IFRC Global Disaster Preparedness Center

EXECUTIVE SUMMARY

Climate Governance and Risk Management:

Comparative Institutional Analysis in Three Key Paraguayan Cities

Angelina Adelfa Trinidad Da Silva, *Universidad Nacional de Asunción*
María Victoria Zavala, *Universidad Nacional del Este*
Jorge Antonio Martin, *Municipalidad de Encarnación*

2025

www.preparecenter.org

Climate Governance and Risk Management: Comparative Institutional Analysis in Three Key Paraguayan Cities

Executive Summary

This comparative research examines institutional frameworks and climate governance mechanisms in Asunción, Ciudad del Este, and Encarnación, evaluating their effectiveness in disaster risk management and reduction within the context of climate change vulnerability in Paraguay.

The study addresses critical gaps in academic literature on urban climate governance in Latin American intermediate cities through four specific objectives: identifying and comparing institutional frameworks, assessing available capacities and resources, analyzing barriers and enablers to climate action, and examining participation and equity mechanisms. A mixed sequential methodology integrated qualitative analysis of twenty-five institutional documentary sources with quantitative spatial analysis using Geographic Information Systems, enabling triangulation of institutional evidence with territorial vulnerability patterns.

The research identified a dominant pattern of fragmented polycentrism characterized by multiple decision-making centers operating with overlapping authorities and inadequate coordination mechanisms. This configuration generates systematic duplication of competencies, delays in policy implementation, and dilution of institutional responsibilities across the three cities studied.

Critical structural deficits pervade all institutional levels, with specialized human resources ranging from 0.18 to 0.6 professionals per municipality and external financing dependence exceeding 70% across all cities. These limitations compromise the sustainability and effectiveness of local climate interventions, particularly in Ciudad del Este, which exhibits the most severe capacity constraints.

Spatial correlation analysis revealed systematic convergence between areas of highest physical climate exposure and greatest institutional barriers to community participation. Vulnerability concentrations affect 240,300 people in Asunción's wetlands, while Ciudad del Este's San Rafael neighborhood faces both elevated spatial vulnerability and economic barriers of USD 270 for community organizational recognition.

Institutional learning capacity emerges as a critical differentiating factor, exemplified by Encarnación's transformation of the traumatic Yacyretá dam relocation experience into specialized institutional capabilities. The establishment of the Municipal Council for Disaster Management and Reduction in 2017 demonstrates how crisis-driven learning can catalyze sustainable institutional innovation when properly channeled through appropriate regulatory frameworks.

The study contributes to the Fragmented Polycentric Climate Governance Model, distinguishing between functional polycentrism with effective coordination and fragmented polycentrism characterized by institutional disconnection. This framework provides analytical tools for diagnosing and strengthening climate governance systems in similar urban contexts throughout Latin America.

The empirical validation of three-dimensional climate justice theory demonstrates that communities facing greatest physical climate risks simultaneously encounter the most

significant procedural barriers and recognition deficits, creating reinforcing cycles of vulnerability and institutional exclusion.

Immediate interventions should prioritize formalizing multilevel preventive protocols that systematically articulate competencies between SEN, governorates, and municipalities, transitioning from reactive responses to anticipatory planning. Territorial prioritization should focus investments in critical areas identified through GIS analysis, specifically targeting drainage infrastructure and community early warning systems.

Medium-term strategies require sustainable strengthening of technical capacities through institutionalized university-government agreements and elimination of political discretion through transparent, objective criteria for resource distribution based on spatial vulnerability indices.

Long-term innovations encompass creating Municipal Risk Observatories that integrate urban sensors with community registries and implementing digital participatory mapping to democratize climate information management while strengthening informed citizen participation.

This research provides methodologically robust evidence demonstrating the feasibility of transforming fragmented institutional arrangements into functional polycentric governance models through systematic institutional learning and sustained multilevel coordination. The findings offer replicable assessment tools and empirically grounded recommendations for strengthening urban climate action in Paraguay and comparable regional contexts, contributing significantly to underrepresented Latin American perspectives in international climate governance scholarship.

The validation of spatial vulnerability indices as objective criteria for policy prioritization establishes an evidence-based foundation for territorial development policies that integrate social equity considerations in urban planning and risk management, addressing both immediate operational needs and long-term institutional sustainability requirements.