accessing the platform are provided below. ■

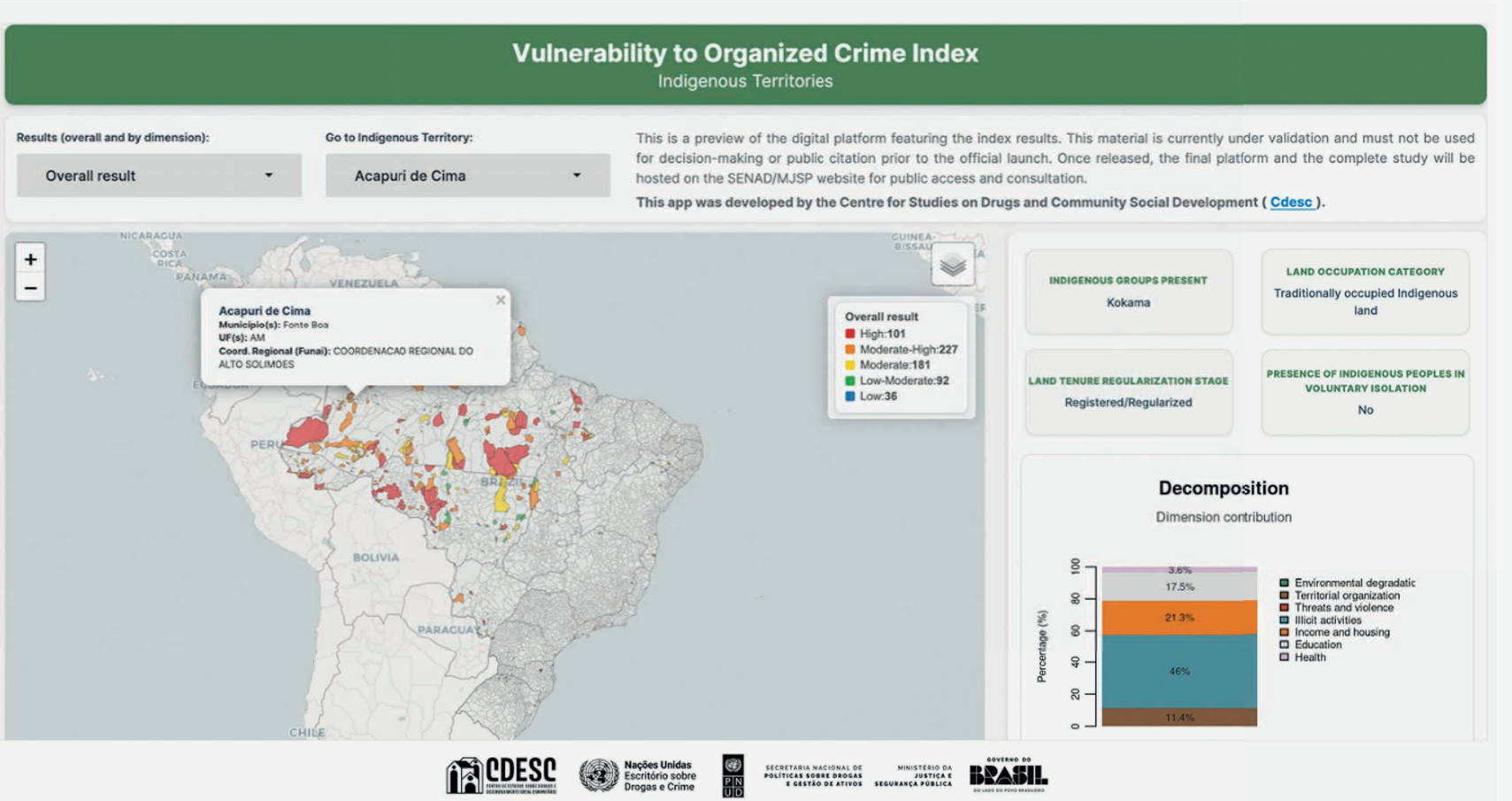


FIGURE 7
Online Platform and Results Visualization

IMPLICATIONS FOR PUBLIC POLICY

IMPLICATIONS FOR PUBLIC POLICY

The Vulnerability to Organized Crime Index – Indigenous Territories is an evidence-based tool to support public policy, technical cooperation, and the work of Indigenous and Indigenous-rights organizations. By integrating multiple dimensions of territorial vulnerability, it helps identify where social deprivation, environmental pressures, violence, and illicit-economy dynamics converge, informing targeted and coordinated responses. Results should be read as signals for territorial attention and prioritization, not as a basis for ranking or normative judgments.

1) Prioritizing integrated prevention, protection, and services

The index identifies territories where organized crime pressures and social vulnerability converge, supporting coordinated policies that combine protection, health, social assistance, education, and rights-based service delivery — rather than isolated sectoral actions.

2) Guiding Alternative Development and resilience-building

By highlighting vulnerability, the index helps target livelihoods-based interventions that strengthen local economies and community organization, reducing reliance on illicit economies and increasing adaptive capacity.

3) Targeting territorial governance and enabling monitoring over time

Environmental and illicit-activity signals help prioritize socioenvironmental monitoring and territorial protection, indicating where enforcement should be paired with social measures.

4) Operational integration with UNODC Brazil initiatives

The index can provide a standardized territorial baseline to strengthen ongoing initiatives:

- **Tapajós Project:** the index can help identify territories where illicit mining contexts coincide with social vulnerability and threats, supporting prevention and response strategies related to trafficking in persons and forced labour risks.
- **SAR-TI (Early Warning System in Indigenous Territories):** the index results can complement environmental alerts by incorporating underlying social and institutional vulnerabilities, improving prioritization for response in territories where risks are compounded.
- **Aurum Project:** combining index dimensions related to illicit activity indicators, environmental degradation, and socioeconomic conditions can help identify contexts where illegal gold networks are more likely to expand, supporting more targeted enforcement, traceability efforts, and inter-institutional coordination.

5) Alignment with Senad/MJSP strategic initiatives

The index provides a territorial evidence base to support planning, prioritization, and monitoring of Senad/MJSP actions to mitigate and address the impacts of drug trafficking on Indigenous Territories, including the identification of priority areas for integrated policies and for instruments such as CAIS Povos Indígenas, PRONASCI Juventude, and the National Strategy for Mitigation and Reparation of the Impacts of Drug Trafficking on Indigenous Territories (Decree No. 11,511 of 2023).

Recommended conditions for use

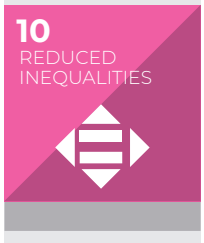
For responsible application, results should be interpreted alongside qualitative evidence and community consultation, ensuring that quantitative patterns are read in light of territorial realities and Indigenous perspectives. Used in this way, the index can support targeted prevention, coordinated action, and learning over time, while respecting the limits of quantitative measurement. ■

CONNECTIONS BETWEEN THE INDEX AND THE 2030 AGENDA

CONNECTIONS BETWEEN THE INDEX AND THE 2030 AGENDA

SDG 3
GOOD HEALTH AND WELL-BEING

The index is not intended to measure health conditions directly or replace standard health indicators. However, it can help target health policies by identifying Indigenous Territories where organized crime–related pressures are likely to worsen health outcomes. In these settings, criminal dynamics may increase the circulation of psychoactive substances, intensify interpersonal and sexual violence, and disrupt local health services due to insecurity or territorial capture. They may also intersect with high-impact illicit activities such as illegal mining, heightening epidemiological risks linked to environmental degradation and forced displacement. The index therefore serves as a complementary tool to support territorial prioritization of health actions in high-vulnerability contexts.



SDG 10
REDUCED INEQUALITIES

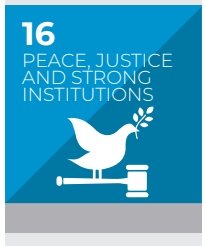
The index relates directly to SDG 10 by addressing the territorial and ethno-racial inequalities that shape Indigenous vulnerability in Brazil. Using Indigenous Territories as the unit of analysis, it highlights persistent gaps in access to services, institutional protection, and socioeconomic opportunities. These disparities reflect historical and territorial exclusion, expressed in uneven risk exposure, weak state presence, and greater exposure to violence and illicit activities. The index helps make structural inequalities visible beyond national averages and supports policies aimed at reducing disparities and promoting inclusion in Indigenous Territories.

SDG 13
CLIMATE ACTION

Although the index does not primarily measure climate impacts, it links to SDG 13 by incorporating territorial processes that exacerbate climate change. By including variables on deforestation, wildfires, and illegal mining in and around Indigenous Territories, it highlights pressures that undermine ecosystem stability and climate regulation, particularly in the Amazon. These dynamics—often connected to illicit economies and weak governance—compound socioenvironmental vulnerability, increasing exposure to extreme events and degrading natural resources. The index can therefore complement climate adaptation and mitigation efforts by identifying territories where climate action depends on environmental protection, curbing illicit activities, and strengthening institutions.

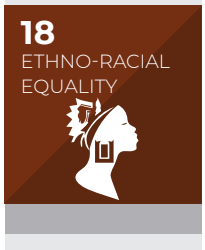
SDG 15
LIFE ON LAND

The index relates directly to SDG 15 by incorporating variables on deforestation, wildfires, and illegal mining—pressures that disproportionately affect Indigenous Territories. By using these territories as the unit of analysis, it recognizes their role in biodiversity conservation while documenting how illicit activities threaten ecosystem integrity. Environmental degradation is treated as intertwined with illegal economies, institutional fragility, and the vulnerabilization of Indigenous populations. The index thus supports efforts that link ecosystem protection, territorial governance, and the mitigation of illicit activities in environmentally sensitive areas.



SDG 16
PEACE, JUSTICE AND STRONG INSTITUTIONS

The index contributes to SDG 16 as a diagnostic tool by providing evidence on territorial dynamics linked to violence and institutional fragility in Indigenous contexts. By measuring exposure to organized crime, it systematizes information on threats, homicides, other forms of violence, territorial capture, and weak or ineffective state presence. It helps make these patterns visible and can inform security, justice, and territorial protection efforts aimed at reducing violence and strengthening institutions in Indigenous Territories.



SDG 18
ETHNO-RACIAL EQUALITY

Brazil voluntarily adopted SDG 18 on ethno-racial equality in September 2023 and, in December 2023, established the National Commission for the SDGs (CNODS) to support implementation through government–civil society coordination.

The index aligns with SDG 18—particularly targets related to public security and justice—by showing how multiple forms of violence affect Indigenous peoples and territories through an intersectional lens. It draws attention to lethal violence that disproportionately impacts Indigenous youth and underscores the need to strengthen policies that expand access to justice. In this sense, the index can support SDG 18 monitoring by helping identify territories where Indigenous people are more exposed to intentional homicide.

SDG 18 also includes targets on full reparation for territorial losses and environmental impacts in Indigenous lands, linked to rights to memory, truth, and justice. This can be tracked through indicators such as the share of Indigenous people living in regularized territories and the extent of deforestation and secondary vegetation in Indigenous lands. The index therefore helps map socioenvironmental vulnerabilities and supports monitoring progress on ethno-racial equality. ■

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BRAZILIAN GOVERNMENT
BRASIL
STANDING WITH THE BRAZILIAN PEOPLE