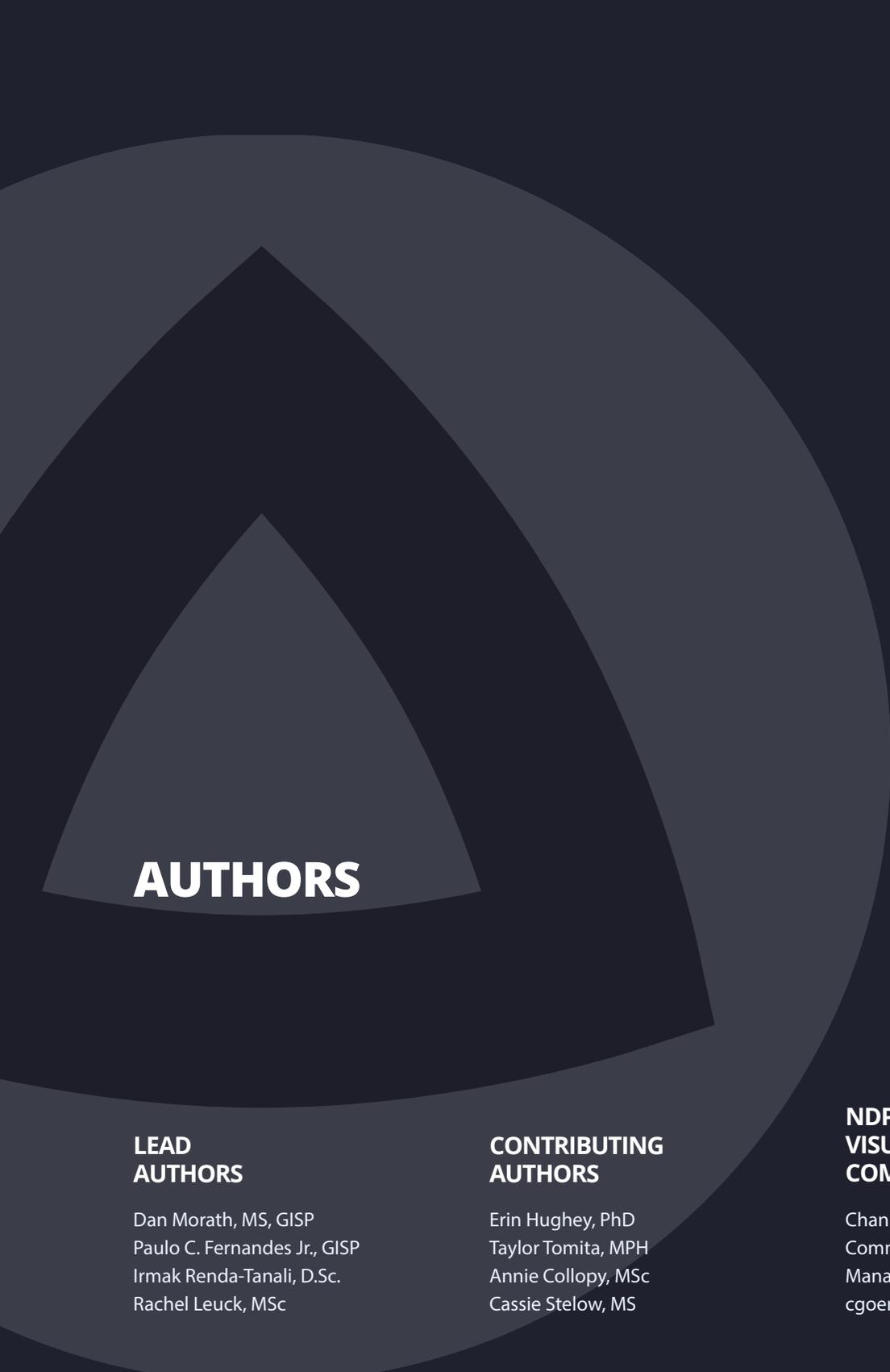




PARAGUAY NATIONAL DISASTER PREPAREDNESS BASELINE ASSESSMENT

A DATA-DRIVEN TOOL FOR
ASSESSING RISK AND BUILDING
LASTING RESILIENCE





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- Ministerio de Hacienda
- Ministerio de Obras Públicas y Comunicaciones (MOPC)
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- Universidad Catolica de Asunción (ACA)
- Universidad Columbia (UC)
- Universidad Nacional de Asunción (UNA)

LIST OF ABBREVIATIONS

AEP = Agencia Espacial de Paraguay/ Paraguayan Space Agency

ACA = Universidad Católica de Asunción/ Catholic University of Asunción

ARRN = Autoridad reguladora radiológica y nuclear/ Radiological and Nuclear Regulatory Authority

BID = Banco Interamericano de Desarrollo /Inter-American Development Bank

CC= Cambio Climático/Climate Change

CCA = Climate Change Adaptation

CD = Capacity Development
CIAT = Centro de Información y Alerta Temprana/ Center for Information and Early Warning

CNCC = Comisión Nacional de Cambio Climático/ National Commission on Climate Change

COG= Continuity of Government

CONACYT = Consejo Nacional de Ciencia y Tecnología/ National Council of Science and Technology

CONAM = Consejo Nacional del Ambiente/ National Council of the Environment

COOP = Continuity of Operations

COOPI = Cooperazione Internazionale/ International Cooperation
COVID-19 = Corona Virus Disease 2019

CBVP = Cuerpo de Bomberos Voluntarios del Paraguay/ Volunteer Fire Department of Paraguay

INE= Instituto Nacional de Estadísticas/ National Statistics Institute

DIBEN = Dirección de Beneficencia y Ayuda Social/ Directorate of Charity and Social Assistance

DISERGEMIL = Dirección Del Servicio Geográfico Militar/ Directorate of the Military Geographic Service

DM = Disaster Management

DMA = Disaster Management Analysis

DMH = Dirección de Meteorología e Hidrología/ Directorate of Meteorology and Hydrology

DRR = Disaster Risk Reduction

EDAN = Damage Assessment and Needs Analysis/ Evaluación de daños y análisis de necesidades

COE/EOC = Centros Operaciones de Emergencia/ Emergency Operations

CenterEOS = Organized Entities of the Society

FAO = Food and Agriculture Organization

FMB = Fundación Moisés Bertoni/ Moisés Bertoni Foundation

FONE = National Emergency Fund/ Fondo Nacional de Emergencia

GDP = Gross Domestic Product
HAZMAT = Hazardous Materials

IADB = Inter-American Development Bank

ICS = Incident Command Systems

IICA = Instituto Interamericano de Cooperación para la Agricultura/ Inter-American Institute for Cooperation on Agriculture

IHL = International Humanitarian Law

INFONA = Instituto Forestal Nacional/ National Forest Institute

MADES = Ministerio del Ambiente y Desarrollo Sostenible/ Ministry of the Environment and Sustainable Development

MAG = Ministerio de Agricultura y Ganadería/ Ministry of Agriculture and Livestock

MDN = Ministerio De Defensa Nacional/ Ministry of National Defense

3/4

MDS = Ministerio de Desarrollo Social/ Ministry of Social Development

MEC = Ministerio de Educación y Ciencias/ Ministry of Education and Science

MOPC = Ministerio de Obras Públicas y Comunicaciones/ Ministry of Public Works and Communications

MRE = Ministerio de Relaciones Exteriores/ Ministry of Foreign Affairs

MSPYBS = Ministerio de Salud Pública y Bienestar Social/ Ministry of Public Health and Social Welfare

NDPBA = National Disaster Preparedness Baseline Assessment

NEC = National Emergency Committee

NGO = Non-Governmental Organization

ONCC = Oficina Nacional de Cambio Climático/ National Office of Climate Change

OPS = Organización Panamericana de la Salud/ Pan American Health Organization

PDC = Pacific Disaster Center

PNCC = Programa Nacional de Cambio Climático/ National Climate Change Program

PND = National Development Plan

PNEGER = National Education Plan for Risk Management

PNRRD = National Platform for Disaster Risk Reduction

PTI = Parque Tecnológico Itaipu/ Itaipu Technological Park

REHU = Reunión Especializada de Reducción de Riesgos de Desastres Socionaturales, la Defensa Civil, la Protección Civil y la Asistencia Humanitaria/ Specialized Meeting on Social and Natural Disaster Risk Reduction, Civil Defense, Civil Protection and Humanitarian Assistance

RVA = Risk and Vulnerability Assessment

SAT = Early Warning System

SD = Sustainable Development

SDGRR = Secretarías de Gestión y Reducción de Riesgos/ Secretariats of Risk Management and Reduction

MADES= Ministerio del Ambiente y Desarrollo Sostenible/ Ministry of Environment and Sustainable Development

SENASA = Servicio Nacional de Saneamiento Ambiental/ National Service of Environmental Sanitation

SIGOB= Sistemas de información para la gobernanza/ Information Systems for Governance

SEN = Secretaría de Emergencia Nacional/ National Emergency Secretariat

SISNAM = Sistema Nacional del Ambiente/ National Environmental System

SISNE = Sistema Nacional de Emergencia/ National Emergency System

SOP = Standard Operating Procedure

SOUTHCOM = US Southern Command

STP = Social Development Planning

UC = Universidad Columbia/ Columbia University

UCNSA = Universidad Católica Nuestra Señora de la Asunción

UNA = Universidad Nacional de Asunción

UNASUR = Unión de Naciones Suramericanas/ South American Nations Union

UNDAC = United Nations Disaster Assessment and Coordination

UNDRR = United Nations Disaster Risk Reduction

USAID = US Agency for International Development

WASH = Water, Sanitation and Hygiene

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EXECUTIVE SUMMARY

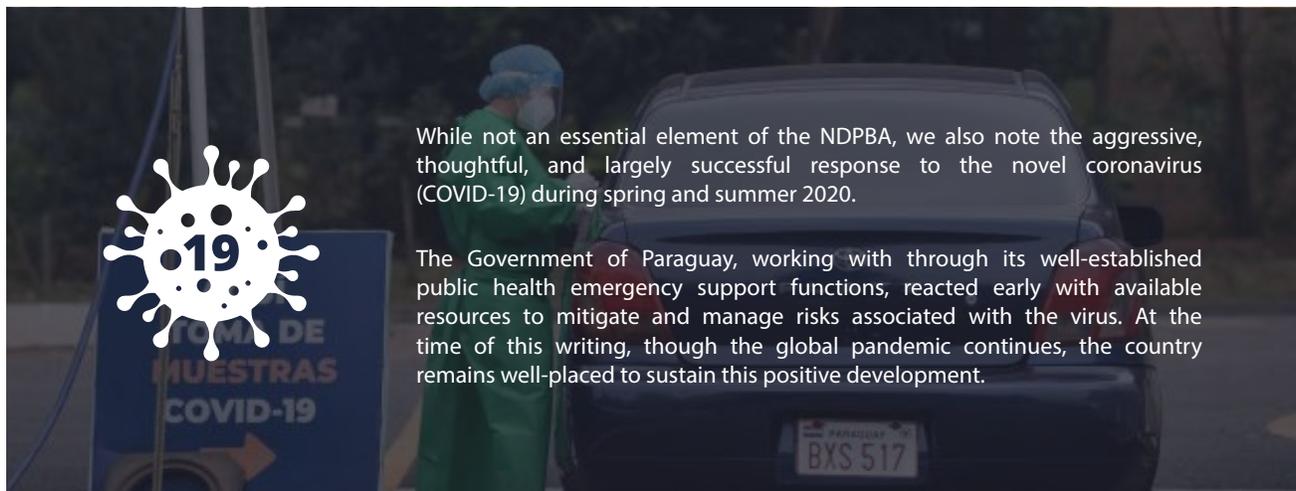
**PARAGUAY NATIONAL DISASTER
PREPAREDNESS BASELINE ASSESSMENT**

OVERVIEW

The Pacific Disaster Center (PDC) completed the Paraguay National Disaster Preparedness Baseline Assessment (NDPBA) in partnership with Paraguay's Secretaría de Emergencia Nacional (SEN). Hazard-based risks, vulnerabilities, resilience and disaster management capabilities were researched and analyzed to produce scientific data that can be used in the decision-making process during all phases of disaster management. The results are based on data made available by in-country partners during the period of the project from 2017-2019 and include recommendations that will increase disaster management readiness for supporting stakeholders. The NDPBA provides stakeholders with analytical tools, scientific data, and evidence-based practices that allow the disaster management community in Paraguay to reduce disaster risk and support response efforts. The methodology and associated recommendations are in alignment with United Nations Development Goals and the Sendai Framework for Disaster Risk Reduction 2015-2030.

The NDPBA was funded by the United States Government through the US Southern Command and was conducted in coordination with the US Embassy in Asunción. Although SEN was PDC's in-country partner during this project, the Center also developed relationships and data-sharing agreements with multiple government and non-governmental agencies in Paraguay that supported the data gathering and vetting process. A complete list of PDC's valued partners in the NDPBA effort is included in the introduction below.

The full report presents the data collected, the results of our modeling, analysis of these results, and the recommendations for closer alignment with the Sendai Framework. The following sections summarize these findings for executive review.



SUMMARY OF FINDINGS

Although Paraguay is a small country with many challenges, it has made significant progress understanding existing risks and creating an environment that has allowed the disaster management community to prepare the foundation for reducing disaster risk and increasing capabilities.

Paraguay was the first country to issue a presidential decree to incorporate the goals of the Sendai Framework into national policies and procedures. Although progress has been made, there is much work to be done.

Paraguay is a small nation, the 60th in size in the world with an area of 157,048 square kilometers. It is one of two landlocked countries in South America, along with its neighbor Bolivia. Its landscape profile provides an environment where many types of natural hazards exist. For this assessment, we identified flood, wildfire, drought, extreme cold, storms, and water deficit as the hazards that Paraguay's population is most exposed to.

Exposure to multiple hazards is compounded by socioeconomic vulnerabilities in Paraguay. Although the poverty rate has dropped steadily in recent years, urban poverty and income inequalities remain a challenge. The COVID-19 pandemic struck Paraguay at a time of strong economic recovery. Consequently, GDP is expected to decline in the near term, slowing economic development and poverty reduction.

NATURAL HAZARD EXPOSURE

2.6 million **30,000**

people affected by natural disasters (2010 - 2019)

people displaced by flooding in 2019



Flood



wildfire



Drought



Extreme cold



Storms



Water deficit



Exposure to multiple hazards is compounded by **socioeconomic vulnerabilities**. Although the poverty rate has dropped steadily in recent years, urban poverty and income inequalities remain a challenge.



The COVID-19 pandemic struck Paraguay at a time of strong economic recovery. **Consequently, GDP is expected to decline in the near term, slowing economic development and poverty reduction.**



Recent population growth throughout the country may put additional stress on the economy, as well as environmental resources and critical infrastructure.

The combination of multi-hazard exposure and vulnerability put Paraguay at increased risk of disasters from natural hazards. From 2010 to 2020, natural disasters affected over 2.6 million people.¹ Paraguay is particularly prone to seasonal floods and droughts. Paraguay declared a state of emergency due to flooding in April 2019 that resulted in 30,000 displaced persons in Asunción alone.² On January 30, 2020, more than 200 families were affected by heavy rains in Asunción. Drought negatively impacts Paraguay’s economy, particularly soybean production. During the 2018/2019 growth cycle, drought caused the soybean harvest to drop 23 percent to 7.8 million tons. This drop reduced Paraguay’s foreign exchange income by around US \$1.3 billion.³ In the face of these challenges, we found that the Government of Paraguay has taken many steps to provide for the safety of its citizens.

In 2005, Paraguay created the National Disaster Response and Disaster Risk Reduction Plan. This plan was the key strategy behind the strengthening of subnational disaster management (DM) capacity through effective coordination, as well as formation of SEN as the coordination agency. SEN has the mandate to establish structures of disaster risk reduction (DRR) and response within

RECENT MAJOR DISASTERS

<p style="font-size: 2em; font-weight: bold; color: #00a0e3;">2019</p> <p style="color: white;">Asunción floods</p>	<p style="font-size: 2em; font-weight: bold; color: #00a0e3;">2018- 2019</p> <p style="color: white;">Drought</p>	<p style="font-size: 1.5em; font-weight: bold; color: #00a0e3;">-\$ 1.3 billion (USD)</p> <p style="color: white; font-size: 0.9em;">Foreign exchange income loss due to reduction in soybean harvest for 2018-2019 growth year.</p>
---	---	--

all levels of government to be integrated into the National Emergency System (SISNE). The current DM system of Paraguay is based on solid legal framework placing SEN at the center of vertical and horizontal coordination.

Law 2615/05, which established SEN, forms the basis for emergency management capacity in Paraguay. It stipulates SEN's leadership and governance arrangements, provides the necessary statutory authorities to act, provides operational and emergency budget arrangements, clarifies declarations procedures, formalizes domestic military support and international cooperation mechanisms, and has many other provisions to enable effective emergency management capacity. Strategic direction is provided by the National Policy for Disaster Risk Management and Reduction, which calls for the integration of DM and DRR into development policies at national and subnational levels, and the alignment therein with existing frameworks for sustainable development through proper funding.

In 2018, Resolution 369/2018 was passed establishing both the Department of Capacity Development in Disaster Risk Reduction and the Department of Recruitment and Training in Disaster Risk Reduction within SEN's General Directorate of Risk Management. However, training and exercise requirements remain largely focused on practical elements of DM, including first aid, firefighting, HAZMAT, and Damage Assessment and Needs Analysis (EDAN).



Paraguay's national Early Warning System (SAT), operated through the Center for Information and Early Warning (CIAT), has been modernized with recent funding from the Inter-American Development Bank (IADB). The current Doppler radar system is outdated. Hazard monitoring systems across the board need to be continuous, reliable, and timely through proper funding of technology upgrades. Monitoring for all known hazards, including droughts, floods, hazardous materials, storms, and tornadoes, is conducted through technically specialized agencies. Real-time, 10-day forecast models exist for meteorological and hydrological hazards. SEN also acknowledged the need to standardize and test the procedures for early warning and notification to include key stakeholders, vulnerable populations, and translate data into actionable information.

While a great deal of work has been accomplished, and much progress has been made, many additional actions can be taken by the Government of Paraguay and its partners to further build capacity for disaster resilience and response.

RECOMMENDATIONS



These recommendations are included in greater detail in the body of the report. Our hope is that the Government of Paraguay and key development and disaster management partners will leverage the results of this comprehensive assessment to enable a more robust and sustainable disaster risk reduction effort in Paraguay that will contribute to saving lives and property.

IN LIGHT OF OUR FINDINGS, PDC MAKES THE FOLLOWING RECOMMENDATIONS:

1

Advance the implementation of national platforms for climate change adaptation and sustainable development throughout Paraguay.

2

Formalize the engagement of non-governmental stakeholders, including the private sector, in disaster management and disaster risk reduction initiatives.

3

Strengthen disaster management legislation to facilitate the development of a comprehensive disaster management system for the country.

4

Increase financial resources designated for disaster management through the strategic diversification of funds.

5 Build comprehensive disaster management and risk reduction strategies to align with sustainable development and climate adaptation.

6 Broaden plans to include continuity of operations and long-term recovery.

7 Increase public organization and engagement in disaster management efforts throughout Paraguay.

8 Institutionalize Paraguay's Unified Command system and structures as a standard of practice during disaster events of all size and scope.

9 Increase the capacity for emergency operations.

10 Strengthen dedicated resources for mass care.

11 Maintain sufficient commodity and supply inventories to adequately support post-disaster needs of the population.

12 Build human resource capacities in support of nationwide disaster management efforts.

13 Strengthen nationwide support for functional capabilities directly related to effective disaster management policies and procedures..

14 Increase disaster management and disaster risk reduction training and education opportunities nationwide.

15 Enhance monitoring and evaluation practices for plans, standard operating procedures, and legislation.

16 Establish a standard risk assessment process, inclusive of risk mapping requirements for the national and subnational levels.

17

Strengthen national hazard monitoring capacity.

18

Institutionalize standards for damage and needs assessments.

19

Formalize and increase data and information-sharing at all levels of government through the digitization of data.

20

Develop and implement a formalized communications strategy.

21

Plan for increasing population pressures.

22

Mitigate environmental stress.

23

Reduce marginalization and promote gender equality.

24

Reassess progress made toward DRR and resilience goals.

AN INTRODUCTION

TO PDC'S NATIONAL DISASTER PREPAREDNESS BASELINE ASSESSMENT (NDPBA)

The NDPBA uses a collaborative, stakeholder-driven approach, PDC worked to integrate national priorities and stakeholder feedback throughout every step of the process. The NDPBA for Paraguay included a Risk and Vulnerability Assessment (RVA) which examined several components of risk including exposure to hazards, vulnerability, coping capacity, and existing disaster management capabilities. The findings of the RVA were further reviewed through the lens of PDC's unique Disaster Management Analysis (DMA). The DMA contextualizes the RVA and guides recommendations designed to increase resilience and reduce disaster risk. Findings of this analysis were compiled into a Disaster Risk Reduction (DRR) Plan offering practical actions to be taken over a five-year period.

To receive access to the findings, recommendations and data (tabular and spatial) used to conduct the Paraguay NDPBA analysis please visit the Pacific Disaster Center's DisasterAWARE platform and request access, visit emops.pdc.org.



PARAGUAY NDBPA

APPLYING ASSESSMENT RESULTS

The Pacific Disaster Center's (PDC) National Disaster Preparedness Baseline Assessment (NDPBA) is more than just an assessment. It is a sustainable system for accessing, understanding, updating, and applying critical risk information in decision making. The NDPBA provides the necessary tools, scientific data, and evidence-based practices to effectively reduce disaster risk—informing decisions at the national, subnational, and local level.



STRENGTHEN PARTNERSHIPS



Use the NDPBA as a decision-support tool to create a transparent and efficient process for disaster risk reduction efforts within the context of Paraguay.



Provides necessary tools and data for disaster monitoring to promote risk-informed decision making and sustainable development.



Allows team members to conceptualize risk as a function of data, measuring the social, cultural, and economic drivers of risk.



SUPPORT SENDAI COMMITMENTS

By participating in the NDPBA process, Paraguay significantly enhances its capacity to meet Sendai Framework commitments under each of these Priority Areas:



Priority 1 - Understanding Disaster Risk



Priority 2 - Strengthening Disaster Risk Governance to Manage Disaster Risk



Priority 3 - Investing in Disaster Risk Reduction for Resilience



Priority 4 - Enhancing Disaster Preparedness for Effective Response and to "Build Back Better" in Recovery, Rehabilitation and Reconstruction



INCREASE RESILIENCE



Align in areas where partner capacity development efforts overlap.



Improve resilience at the subnational level and reduce potential impacts to the population.



Rely on trusted and proven data-driven tools.



NDPBA

METHODOLOGY AND OBJECTIVES

OVERVIEW

MEASURING RISK

RVA METHODOLOGY | COMPONENTS OF RISK



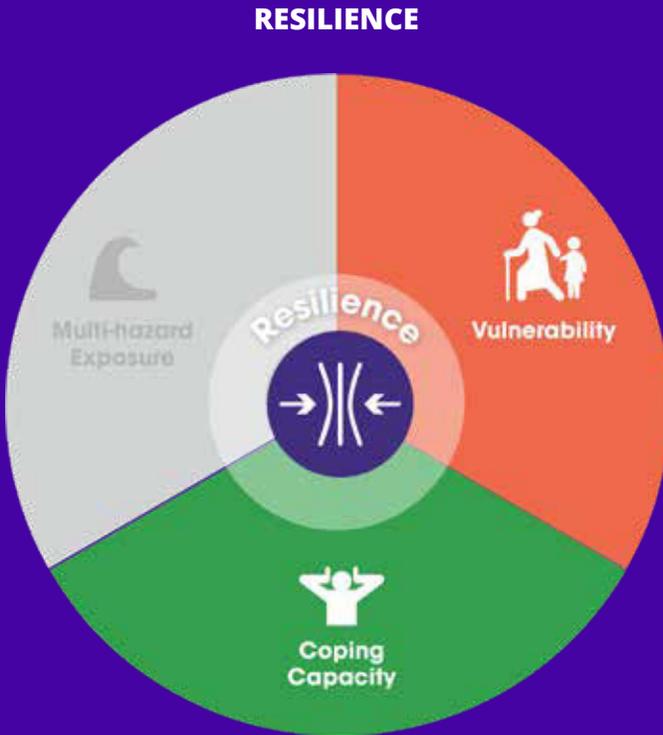
The NDPBA methodology is based on a composite index approach and investigates the underlying conditions that lead to increased risk. The assessment combines several components of risk which include multi-hazard exposure, coping capacity, and vulnerability. Individual components are comprised of subcomponents used to assess the status of thematic areas either as a sum or individually. Additional information on the assessment methodology can be found at: <https://pdc.org/methodology>.

OBJECTIVES

- Form a foundation for long-term data sharing and monitoring to support disaster risk reduction.
- Enhance decision making through improved access to temporal and spatial data.

MEASURING RESILIENCE

RVA METHODOLOGY



HAZARD INDEPENDENT



Components of resilience are independent of natural hazard exposure. This type of measure helps rank countries based on their likelihood of experiencing a disruption outside of a naturally occurring event. The measure of resilience includes vulnerability and coping capacity components, including their subcomponents.

OBJECTIVES

Use vulnerability and coping capacity indicators to determine initiatives and engagements that will decrease vulnerability and reduce disaster risk by increasing the resiliency of the population.

KEY CONCEPTS

RVA METHODOLOGY

EXAMPLES AND DEFINITIONS



VULNERABILITY: Provides visibility into the underlying socioeconomic and societal factors that predispose areas to disasters. A vulnerability analysis measures the physical, environmental, social, and economic conditions and processes that increase susceptibility of communities and systems to the damaging effects of hazards. Multiple factors influencing disaster outcomes, including those linked to poverty and development, are considered in the analysis.



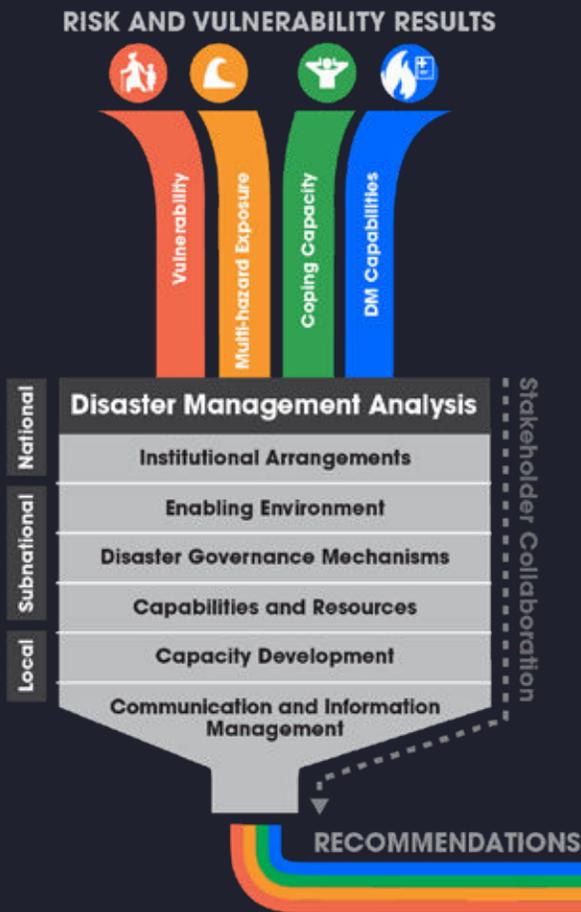
COPING CAPACITY: Provides visibility into the status of governance and capacity within each district. A coping capacity analysis measures the systems, means, and abilities of people and societies to absorb and respond to disruptions in normal function. It considers a range of factors that contribute to the ability of an impacted population to limit the likelihood or severity of the damaging effects of hazards and to manage disruptions that do arise.



RESILIENCE: Provides an overall measure of the ability of a district to withstand shocks and disruptions to normal function. For instance, districts with lower resilience may also exhibit a decrease in the ability of a population to mitigate the negative impacts of a disaster and return to normal function. This measure is the combination of the vulnerability and coping capacity components.

DISASTER MANAGEMENT ANALYSIS

DMA METHODOLOGY



The Disaster Management Analysis (DMA) identifies, codifies, and characterizes capacity implementation needs given risks identified in the RVA and a country's risk reduction goals. The analysis looks at the capabilities, resources, and systems that have been developed or implemented to reduce disaster risk, to address unmet needs that arise from a subsequent disaster event, and to facilitate long-term recovery of people, economies, and societies.

ANALYSIS OBJECTIVES

Increase resilience and reduce disaster risk through disaster management capacity development initiatives.

DISASTER MANAGEMENT THEMES

The DMA aims not only to limit hazard risk as assessed, but also address the anticipated response and recovery needs of hazard-exposed populations, economies, and societies. The manner in which unmet capacity is identified, qualified, and quantified supports a sharper focus on cost-effective investment planning. It also helps support long-term development in a manner that directly reflects the Sendai Framework and Sustainable Development Goals. The analysis considers needs in relation to multi-hazard risk, and is based on sector-defined capacity standards. Associated themes are listed below with examples of the data and information that help to inform the analysis.



Institutional
Arrangements



Enabling
Environment



Disaster Governance
Mechanisms



Capabilities
and Resources



Capacity
Development



Communication and
Information Management



COUNTRY BACKGROUND AND OVERVIEW

GEOGRAPHY

GEOGRAPHY

Paraguay, or the Republic of Paraguay, is located in south-central South America. It shares borders with Bolivia to the north and northwest, Brazil to the northeast and east and Argentina to the southeast, south and west. Paraguay's total land area is 406,752 square kilometers (60th in the world) (World Population Review). Paraguay's capital, Asunción, is located in the southwest of the country on the east bank of the Paraguay River. The Paraguay River runs from north to south and divides the country into two distinct geographic regions. Paraguay and Bolivia are the only two landlocked countries in South America.

406,752 km²

Total Area: ~27,699 sq mi

4,655 km

Land Boundaries (total)

17

Departments

Neighboring Countries

- Argentina
- Bolivia
- Brazil

2,531 km

Argentina

753 km

Bolivia

1

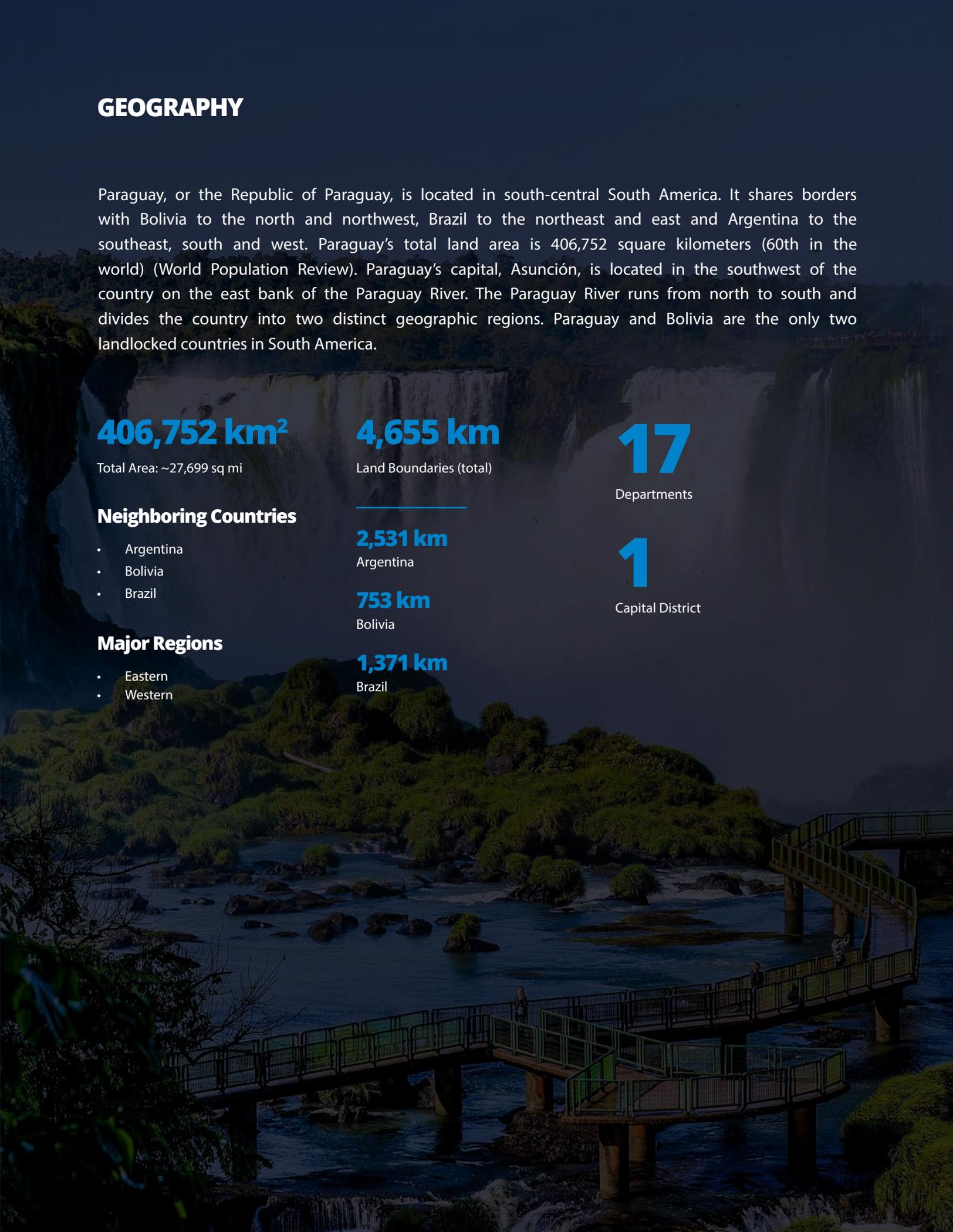
Capital District

Major Regions

- Eastern
- Western

1,371 km

Brazil



GEOLOGY AND CLIMATE

Paraguay has a subtropical climate with mild winters and long, hot summers. Temperatures in Paraguay range from 16 to 21°C in the winter and 25 to 38°C in the summer. Because Paraguay has a subtropical climate, the rains can be irregular; weeks can pass with no rain, and then heavy showers may occur. The driest area in Paraguay is Gran Chaco; average precipitation there is less than 1,000 millimeters per year. The Paraná River region receives the most precipitation at an average of almost 2,000 millimeters per year. Paraguay is exposed to both cold and warm air masses. Cold winds blowing from Argentina, called Pamperos, can lead to freezing nighttime temperatures in the winter, especially in southern Paraguay. Warm air masses can bring warm days throughout the year with temperatures reaching over 30°C.



Floods

1.04 Million
(14.5%)

People exposed



Storms

2.4 Million
(33.4%)

People exposed



Wildfires

6.24 Million
(87.1%)

People exposed



Drought

6.99 Million
(97.6%)

People exposed



Extreme Cold

695,824
(9.7%)

People exposed



Water Deficit

1.7 Million
(23.8%)

People exposed

CLIMATE



Floods



Drought



Severe Storms



Water Borne
Diseases



Extreme
temperature



Food Insecurity

DEMOGRAPHICS

6.96 Million

Total population



17.9

Doctors per 10k people



73.2

Avg. life expectations

95% Mestizo

(Spanish mixed with Indigenous Guarani)

Ethnic groups



10.5

Nurses per 10k people



17.9

Infant deaths per 1k live births

90% Guarani

87% Spanish

Language



10.5

Hospital beds per 10k people



93.65%

Adult literacy



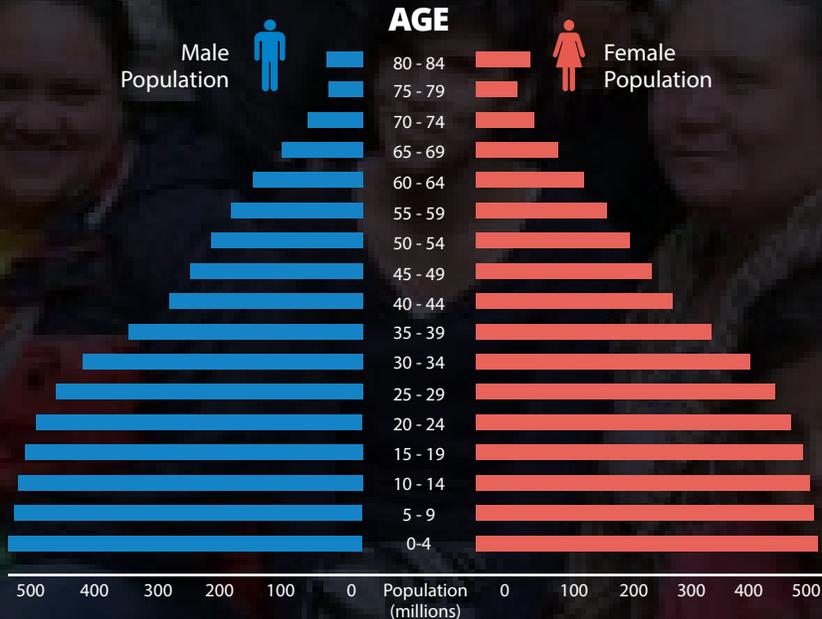
98

Global socioeconomic vulnerability ranking



1.31 %

Avg. annual population growth



ECONOMY

As of 2019, Paraguay's GDP was \$34.1 billion (USD). Paraguay is one of the top exporters of soybeans in the world. Paraguay also exports meat products, wheat, maize and hydroelectricity. Most of Paraguay's exports go to Brazil, Russia, Argentina, Chile and the Netherlands. The country's top imports are machinery, petroleum, chemicals and automobile and bus parts (Nickson and Service). Although the income of the bottom 40% of the population increased by 8% annually between 2009 and 2014, poverty and income inequality are a major challenge in Paraguay.

GDP and Key Exports

\$ 34.1 Billion (USD)
(-0.03%)

GDP (2019)



3.135%

Avg. annual growth
in GDP (2015-2019)



26.4%

People living below national
Poverty line (2017)



Soybeans



Meat and wheat



Maize



Petroleum



Chemicals



Machinery and
automobile parts

Hydroelectricity

1,000 GWh/year

Hydroelectric array

35,000 GWh/year

Major industries (% of GDP) (top 3)

Agriculture 10.8%,
Industry 32.24%,
Services 50.42%

55,000 GWh/year

Total

45,500 GWh/year
(Paraguay's share)

Itapu (Bi-national owned with Brazil)

15,000 GWh (2018)

Domestic Electricity Demand

8,500 GWh/year
(Paraguay share)

Yacyreta (Bi-national
owned with Argentina)

35,000 GWh/year

Electricity Export

KEY INFRASTRUCTURE

Transportation

 **67**
Airports

 **5**
Medium (2 international)

 **62**
Small

 **96,8%**
Access to electricity

 **96,8%**
Access to water

 **97%**
Access to improved water

Emergency Services

982 
Police Station

100 
Fire Stations (CBVP)

7k 
Firefighters (CBVP)

6
SAR teams

DISASTER MANAGEMENT

Major Capacity improvements/milestones (part 15 years):

- Law 2615/05 established SEN and forms the basis for emergency management capacity in Paraguay.
- National Disaster Response and Disaster Risk Reduction Plan creating was key to strengthen subnational DM capacity through effective coordination, as well as formation of SEN as the coordination agency.
- The National Policy for Disaster Risk Management and Reduction provides strategic guidance and calls for integration of DRR and DM into development of policies at national and subnational levels.
- Resolution 369/2018 established the Department of Capacity Development in Disaster Risk Reduction and the Department of Recruitment and Training in Disaster Risk Reduction within SEN.
- Paraguay's national Early Warning System operated through the Center of Information and Early Warning has been modernized with funds from the IADB.

Major Disaster Impacts (2010-2020)

- Eastern Region Drought and Food Shortage (2012) Deaths 0 Affected 1,391,900
- Ñeembucú, Presidente Hayes, Alto Paraguay, Concepción, Capital, Misiones, San Pedro, Central Departments Heavy Rains and Floods (2019) Deaths 16 Affected 310,595
- Ñeembucú, Presidente Hayes, Alto Paraguay, Concepción, San Pedro, Alto Parana, Misiones, Central provinces Heavy Rains and Floods (2014) Deaths 0 Affected 231,360
- Asuncion and Pilar Heavy Rains and Floods (2019) Death 23 Affected 208,602
- Eastern Region Floods (2015) Death 12 Affected 136,450





THE RVA

RISK AND VULNERABILITY ASSESSMENT RESULTS

RISK AND VULNERABILITY ASSESSMENT RESULTS

Provided in this section are the results of the Risk and Vulnerability Assessment (RVA) conducted by the Pacific Disaster Center as part of the Paraguay National Disaster Preparedness Baseline Assessment. For details on the methodology and data sets used see Appendix A.

PARAGUAY DISTRICTS



PARAGUAY BACKGROUND

Paraguay is located in south-central South America. It is a landlocked country, sharing borders with Bolivia to the north and northwest, Brazil to the northeast and east, and Argentina to the southeast, south, and west. The climate of Paraguay is subtropical to temperate. The average annual temperature is 23.5°C, with variations between the cooler eastern regions and warmer western regions.⁴ Precipitation patterns also vary geographically, being most concentrated in the southeastern regions. In Paraguay, El Niño greatly influences weather patterns and is associated with hazard events, including floods and heat waves.⁴ Paraguay is divided into 17 departments, which are further divided into 250 districts. This assessment analyzes data at the department level.

COMPONENTS OF RISK



Vulnerability



Coping Capacity



Multi-Hazard Exposure



THE RVA

MULTI-HAZARD EXPOSURE

MULTI-HAZARD EXPOSURE

Paraguay is susceptible to multiple hazards, with seasonal floods and droughts occurring regularly. According to UNDRR, floods alone have resulted in over US\$20 million worth of damage between 1978 and 2017.⁵ Wildfires are another major hazard in Paraguay. With reoccurring droughts and human activities, such as slash and burn agriculture, the population is highly exposed to wildfire impacts. Storms occur frequently in Paraguay, and most of the country is relatively flat, with few topographic features to provide protection from strong winds. With climate change influencing temperatures and precipitation patterns, extreme wet and dry season hazards are likely to increase in magnitude and frequency, increasing disaster risk.

Global Multi-Hazard Exposure Rank (from global RVA)

135 OUT OF 207 COUNTRIES

Paraguay's Multi-Hazard Exposure rank among other South American countries

9 OUT OF 14 COUNTRIES

PARAGUAY HAZARD ZONES

Multi-hazard exposure at the department level in Paraguay was assessed by combining components of flood, wildfire, drought, extreme cold, storm, and water deficit.



FLOOD

14.5%
Relative Population Exposure

☒ **1,038,794**
Raw Population Exposure

\$24.3 billion
Raw Economic Exposure (USD)



WILDFIRE

87.1%
Relative Population Exposure

☒ **6,238,345**
Raw Population Exposure

\$93.3 billion
Raw Economic Exposure (USD)



DROUGHT

97.6%
Relative Population Exposure

☒ **6,991,312**
Raw Population Exposure

\$101.9 billion
Raw Economic Exposure (USD)



EXTREME COLD

9.7%
Relative Population Exposure

☒ **695,824**
Raw Population Exposure

\$7.3 billion
Raw Economic Exposure (USD)



STORM

33.4%
Relative Population Exposure

☒ **2,395,483**
Raw Population Exposure

\$28.9 billion
Raw Economic Exposure (USD)



WATER DEFICIT

19.6%
Relative Population Exposure

☒ **1,706,297**
Raw Population Exposure

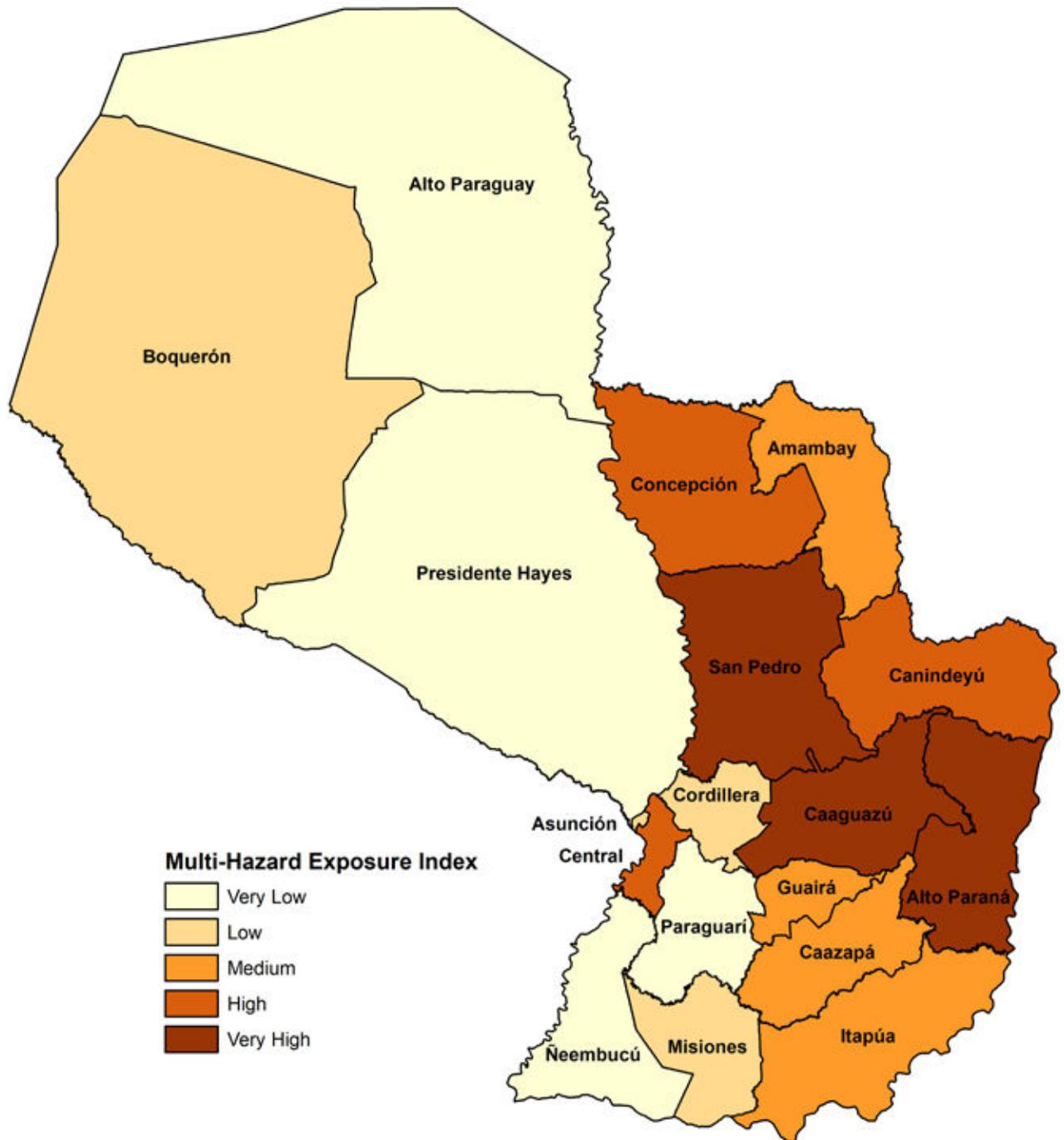
\$19.6 billion
Raw Economic Exposure (USD)

MULTI-HAZARD EXPOSURE BY DEPARTMENT

RANK	DEPARTMENT	INDEX SCORE
1	Alto Paraná	0.917
2	Caaguazú	0.809
3	San Pedro	0.676
4	Concepción	0.700
5	Central	0.699
6	Canindeyú	0.696
7	Caazapá	0.678
8	Amambay	0.676
9	Itapúa	0.672
10	Guairá	0.539
11	Misiones	0.531
12	Asunción	0.511
13	Cordillera	0.495
14	Boquerón	0.447
15	Presidente Hayes	0.317
16	San Paraguairí	0.436
17	Ñeembucú	0.317
18	Alto Paraguay	0.000

MHE Index values of 0.000 indicate that Alto Paraguay has the lowest cumulative exposure in comparison to all other departments in Paraguay. Zero values do not indicate “No Exposure” to hazards.







THE RVA

VULNERABILITY

VULNERABILITY

Vulnerability measures the physical, environmental, social, and economic conditions and processes that increase susceptibility of communities and systems to the damaging effects of hazards. Vulnerability data are designed to capture the multi-dimensional nature of poverty, the inequality in access to resources due to gender, and the ability of a given area to adequately support the population. In coordination with stakeholders, the following indicators were selected to measure vulnerability subcomponents in Paraguay. Breaking down each subcomponent to the indicator level allows users to identify the key drivers of vulnerability to support risk reduction efforts and policy decisions.

Global Vulnerability Rank (from global RVA)

98 OUT OF 160 COUNTRIES

Paraguay's Vulnerability Rank among other South American countries

6 OUT OF 12 COUNTRIES | Excluding Falkland Islands and French Guiana

VULNERABILITY SUBCOMPONENTS AND INDICATORS



Population Pressures

Average Annual Total Population Change



Gender Inequality

Female to Male Secondary Education Attendance
Female to Male Economic Activity
Female to Male Average Monthly Income



Information Access Vulnerability

Illiteracy Rate (Pop 15+)
Average Years of Schooling (Pop 25+)
Households with Internet
Households with Television
Households with Radio



Environmental Stress

Cultivated Area Change
Deforestation



Vulnerable Health Status

Life Expectancy at Birth
Infant Mortality Rate
Maternal Mortality Ratio
% Households with Disabled People
% Population Self Reporting as Sick or Injured
Malnutrition Rate



Clean Water Access Vulnerability

Population with Improved Water Source
Population with Improved Sanitation



Economic Constrains

Age Dependency Ratio
GINI Coefficient
Total Poverty Rate

VULNERABILITY BY DEPARTMENT

RANK	DEPARTMENT	INDEX SCORE
1	Alto Paraguay	0.749
2	Boquerón	0.699
3	Presidente Hayes	0.610
4	Canindeyú	0.609
5	San Pedro	0.572
6	Caazapá	0.569
7	Caaguazú	0.557
8	Concepción	0.555
9	Amambay	0.471
10	Paraguarí	0.438
11	Alto Paraná	0.437
12	Itapúa	0.434
13	Guairá	0.434
14	Cordillera	0.382
15	Misiones	0.335
16	Ñeembucú	0.314
17	Central	0.298
18	Asunción	0.150

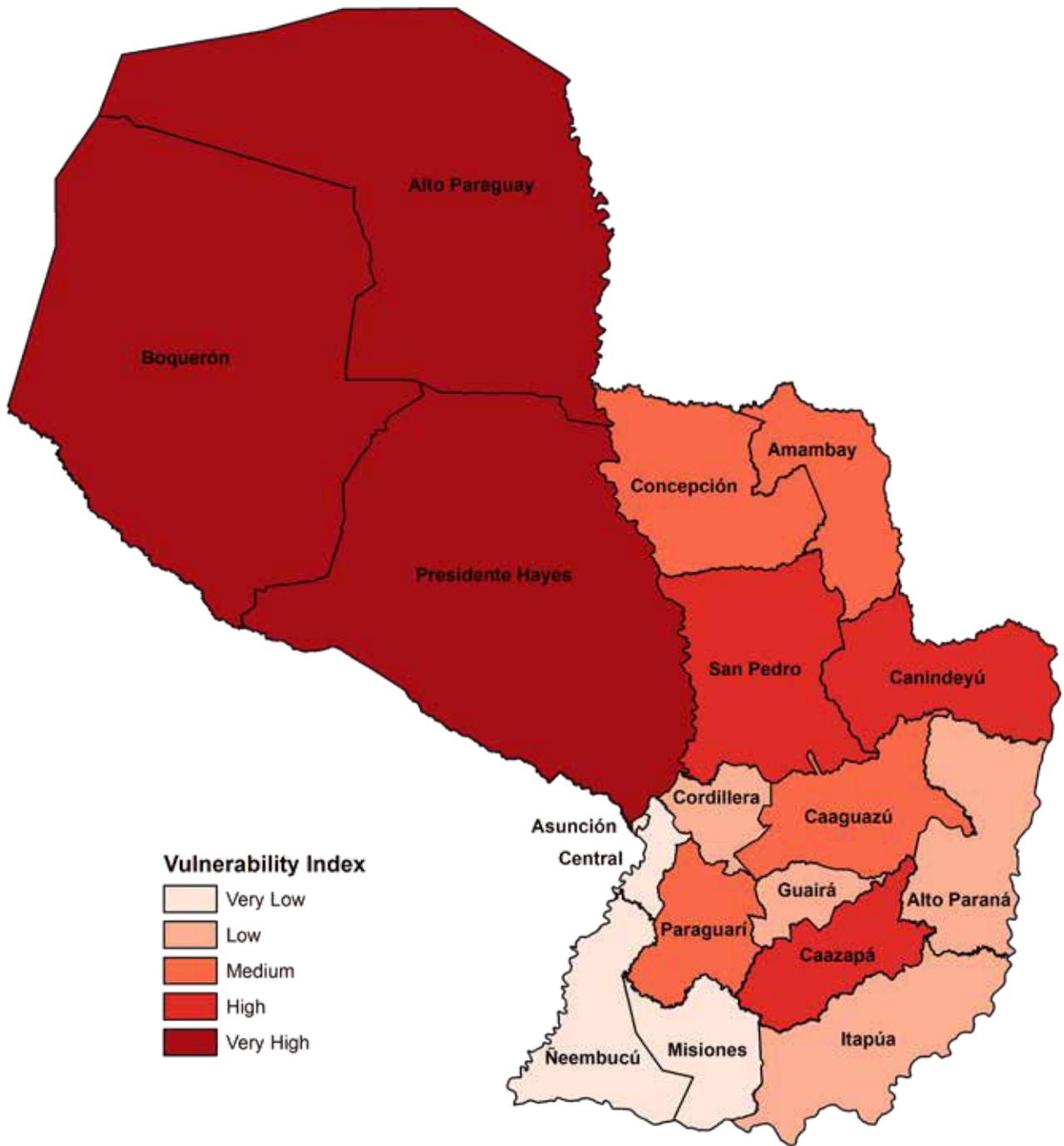
VERY LOW

LOW

MEDIUM

HIGH

VERY HIGH





THE RVA

COPING CAPACITY

COPING CAPACITY

Coping capacity describes the ability of people, organizations, and systems, using available skills and resources, to face and manage adverse conditions, emergencies, or disasters.

In coordination with stakeholders, the following indicators were selected to measure coping capacity subcomponents in Paraguay. Breaking down each subcomponent to the indicator level allows users to identify the key drivers of coping capacity to support risk reduction efforts and policy decisions.

Global Coping Capacity Rank (from global RVA)

91 OUT OF 176 COUNTRIES

Paraguay's Coping Capacity Rank among other South American countries

9 OUT OF 12 COUNTRIES | Excluding Falkland Islands and French Guiana

VULNERABILITY SUBCOMPONENTS AND INDICATORS

Economic Capacity



- Employment Rate
- Average Monthly Income

Governance



- Voter Participation in 2018 Presidential Election
- Homicide Rate per 100,000 Persons
- Property Crime Rate per 100,000 Persons
- % Households with Public Garbage Collection

Environmental Capacity



- Protected Areas

Communications Capacity



- Households with Fixed Phone
- Households with Mobile Phone

Transportation Capacity



- Road Density
- Distance to Port

Healthcare Capacities



- Physicians per 10,000 Persons
- Nurses per 10,000 Persons
- Hospital Beds per 10,000 Persons
- Average Distance to Hospital/Health Center
- Vaccination Coverage
- Access to Health Care

Energy Capacity



- Households Connected to Electric Grid

Disaster Management Capacity



- Ambulances per 100,000 Persons
- Distance to Fire Station
- Distance to Warehouse

COPING CAPACITY BY DEPARTMENT

RANK	DEPARTMENT	INDEX SCORE
1	Asunción	0.812
2	Central	0.646
3	Misiones	0.632
4	Ñeembucú	0.599
5	Amambay	0.538
6	Canindeyú	0.535
7	Guairá	0.53
8	Alto Paraná	0.525
9	Cordillera	0.506
10	Paraguarí	0.482
11	Itapúa	0.481
12	Caaguazú	0.478
13	Concepción	0.452
14	Boquerón	0.448
15	San Pedro	0.445
16	Caazapá	0.442
17	Alto Paraguay	0.401
18	Presidente Hayes	0.3

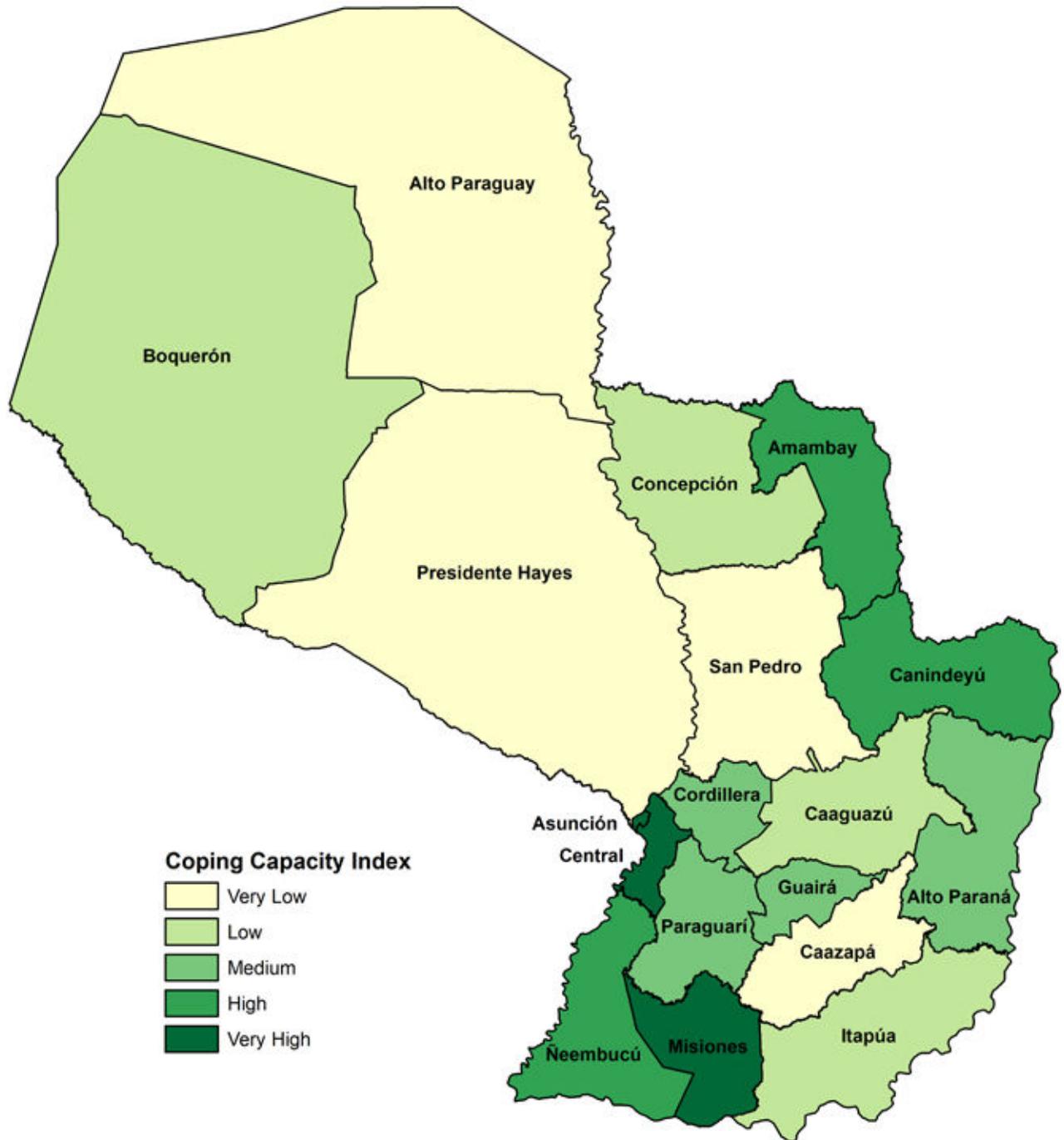
VERY LOW

LOW

MEDIUM

HIGH

VERY HIGH





THE RVA
RESILIENCE

RESILIENCE

Resilience represents the combination of susceptibility to impact with the relative ability to absorb, respond to, and recover from short-term disaster impacts. Resilience provides an indication of current socioeconomic and disaster management conditions on the ground, independent of hazard exposure.

Resilience in Paraguay was calculated by averaging vulnerability and coping capacity. Results are displayed across each department below, while the four main drivers of resilience with detailed recommendations are provided in the individual department profiles.

Global Coping Resilience Rank (from global RVA)

78 OUT OF 155
COUNTRIES

Paraguay's Resilience Rank among other South American countries

7 OUT OF 12
COUNTRIES | Excluding Falkland Islands
and French Guiana

APPLYING RESILIENCE DATA

Resilience data can be used to:

-  Prioritize response and recovery efforts during hazard events.
-  Identify the social, cultural, and economic factors that influence disaster risk and vulnerability.
-  Provide the necessary justification to support policy decisions that will protect lives and reduce losses resulting from disasters.
-  Establish a department-level foundation for monitoring risk and vulnerability over time.
-  Enhance decision making for disaster risk reduction initiatives.

RESILIENCE COMPONENTS



Vulnerability

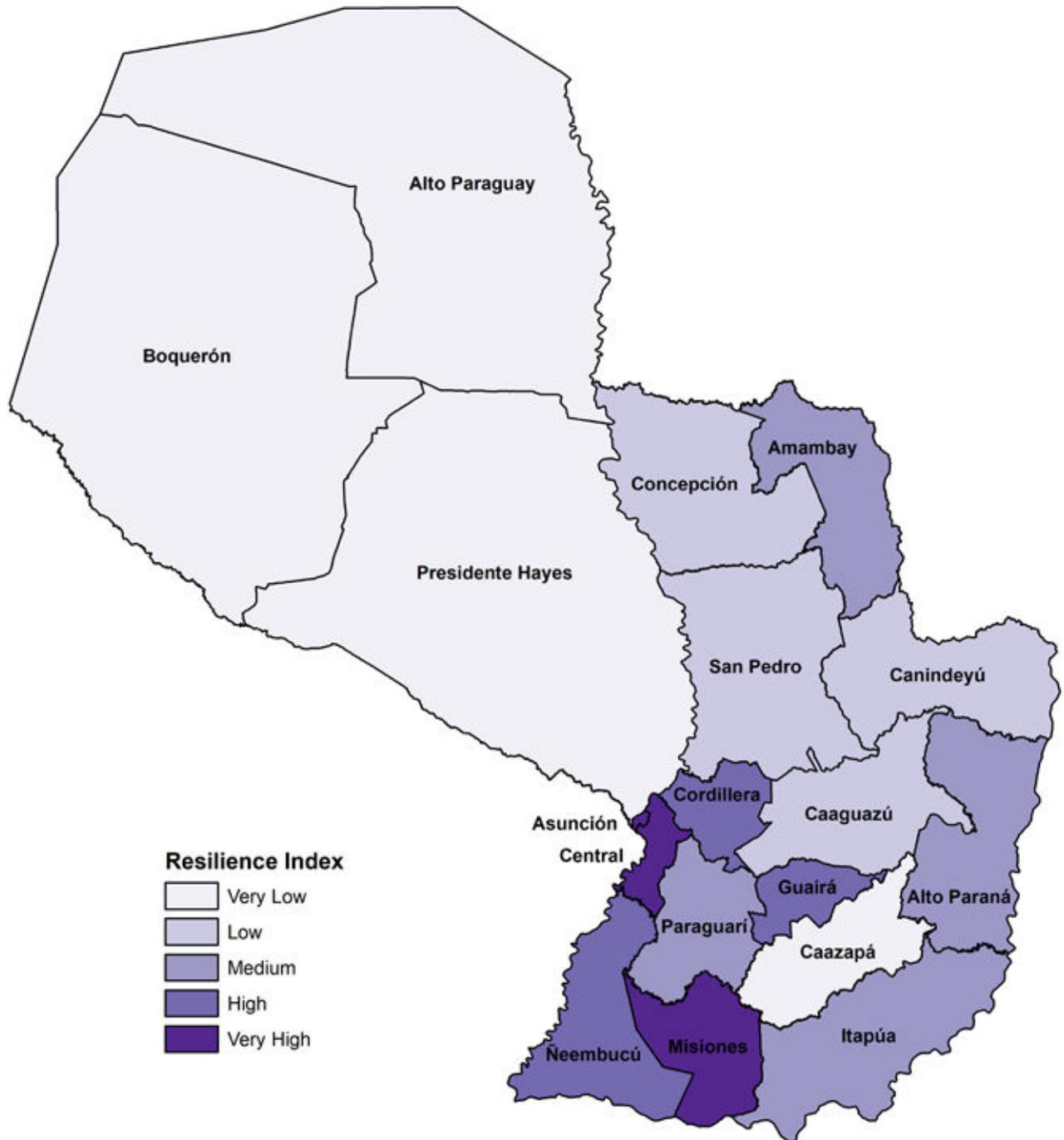


Coping Capacity

RESILIENCE BY DEPARTMENT

RANK	DEPARTMENT	INDEX SCORE
1	Asunción	0.831
2	Central	0.674
3	Misiones	0.649
4	Ñeembucú	0.642
5	Cordillera	0.562
6	Guairá	0.548
7	Alto Paraná	0.544
8	Amambay	0.534
9	Itapúa	0.523
10	Paraguarí	0.522
11	Canindeyú	0.463
12	Caaguazú	0.46
13	Concepción	0.448
14	San Pedro	0.437
15	Caazapá	0.436
16	Boquerón	0.375
17	Presidente Hayes	0.345
18	Alto Paraguay	0.326







THE RVA

HAZARD-SPECIFIC RISK

HAZARD-SPECIFIC RISK

Hazard-specific risk examines individual hazard exposure in combination with a department's resilience to provide a clear understanding of risk drivers for each hazard type. Hazard-specific risk provides a tool for disaster managers to anticipate, plan for, and mitigate outcomes of specific hazard events across Paraguay.

APPLYING HAZARD-SPECIFIC RISK DATA

Hazard-Specific Risk data can be used to:

-  Examine socioeconomic and cultural factors that make certain populations more susceptible to negative outcomes from a specific hazard.
-  Anticipate potential impacts of a specific hazard on a department's population.
-  Enhance national and subnational multi-hazard planning.
-  Prioritize national and province-level hazard-specific mitigation actions.
-  Provide necessary justification to enhance hazard monitoring and implement early warning systems.

HAZARD RISK COMPARED



Drought



Extreme Cold



Flood



Storm

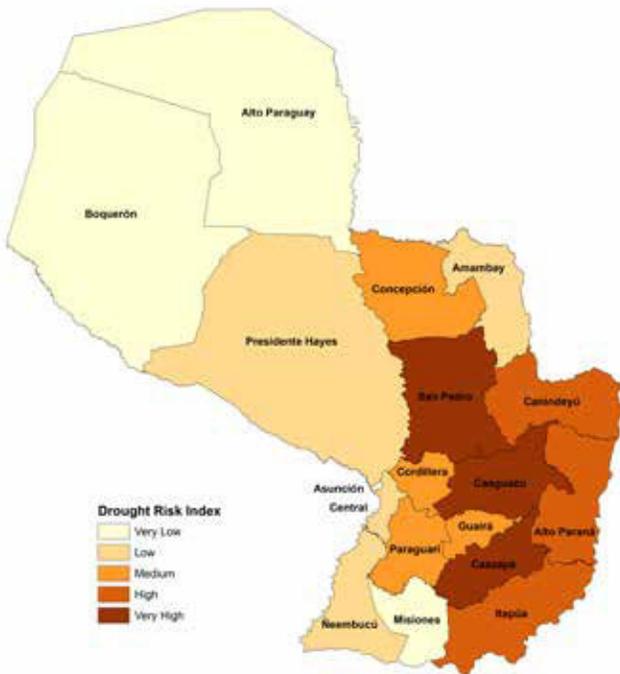


Water Deficit

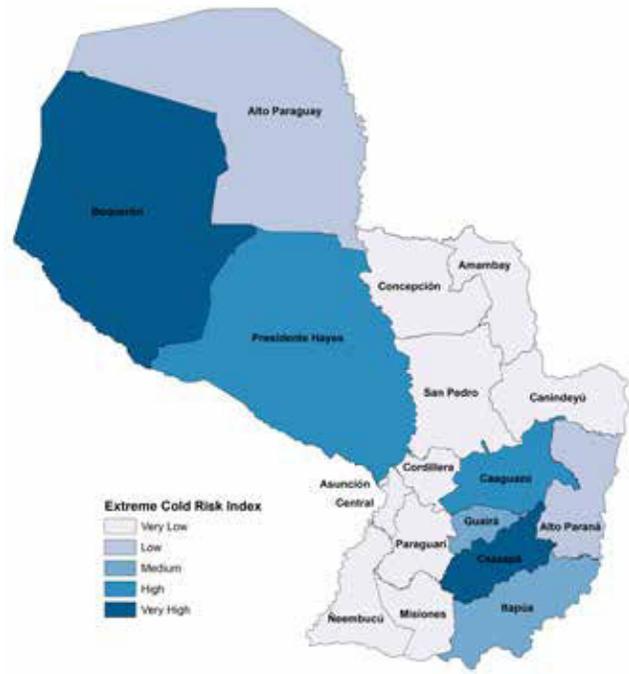


Wildfire

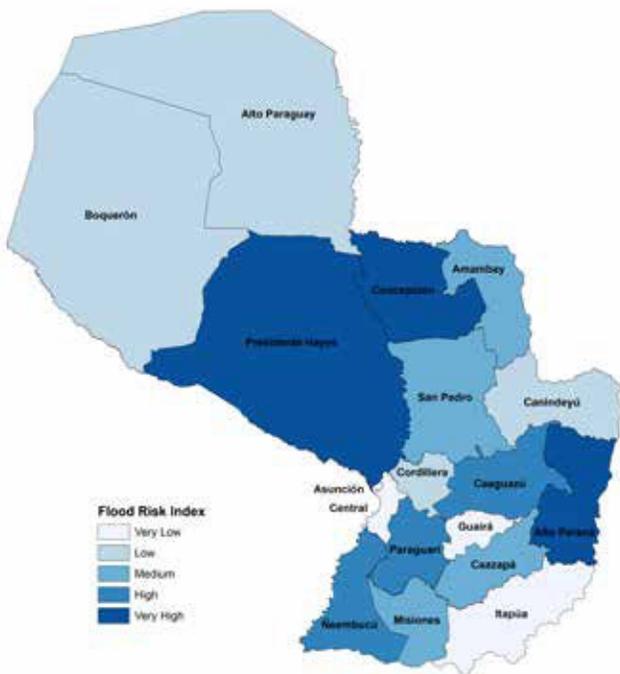
DROUGHT RISK INDEX



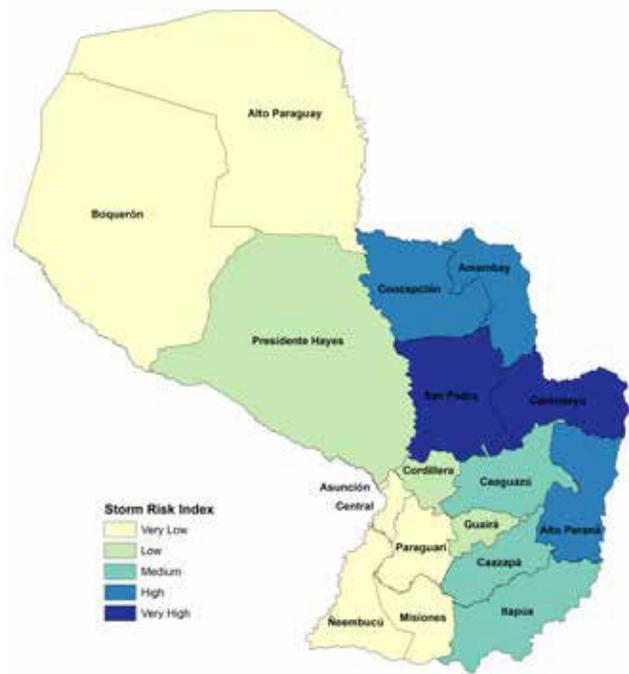
EXTREME COLD RISK INDEX



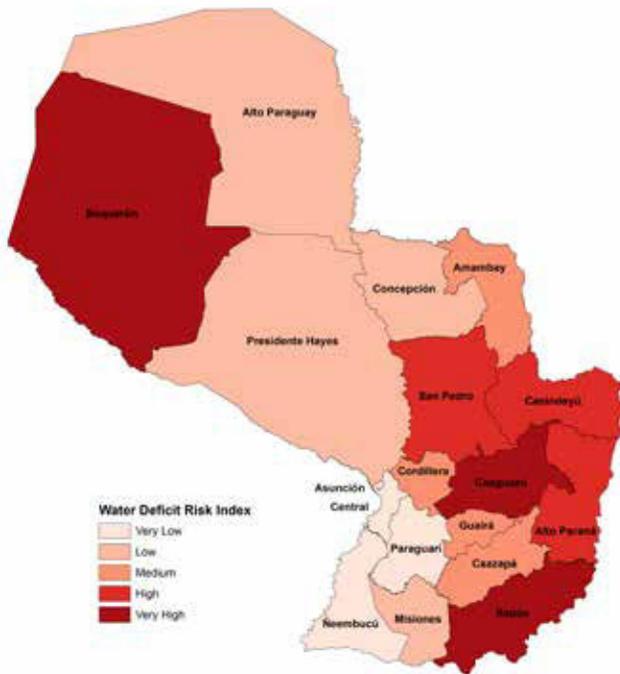
FLOOD RISK INDEX



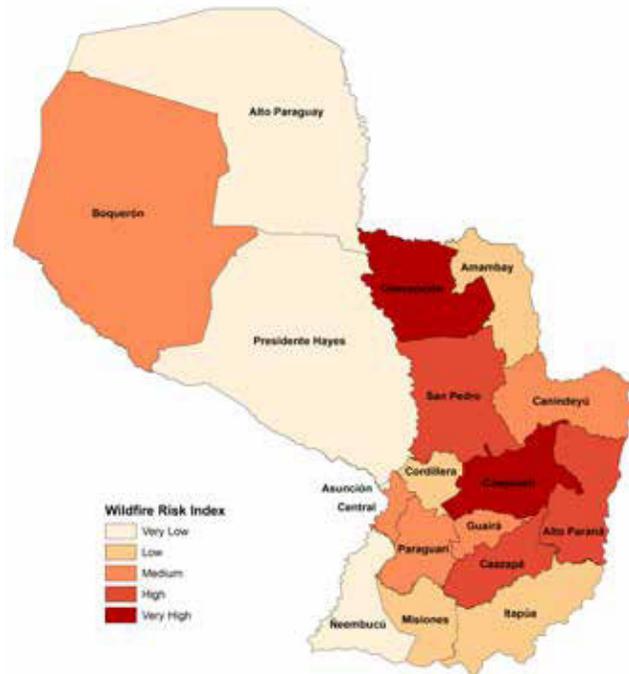
STORM RISK INDEX



WATER DEFICIT RISK INDEX



WILDFIRE RISK INDEX





THE RVA

MULTI-HAZARD RISK

MULTI-HAZARD RISK

Multi-hazard risk combines hazard exposure, susceptibility to impact, and the relative ability to absorb negative disaster impacts to provide a collective measure of how each province may be affected by hazard and disasters as a whole over time. Analyzing risk information throughout all phases of disaster management – mitigation, preparedness, response, recovery – improves operations and promotes efficient resource allocation.

Multi-hazard risk in Paraguay was calculated by averaging multi-hazard exposure, vulnerability, and coping capacity. Results are displayed across each department below, while additional detail on department risk is provided in the individual department profiles.

Global Coping Resilience Rank (from global RVA)

106 OUT OF 155 COUNTRIES

Paraguay's Resilience Rank among other South American countries

9 OUT OF 12 COUNTRIES | Excluding Falkland Islands and French Guiana

MULTI-HAZARD RISK COMPONENTS



Vulnerability



Coping Capacity



Multi-Hazard Exposure

MULTI-HAZARD RISK BY DEPARTMENT

RANK	DEPARTMENT	INDEX SCORE
1	Caaguazú	0.629
2	San Pedro	0.629
3	Alto Paraná	0.61
4	Caazapá	0.602
5	Concepción	0.601
6	Canindeyú	0.59
7	Boquerón	0.566
8	Presidente Hayes	0.559
9	Itapúa	0.542
10	Amambay	0.536
11	Guairá	0.481
12	Paraguarí	0.464
13	Cordillera	0.457
14	Central	0.45
15	Alto Paraguay	0.449
16	Misiones	0.411
17	Ñeembucú	0.344
18	Asunción	0.283

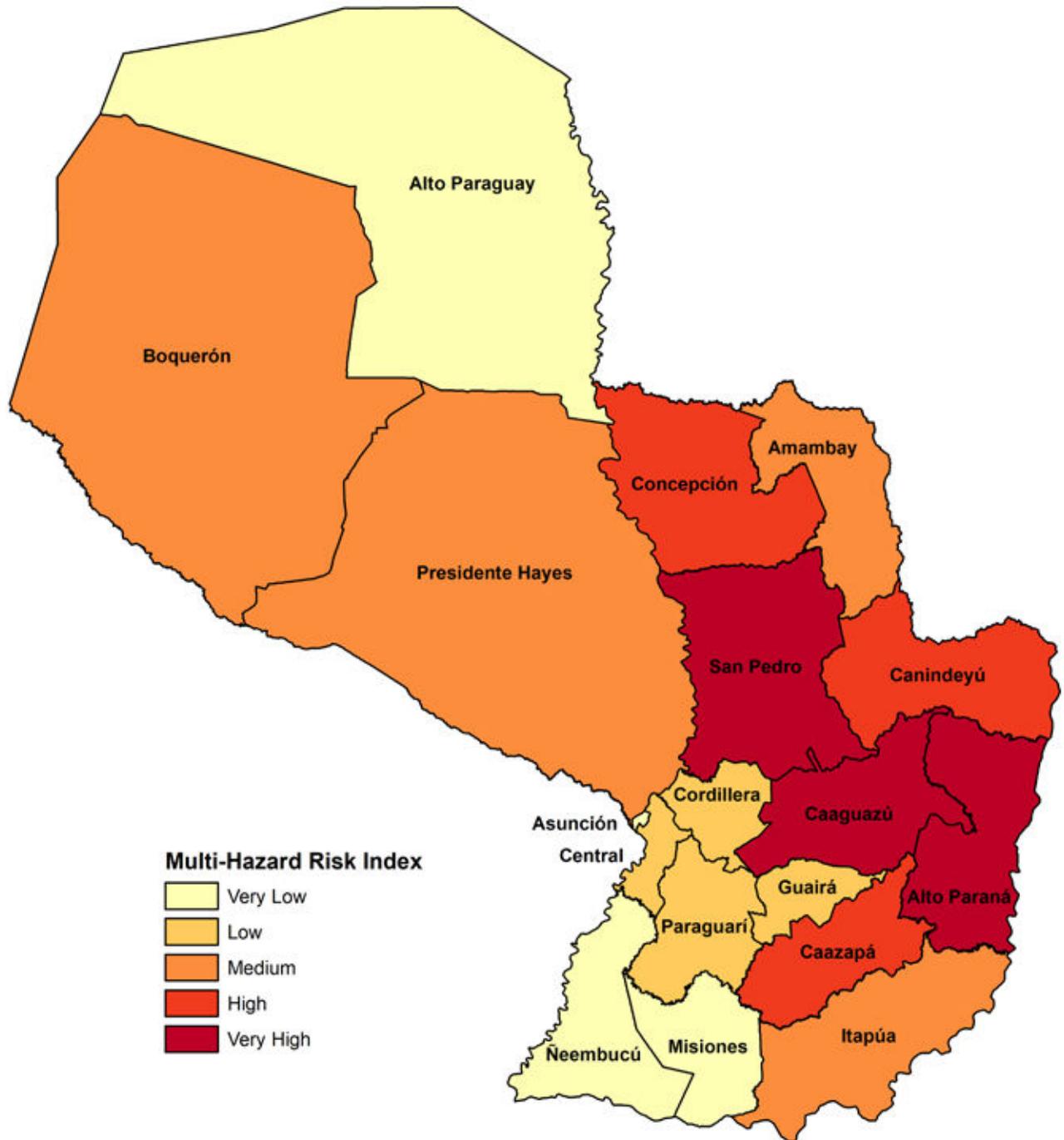
VERY LOW

LOW

MEDIUM

HIGH

VERY HIGH





THE DMA

DISASTER MANAGEMENT ANALYSIS

SUMMARY OF FINDINGS

DISASTER MANAGEMENT ANALYSIS

FINDINGS & RECOMMENDATIONS

Provided in this section are the results of the Disaster Management Analysis (DMA) that was conducted as part of the Paraguay National Disaster Preparedness Baseline Assessment. The outcome of the DMA enables more effective prioritization of risk-reduction and resilience-building initiatives. Considering diverse community needs, operational successes and barriers, the DMA results enable communities to prioritize actions for disaster risk reduction and disaster governance at all levels. The following section summarizes key findings in six broad areas of analysis: Institutional Arrangements; Enabling Environment; Disaster Governance Mechanisms; Capabilities and Resources; Capacities; and Communications and Information Management. For details on the DMA methodology and data see Appendix B.

DISASTER MANAGEMENT ANALYSIS THEME & SUBTHEMES



Institutional Arrangements

- Organizational Structures
- Leadership Arrangements
- Mechanisms for Stakeholder Engagement



Disaster Governance Mechanisms

- Plans
- Standard Operating Procedures
- Emergency Operations Centers
- Command, Control, and Coordination Systems



Enabling Environment

- Legal Instruments
- Financial Resources
- Strategies
- Public Confidence
- Political Support
- Attitudes and Experience



Capacity Development

- Capacity Development Plans and Strategies
- Training and Education Programs and Facilities
- Monitoring and Evaluation Processes and Systems



Communication & Information Management

- Hazard and Risk Analysis Systems
- Disaster Assessment
- Media and Public Affairs
- Information Collection, Management, and Distribution



Capabilities & Resources

- Dedicated Facilities and Equipment
- Human Resources
- Inventory of Commodities and Supplies
- Targeted Functional Capabilities



INSTITUTIONAL ARRANGEMENTS

SUB-THEME STATUS

- Limited or No Capacity
- Early Capacity Development
- Achievement with Significant Limitations
- Substantial Progress with Some Limitation
- Advanced Capacity



Paraguay enjoys a rather well-orchestrated national disaster management (DM) system, which is coordinated by Secretaría de Emergencia Nacional (SEN), an independent, cabinet-level DM agency with a direct line of reporting to the Presidency. The 2005 National Disaster Response and Disaster Risk Reduction Plan was the key strategy behind the strengthening of subnational DM capacity through effective coordination, as well as the formation of SEN as the coordination agency. SEN has a mandate to establish structures for disaster risk reduction and response within the existing regional and local administrative and community structures to be integrated with the National Emergency System (SISNE). The current DM system of Paraguay is based on a solid legal framework placing SEN at the center of vertical and horizontal coordination. SEN is responsible for inter-institutional coordination at the national level. Military is formally and effectively integrated into the DM system. However, there is still room for improvement for an effective and formal integration of the private sector, NGOs, and academia into the DM system. Paraguay advanced the implementation of climate change programs through the creation of its National Climate Change Commission (CNCC), a National Climate Change Office (ONCC), the National Council for the Environment (CONAM), the National Climate Change Program (PNCC), and its National System of the Environment (SISNAM). Substantial progress has also been made towards advancing the implementation of a national platform for sustainable development (SD) for DRR, through Paraguay's National Development Plan (PND), "Paraguay 2030," and the National Policy for Disaster Risk Management and Reduction. However, integration between CC, DRR, and SD has yet to be fully realized and remains in progress.



INSTITUTIONAL ARRANGEMENTS SUB-THEMES



Organizational Structures



Leadership



Stakeholder Engagement



ORGANIZATIONAL STRUCTURES

Organization of Government DM Functions: A standalone, cabinet-level disaster management agency supports disaster management functions within government. Law 2615 in 2005 and its regulations under Decree No. 11632 in 2013 established the Secretaría de Emergencia Nacional (SEN), an independent, cabinet-level DM agency with a direct line of reporting to the Presidency.^{6,7} Law 2615/05 states that SEN is responsible for the prevention of disasters, both natural and man-made, as well as the coordination of all activities related to the “prevention, mitigation, response, rehabilitation, and reconstruction of communities affected by emergency or disaster situations.”⁶ Prior to the creation of SEN, the coordination of national emergency management activities fell under the responsibility of the National Emergency Committee (NEC); the NEC was replaced by SEN with the passage of Law 2615/05.⁸

Development of DM Organizational Structure: Interagency disaster management responsibilities are clearly mapped and at advanced level of implementation. Interagency disaster management (DM) responsibilities are outlined in legislation and are coordinated through the SEN Executive Council, which consists of high-level, decision-making staff. The Council is mandated to meet on a routine basis once a month, as well as on an as-needed basis at the request of the President or at least five Council members.⁶ Further stipulations entail the integration of local and departmental emergency organizations into the National Emergency System through coordination with SEN, the Organized Entities of the Society (EOS), and the relevant local and municipal authorities (Articles 14&15).

Decree No. 11632/13 outlines interinstitutional coordination for the management and reduction of risks; all interagency actions are done in coordination with SEN.⁷ The 2005 National Disaster Response and Disaster Risk Reduction Plan further expands upon interinstitutional coordination by outlining the following:⁹

- SEN is responsible for interinstitutional coordination at the national level.
- Interinstitutional coordination at the regional, departmental, and municipal levels falls under the responsibility of the respective Emergency Coordinator at the corresponding governmental level (district, municipality, etc.).

Bi/Multilateral Engagement: Paraguay maintains an office dedicated to engagement with bilateral, international, and other humanitarian actors. SEN is authorized to “seek mutual international cooperation in matters of risk reduction and reciprocal assistance in matters of civil protection in cases of emergencies or disasters and to participate in bilateral or multilateral organizations that pursue similar purposes.”⁶ Resolution 39/2018 established the Directorate of International and Interinstitutional Relations within the larger SEN organizational structure. The Directorate of International and Interinstitutional Relations consists of three departments:¹⁰

- The Department of International Relations;
- The Department of Interinstitutional Relations; and

- The Department of Cooperation.

Regionalized Capacity: DM activities, including those of response, are conducted out of regional disaster management offices. Several pieces of legislation outline Paraguay's regionalized DM capacity. Law 2615/05 gives SEN a mandate to establish structures for disaster risk reduction and response within existing regional and local administrative and community structures, to be integrated with National Emergency System (SISNE) and under SEN's coordination.⁶ Decree No. 11632/13 further outlines the structure of subnational risk management and reduction for Paraguay.⁷ Laws 214/93 and 3966/10 outline departmental responsibilities (Article 17) and detail municipal functions (11b, Article 12; Articles 99-106), respectively. Subnational DM capacities are further stipulated in the 2005 National Disaster Response and Disaster Risk Reduction Plan.

Disaster Risk Reduction (DRR) Platform: A national platform exists at an advanced level to manage implementation of disaster risk reduction (DRR) and the Sendai Framework. Decree No. 5243/10 established the National Platform for Disaster Risk Reduction (PNRRD) and outlined the implementation of the Hyogo Framework for Action 2005-2015 in alignment with Paraguay's National Policy for Disaster Risk Management and Reduction.^{9,11}

Moreover, Paraguay reiterated its 2015 commitment to the Sendai Framework through the Plan Nacional de Implementación del Marco de Sendai 2018-2022.¹² The plan maps out priorities and a timeline for implementing specific activities towards meeting Sendai targets. In addition, the Plan urges all institutions within the government to align their policies, programs, and actions to the Sendai Framework.¹²

Climate Change Adaptation (CCA) Platform: A national platform for the implementation of CCA exists at an advanced level of implementation. Paraguay's participation in the Paris Agreement on climate change was approved under Law 5681/16.¹³ The National System of the Environment (SISNAM) is composed of national, departmental, and municipal government agencies and private entities whose work relates to the environment. The National Council for the Environment (CONAM) is responsible for evaluating national environmental policy and developing guidelines for consideration by the Ministry of the Environment. CONAM must cooperate with the Executive Ministry of Environment and Sustainable Development (MADES) regarding compliance to the Law and its regulations. The National Climate Change Program (PNCC), under the Ministry of the Environment, includes a National Climate Change Commission (CNCC) and a National Climate Change Office (ONCC) (Article 1).¹⁴⁻¹⁶

Sustainable Development (SD) Platform: A sustainable development platform exists at an advanced level of implementation. Substantial progress has been made towards advancing the implementation of a national platform for SD. Paraguay's National Development Plan (PND), "Paraguay 2030," was approved in 2014 by Decree No. 2794.¹⁷ The PND falls under the responsibility of the Technical Secretariat for Economic and Social Development Planning (STP) and defines Paraguay's strategic objectives and policy priorities for inclusive and sustainable countrywide development. It incorporates three lines of action:

- Poverty reduction and social development;
- Inclusive economic growth; and
- Paraguay's insertion into the world.

Integration of DRR, CCA, and SD: Integration is planned between the offices and platforms responsible for managing implementation of DRR, CCA, and SD. The integration of national platforms for DRR, CCA, and

SD is addressed in the 2018 National Policy Update for Disaster Risk Management and Reduction.¹⁸ Based on international commitments, these platforms share a common objective to build Paraguay's resilience through risk-informed development. Integration of these themes has yet to be fully realized and remains in progress.

Military Engagement: The military is formally integrated in the civil DM structure. The Armed Forces of Paraguay are an integrated component of national DRR. The Commander of the Armed Forces participates in the SEN Executive Council, per Law 2615/05 (Article 7).⁶ Law 2615/05 mandates that the Armed Forces "will provide SEN with the cooperation required," including military personnel and resources, in support of emergency operations as defined in the law (Article 26).⁶ This is reiterated under Decree No. 11632/13, wherein the Armed Forces are "obliged to coordinate with SEN" (Article 32).⁷



LEADERSHIP ARRANGEMENTS

Emergency Management Leadership Arrangement: A singular leadership position exists with responsibility for all DM activities throughout government. Law 2615/05 designates leadership positions within SEN with responsibility for all risk management and reduction activities and establishes SEN's Executive Secretary, a minister-level position, as well as the position of Deputy Secretary to preside over SEN's operations. Both the Executive Secretary and Deputy Secretary positions are appointed by the President of the Republic.⁶

Leadership Positions Filled: All leadership positions are filled. Interviews with SEN confirmed that all leadership positions within SEN are filled, including the role of Executive Secretary. This enables SEN to comply with leadership expectations as outlined in the legislation and promotes a comprehensive approach to risk management and reduction within the country by allowing leaders in their respective positions to focus on their mandated responsibilities.

Job-specific Competencies of Leadership Positions: Competencies and experience for disaster management positions are required and are defined. Law 2615/05 outlines competency requirements for leadership positions within SEN.⁶

Political Access of DM Leadership: Disaster management leadership enjoys an institutionalized, direct line of reporting and responsibility to the highest level of government. SEN is designated as an independent, cabinet-level DM agency with a direct line of reporting to the Presidency of the Republic of Paraguay.⁶ The positions of Executive Secretary, a minister-level position within SEN, and Deputy Secretary are both appointed by the Presidency.

Proxy Leadership Arrangements: Formal procedures exist for the appointment of proxy leaders, and systems to support this arrangement are fully implemented. Law 2615/05 designates leadership positions and procedures for the appointment of proxy leadership in the event of an emergency or disaster. Specifically:

- The Executive Secretary of SEN "will be assisted by a Deputy Secretary, who will replace 'them' in cases of temporary

absence and will exercise the coordination functions assigned by the Executive Secretary”;

- Both the Executive Secretary and Deputy Secretary positions are appointed by the Presidency of the Republic; and
- The Deputy Secretary will “exercise the General Secretariat of the Executive Council and that of the Expenses Office in the absence of the Executive Secretary.”

Special Decision-Making and Policy-Making Committees for Response and Recovery and Disaster Risk Management: Committees and structures are in place for response and recovery operations. The SEN Executive Council holds responsibility for policy making related to response and recovery operations.⁶ The Council is supported in its efforts for response and recovery operations by the National Operating Committee and its associated advisory committees.⁶

Special Decision-Making and Policy-Making Committees for Disaster Risk Management: Committees and structures are in place for response and recovery operations. The Secretaría de Emergencia Nacional’s (SEN) Executive Council holds responsibility for policy-making related to response and recovery operations.⁶ SEN’s Executive Council is supported in its efforts for response and recovery operations by the National Operating Committee and its associated advisory committees.⁶

Multi-Stakeholder Participation in Decision-Making Committees: Stakeholders are included and have decision-making responsibilities. Several distinct decision-making committees are described in legislation, including the SEN Executive Council, the National Technical Committee, and the National Operating Committee along with their respective advisory committees. In addition, the “participation of public institutions, bodies, and private companies” statutorily converges with SEN in both the National Technical Committee and the National Operating Committee. Stakeholders that participate in these committees are granted decision-making powers within the committee(s).⁹



MECHANISMS FOR STAKEHOLDER ENGAGEMENT

Stakeholder Representation in Government DM Structures: Governmental disaster management organizational arrangements recognize the role of NGO, private sector, and other stakeholder entities in official disaster management and disaster risk reduction structures using general terms. The statutory language that refers to non-governmental (NGO), private sector, and other stakeholder entities in Paraguay’s DM structure lacks specificity regarding roles and responsibilities. To date, the Paraguayan Red Cross alone has been officially recognized in legislation to act as an auxiliary agent to the public powers of Paraguay.¹⁹

Public Private Partnerships (PPPs): Policies exist to support the creation of public-private partnerships, but they remain limited in number and scope. Law 2615/05 and its regulations under Decree No. 11632/13 provide for the creation of public-private partnerships (PPPs) within Paraguay.^{6,7} However, most PPPs to date have been for the public works sector, such as road infrastructure.²⁰

NGO and Private Sector Inventory: A registry exists that lists organizations engaged in DM efforts; however, this registry is still in the beginning stages of development and has yet to be fully realized. Law 6060/18 regulates volunteering and volunteer organizations for Paraguay.²¹ Subsequently, the National Volunteer Council, for which SEN is a coordinating member, has been established. To increase the role of volunteerism in DM, the Technical Secretariat for Economic and Social Development Planning (STP) is leading the development of a technical unit on volunteerism, including the establishment of a mechanism for the registration of volunteer organizations within a National Registry.²²

Nature of Multi-Stakeholder Engagement: Non-governmental organizations (NGOs) are comprehensively engaged in government DM efforts in a manner that is coordinated and complementary. Law 2615/05 and its regulations under Decree No. 11632/13 formally engage non-governmental organizations in Paraguay's DM system.^{6,7} Law 2615/05 outlines non-governmental stakeholder participation in the SEN Executive Council, including the President of the Volunteer Fire Department of Paraguay (CBVP), the President of the National Fire Board, and the President of the Paraguayan Red Cross.⁶

Private Sector Engagement: Businesses support DM efforts but are not formally engaged within Paraguay's DM system. Expectations for support from the business community are outlined in Law 2615/05 and its regulations, Decree No. 11632/13; however, the statutory language is not specific.^{6,7} Decree No. 11632/13 further specifies that all organizations are required to support SEN as necessary when requested – before, during, and after an emergency or disaster declaration.⁷

NGO Organizational Arrangements: Formal non-governmental organization (NGO) associations exist with established and active membership of NGOs but limited to those with defined DM program areas or missions. Organized Entities of the Society (EOS) have a mandate to participate within the country's DM efforts, particularly in interinstitutional organizations, for the prevention of and response to emergency and disaster events.

Academia Involvement in Government DM: Policies and strategies support a robust academic community of practitioners that contributes to official DM efforts through research and development, training, and other means using structurally integrated arrangements. Participation of academic entities in the SEN Interinstitutional Advisory Commissions is mandated. In addition, academic institutions participate in the generation and sharing of knowledge with SEN and the wider DM community through interinstitutional cooperation in teaching, research, and university extension tasks.

National Government Engagement in Regional and Global Efforts: Strong and effective relationships exist with global and regional organizations, including formalized support frameworks and ratified agreements in support of DM efforts. The SEN is committed “to seek mutual international cooperation in matters of risk reduction and reciprocal assistance in matters of civil protection” for emergencies and disaster events. Decree No. 11632/13 outlines expectations for SEN's involvement with humanitarian partners, regional risk reduction blocks, and international cooperation.⁷



ENABLING ENVIRONMENT

SUB-THEME STATUS

- Limited or No Capacity
- Early Capacity Development
- Achievement with Significant Limitations
- Substantial Progress with Some Limitation
- Advanced Capacity



Law 2615/05, which established the Secretaría de Emergencia Nacional (SEN), forms the basis for emergency management capacity in Paraguay. It stipulates SEN's leadership and governance arrangements, provides the necessary statutory authorities to act, provides operational and emergency budget arrangements, clarifies declarations procedures, formalizes domestic military support and international cooperation mechanisms, and has many other provisions to enable effective emergency management capacity. There is still room for improvement for SEN in terms of engaging the public and the private sector in disaster management efforts and garnering political and public support. Statutory language about funding/budgets has left noticeable gaps on expeditious budget mechanisms for response organizations to cover large-scale events, grant programs to support DRR programs at subnational levels, the establishment of formal DRR training and education programs, and research & development agendas/centers. Strategic direction is provided by the National Policy for Disaster Risk Management and Reduction, which calls for the integration of DM and DRR into development policies at national and subnational levels, and the alignment therein with existing frameworks for sustainable development through proper funding. Disaster financing remains a challenge, attributable to incomplete funding of contingency budgets, shallow insurance penetration, and poor access to microfinance credits, expedited remittances, and affordable disaster loans.

CURRENT STATUS

Limited or No Capacity



Advanced Capacity

INSTITUTIONAL ARRANGEMENTS SUB-THEMES



Legal Instruments



Financial Resources



Strategies



Public Confidence and Political Support



Attitudes and Experience



LEGAL INSTRUMENTS

Legal Arrangements Address DM Requirements: DM legislation is comprehensive and driven primarily by a single current disaster law. Law 2615/05 established the SEN and forms the basis for emergency management capacity in Paraguay. It establishes SEN's leadership and governance arrangements, provides the necessary statutory authorities to act, provides operational and emergency budget arrangements, and clarifies declarations procedures and many other provisions to enable effective emergency management capacity.⁶

Scope of Legislation: Legislation addresses all phases of DM. SEN is charged with promoting, coordinating, and guiding the activities of public, departmental, municipal, and private institutions for the prevention, mitigation, response, rehabilitation, and reconstruction of communities affected by emergency or disaster situations.⁶

Basis of the Legislative Process: Disaster management legislation is established on the basis of a broad strategic vision. According to SEN, Paraguay's DM legislation is established based on a broad strategic vision for DM and disaster risk reduction.

Implementation Schedules in Legislation: Legislation details implementation schedules and is partially implemented. Although legislation outlines implementation schedules, details on implementation timelines are vague. The established deadlines deal with procedures for public procurement, reporting, availability, and the transfer of resources to SEN.

Legislation and Institutions: Legislation provides detailed guidance for the establishment of DM institutions. The SEN was established as an independent, cabinet-level agency reporting directly to the President. SEN is directed by an Executive Secretariat that has an Executive Council to act as a steering committee.¹⁰

Legislation and Budgets: Legislation provides detailed provisions for the establishment of DM budgets. In addition to the creation of the National Emergency Fund (FONE), the general budget provisions provided to SEN will address the funding of programmatic assistance in response to emergency and disaster situations.⁶

Legislation is Socialized: Legislation is actively socialized by the government. Legislation is available on the SEN website and other governmental and non-governmental websites. The Basic Concepts Guide and Legal Framework for Risk Management and Reduction (DRR) in Paraguay, available in virtual (downloadable

online) and printed format, also provides subnational governments with a compilation of conceptual and legal references regarding risk management and reduction.²³

Declarations Process, Vertical Cooperation, and Resource Requisition: Some are addressed, specifically the process for declaring an emergency or disaster situation within Paraguay. Law 2615/05 provides legislative authority for a Declaration of Emergency or Disaster Situation.⁶ Additional details are outlined in Decree 11632 and Decree 3713.^{7,24} The actual implementation process is outlined within the 2005 National Disaster Response and Disaster Risk Reduction Plan.⁹

Emergency Powers: Some provisions exist to enable leadership to curtail certain rights and activities during a state of emergency. The Constitution has significant protections against the curtailing of citizens' rights, including in cases of armed conflict or public disturbance.²⁵ The special powers granted during a state of emergency appear to be limited to the granting of credits to finance public expenses "on the margin of the budget" (Article 286, Paragraph 1).²⁵

DM Structures and Arrangements of Sub-jurisdictions: Comprehensive provisions exist which require DM structures and arrangements at lower levels of government. Law 2615/05 has dictates for the creation, direction, and responsibilities for local emergency management organizations.

Guidance for DRR Activities and Requirements: Some guidance exists in support of disaster risk reduction activities and requirements for Paraguay. The National Policy for Disaster Risk Management and Reduction calls for the integration of DM and DRR into development policies at national and subnational levels, and for the alignment therein with existing frameworks for sustainable development.¹⁸

Facilitation of Military Support: Provisions are comprehensive to facilitate military support. It is required by law that the Paraguayan military integrates and cooperates in DM for as long as deemed necessary. According to Law 2615 and its regulations, the SEN must count on the cooperation of the Armed Forces of the Nation for the fulfillment of its objectives assigned in this Law.

Facilitation of International & Cross-border Activities (Facilitation and Provision): Provisions for the facilitation of international and cross-border disaster management needs, including participation in regional and international disaster management frameworks and the acceptance or provision of bilateral or international support, are comprehensive. It is established that the risk management mission of SEN must be carried out "in coordination with countries, international cooperation, humanitarian partners, and national and regional platforms."⁶ There is also a National Plan for the Implementation of the Sendai Framework 2018-2022 of which Paraguay is a signatory.¹²



FINANCIAL RESOURCES

DM Budget Arrangement: The national budget provides line-item funding for DM activities (DM budget). Law 2615 provisions line-item funding for DM activities for the resources necessary for the operations of SEN. However, these provisions are insufficient for the adverse events that occur in Paraguay. More expeditious mechanisms must be envisaged to provide financial resources to response organizations in cases of large-scale events.⁶

DM Budget Funded at Targeted Levels: The DM budget is funded at the levels targeted in legislation and policies. The National Policy for Disaster Risk Management and Reduction states that efforts must be made to provide financial resources at the national, departmental, and municipal levels.⁷

Scope of DM Budget: The DM budget addresses programmatic costs as well as administration and operational needs, but funding or programmatic challenges exist. Within the DM budget, the following are contemplated:²⁶ 1) Projects related to prevention and/or mitigation of threats and disasters; 2) Preparedness, response, rehabilitation, and reconstruction measures in emergency or disaster situations; and 3) Specific assistance programs in each ministry involved in risk management.

DRM Grant Programs: Grant programs that support preparedness and disaster risk reduction programs and acquisitions at the sub-regional and local levels do not exist. According to SEN, grant programs in support of preparedness and disaster risk reduction programs do not exist for the country.

Budget Support for Training, Education, and Research & Development: The DM budget does not support training, education, or research and development. Although training, education, and research and development are mentioned in national policy through both Law 2615 and its regulations, Decree No. 11632, none of them have been strictly established within the budget guidelines.^{6,7}

National Budget Supports Sub-jurisdictions: The DM budget supports capacity development efforts of lower level jurisdictions, but implementation obstacles exist. SEN confirmed that capacity development efforts for lower-level jurisdictions are supported by the DM budget.²⁰ However, the provisions have proven to be insufficient.⁶

Dedicated Emergency or Contingency Fund Exists: Paraguay maintains a dedicated National Emergency Fund (FONE). The National Emergency Fund (FONE) was established by Article 9 of Law 2615 and is guided by Article 2 of Decree 3713.^{6,24} This fund exists as an independent national fund and includes administrative, accounting, and statistical independence.

Contingency Fund Levels: Disaster reserve funding levels are based on historical needs and are at least 2 percent of GDP. Law 2615 mandates that governorates receive at least 2 percent and up to 5 percent of the annual budget, whilst municipalities must provide their own funding for risk reduction and emergency response.⁶

Contingency Fund Limits: The disaster reserve fund includes guidelines for access and provisions that limit non-disaster uses. Law 2615 defines the restricted use of the National Emergency Fund (FONE). FONE resources shall be used for the prevention and mitigation of “events capable of producing disasters,” and the preparation, response, and recovery of disaster-impacted communities.

Existence of and Public Support for Catastrophe Risk Transfer: A catastrophic risk insurance market exists; however, it is not supported by the public sector. Some agricultural, forestry, and livestock insurance exists against adverse hydrometeorological phenomena, although coverage is provided only to businesses. The public sector does not have any type of insurance for disasters or catastrophes.²⁷

Insurance Industry Oversight: Government regulates insurance markets to ensure solvency. An Insurance superintendence regulates the insurance market in Paraguay. The Superintendence of Insurance (SIS) falls under the supervision of the Central Bank of Paraguay.

Availability of Low-interest Loans to Support Recovery: Low-interest loans are not available to support household, business, or NGO recovery costs. According to SEN, low-interest loans are not directly provided for or available to support recovery costs for households, businesses, or NGOs.²⁰

Availability of Microfinance Credit Schemes: The Paraguayan government does not support disaster microfinance credit schemes and expedited remittances. According to SEN, microfinance credit schemes and expedited remittances are not supported through the Paraguayan government.²⁰

Guidelines for Disaster Relief Disbursement: Clear guidelines exist for the provision of disaster relief funds to disaster-impacted departments, including impact thresholds. Guidelines for the provision of disaster relief funds to disaster-impacted departments are established within Decree No. 11632, the Regulatory Decree for Law 2615, which established the creation of the SEN.^{6,7}



STRATEGIES

Strategic Plans and Policies: Distinct DM and DRR strategic plans (strategies) and policies exist, but not for all DM phases. National Policy for Disaster Risk Management and Reduction was approved by a Presidential Decree in 2014 and guides disaster risk reduction for the country.^{28,29} This Policy was updated in 2018 and is based on four strategic pillars: strengthening of institutional capacity; financing; education, communication, and citizen participation; and knowledge and technology management.¹⁸

Stakeholder Engagement: DM and DRR strategic plans address some or all relevant DM stakeholders, but stakeholder engagement has been limited. DM stakeholders have broad participation in the formulation of DM and disaster risk reduction strategic plans through a council.²⁰ For the “National Plan for the Implementation of the Sendai Framework 2018-2022,” multisectoral managers are assigned for the fulfillment of the priority axes.¹²

Stakeholder Guidance: Guidance is provided through documents and other self-directed means. SEN developed a comprehensive guidance program that is contained within a four-volume “toolbox”: Guide of Basic Concepts and Legal Framework of Risk Management and Reduction (DRR) in Paraguay; Guide for Strengthening the Departmental (Subnational) Secretariats of Risk Management and Reduction (SDGRR); Guide for the Strengthening of the Municipal Councils for Risk Management and Reduction (CMGRR); and Guide for the Implementation of Key Actions for Disaster Risk Management.²³

Policy Support of DRR Integration: Detailed policies ensure adequate integration of national DM and DRR goals in development, planning, recovery, and reconstruction. In addition, policies ensure integration and coordination with climate change adaptation and sustainable development policies and goals. However, provisions are not explicitly defined. Although not always specifically mentioned, the integration of different sectors whose role directly or indirectly includes risk management and reduction is observed.

DRR and DM Policy Integration Progress: Disaster management and disaster risk reduction policy goals are integrated across all of government and are widely socialized. The 2005 National Disaster Response and Disaster Risk Reduction Plan integrates all other government institutions through two major strategic areas: risk management and disaster risk reduction. Provisions for mitigation exist in DRR policies, but requirements are not specific.⁹

Mitigation Mandates in DRR Policies: Provisions exist, but requirements are not specific. The National Disaster Response and Disaster Risk Reduction Plan from 2005 that integrates all other government institutions through two major strategic areas: risk management and disaster risk reduction.⁹

Consideration of Gender and Vulnerable Groups in Strategies and Policies: Gender issues and vulnerable groups are considered in disaster management and disaster risk reduction strategies and policies, but implementation challenges remain. The Ministry of Women has a mission to promote and implement public policies with a gender perspective, promoting the full exercise of women’s human rights, whilst SEN developed a comprehensive strategy document to reduce the risk of sexual violence in emergency shelters.³⁰



PUBLIC CONFIDENCE AND POLITICAL SUPPORT

Support from Top Government Officials: The office of the President shows support for response-related programs but is not typically engaged in non-disaster activities as a champion or supporter. According to SEN, top government officials acknowledge SEN’s work only in relation to the collaboration between the authorities of different levels of government during a response event.²⁰

Support of the Legislature: Standing legislative or other advisory committees exist with a central focus on DM and disaster risk reduction. Multiple committees existing at strategic, advisory, and operational levels are referenced within the 2005 National Disaster Response and Disaster Risk Reduction Plan.⁹ Additionally, Law 2615 references the National Technical Committee and the National Operating Committee, both com-

posed of representatives from various institutions.⁶

Interagency and Multi-stakeholder Input in the Legislative Process: Committees facilitate interagency and multi-stakeholder input in the legislative process. Law 2615 notes that different institutions, according to their objectives, will participate within the National Technical Committee or within the National Operating Committee as advisory bodies to the SEN Council.⁶

Public Support for DRR: The public supports disaster risk reduction provisions that do not result in increased taxes, costs, or other benefit losses. Paraguay has experienced many successes in emergency management in recent years. It is evident that, as time goes by, the public's attitude is changing towards disasters and the importance of preventative measures.

Public Confidence in Governmental DM: The public is unsure of the capabilities and capacity of DM agencies. Many interinstitutional and multidisciplinary efforts are still required to increase the level of public confidence in the work of SEN and other public bodies.

Political Approval Ratings: Approval ratings are not collected. According to SEN, political approval ratings are not collected or used to guide decision making related to DM.²⁰



ATTITUDES AND EXPERIENCE

Practical Experience of the Jurisdiction: Paraguay experiences approximately one major disaster requiring interagency or extra-jurisdictional coordination every one to three years. Paraguay experiences annual flooding events of varying intensities, as well as the occasional wildfire in the interior of the country.

Practical Experience of the Lead DM Official: The lead disaster management official has held that position for at least three years. SEN Minister Roa has over 20 years of disaster risk management experience, including service on the United Nations Disaster Assessment and Coordination (UNDAC) team since 1999. Minister Roa has held his current position with SEN since August 28, 2013.

Public Engagement in DM: There is little to no public engagement in disaster management efforts. Minimal engagement is committed by the public sector, through either organizations or individuals, in disaster management efforts for the country.

Private Sector Engagement in DM: There is little to no disaster planning reported by the business community, and little to no business community participation in community emergency management efforts. Private sector entities participate voluntarily in disaster management activities as collaborators, donors, and providers of goods and services to the State.

Household Preparedness: No assessments or surveys of household or individual disaster preparedness are conducted. Household preparedness surveys are not conducted for the country.



DISASTER GOVERNANCE MECHANISM

- Limited or No Capacity
- Early Capacity Development
- Achievement with Significant Limitations
- Substantial Progress with Some Limitation
- Advanced Capacity



The 2005 National Disaster Response and Disaster Risk Reduction Plan addresses the elements of response and DRR, while long-term community recovery and reconstruction elements still need to be integrated into official plans and procedures. Although required, Continuity of Operations (COOP) and Continuity of Government (COG) plans remain untested for SEN and Paraguay. Law 2615/05 guides key requirements including the disaster declaration processes, coordination of government disaster plans across all DM agencies with the participation of standing technical committees, incident command and functional coordination structures, the provision of national support to impacted subnational jurisdictions, and protocols for bilateral and multilateral donor aid. There is room for improvement in standardizing incident command and coordination systems where coordination challenges exist among and between agencies and entities (including communications interoperability and responder credentialing). Coherence between plans at each administrative level remains fragmentary despite progress towards the 2022 Sendai adherence targets. SEN Emergency Operations Center (EOC) is equipped for minor incidents but may need additional equipment and resources for large-scale events. Communications infrastructure needs an upgrade in order to avoid internet bandwidth and network connectivity problems that affect coordination during large-scale events. Challenges remain especially in formalizing mutual aid agreements that are common among local and provincial governments. UNASUR Resolution 023/2015 has been a solid step towards formalizing the existing mutual aid agreements established at the bilateral/regional level.



INSTITUTIONAL ARRANGEMENTS SUB-THEMES



Plans and Standard Operating Procedures



Command, Control and Coordination Structures



Emergency Operations Centers



PLANS AND STANDARD OPERATING PROCEDURES

DM Phases Addressed in Plans: Only response and mitigation (DRR) are addressed through formalized plans and standard operating procedures (SOPs). Within the 2005 National Disaster Response and Disaster Risk Reduction Plan, the DM “phases” of response and mitigation/disaster risk reduction (DRR) are addressed.⁹ However, interviews with SEN confirmed that long-term recovery and reconstruction elements are not addressed and need to be integrated into official plans and procedures.²⁰

Coordination of Government Disaster Plans: Plans guide disaster management activities across all DM agencies. There are several standing committees responsible for the coordination of DM activities, including the SEN Executive Council, the National Technical Committee, and the National Operating Committee.

Continuity of Operations (COOP) and Continuity of Government (COG): COOP and COG planning is required, but plans are untested. According to SEN, continuity of operations (COOP) and continuity of government (COG) are required planning components for Paraguay’s DM system. However, these DM functions remain untested for SEN and Paraguay.²⁰

Roles and Responsibilities Defined by Plans: Plans and standard operating procedures (SOPs) identify roles and responsibilities for each level of government. The 2005 National Disaster Response and Disaster Risk Reduction Plan outlines roles and responsibilities for government ministries and SEN before, during, and after emergencies.⁹

Definition of the Declarations Process: The declarations process is defined in official documentation, and declarations must follow the existing procedures. The Declarations Process, Vertical Cooperation, and Resource Requisition section from Law 2615 clearly maps out the procedures.⁶

Accessibility of Plans and Processes: Plans and SOPs are publicly accessible. Plans and SOPs are available online on the SEN website and on PreventionWeb.^{31,32}

Coordination of Government and Stakeholder Plans: The DM stakeholder community maintains sectoral and/or facility plans that are coordinated with government DM plans. The 2005 National Disaster Response and Disaster Risk Reduction Plan references standing committees and other agencies for the coordination of DM activities across all DM agencies.⁹

Mutual Aid Agreements: Formal mutual aid agreements have been established and signed by all relevant parties, detailing how and when resources are shared, the types of resources to be shared, and mechanisms for reimbursement, at the departmental level. Commitments exist, but better planning and management are needed for these agreements to be more effective.

International Mutual Aid Agreements: Formal mutual aid agreements have been established at the bilateral/global regional level. At the MERCOSUR Summit in July 2009, the governments of Paraguay, Argentina, Brazil, and Uruguay approved a statement indicating a willingness to work towards a regional mutual aid com-

pact.18 Regional mutual aid was further advanced in 2015 with the signing of UNASUR Resolution 023/2015, which approved the “Manual of Cooperation for Mutual Assistance Against Disasters in Member Countries of UNASUR.”³³

Protocols for the Use of External Disaster Assistance: Protocols are in place that facilitate and expedite the entry and use of extra-jurisdictional physical and human resources, and the acceptance and coordination of bilateral and multilateral donor aid. Law 2615 provides for the utilization of foreign disaster assistance by assigning a Committee in charge of receiving foreign assistance.

Volunteer and Donations Management Capacity: Systems are in place to accept, process, and utilize donated goods and volunteers. SEN is mandated to establish and manage procedures for the collection and use of donations.



COMMAND, CONTROL, AND COORDINATION SYSTEMS

Incident Command Systems: The incident command system (ICS), or a similar structure, has been incorporated as a formal component of disaster response operations, but it is only used in large events or only by some jurisdictions. Paraguay’s Unified Command System is utilized by fire and police organizations during disaster events. Unified coordination includes both Incident command and incident coordination. Typically, the lead agency in an emergency is the agency most affected by the event – e.g., for dengue, the Ministry of Health with SEN providing the necessary support and resources. However, there is still confusion regarding which organization takes on the role of lead in certain situations.^{6,20}

Incident Coordination Systems: Incident coordination is guided by a standardized incident management system that has been implemented at all levels of government and enables transparent and expedited integration of non-governmental and private sector resources into response activities, but implementation challenges remain. Incident coordination is used by SEN, other government ministries, and regional and local government leaders as part of the Unified Coordination system, which includes incident command. During a response event, SEN implements both incident command and incident coordination. A formalized system exists in Paraguay for SEN to fill gaps and supplement the local level.^{6,9,20}

Legal Basis of Command and Coordination Structures: Incident command and management systems and structures, including decision-making authority and reporting hierarchies, are defined in legal and planning instruments. Incident command and coordination structures are defined in Law 2615, which established the creation of SEN.⁶

Command and Coordination by Function: Plans and procedures delineate leadership and coordination for disaster and emergency support functional areas. Leadership and coordination for disaster and emergency support are outlined in Law 2615.⁶

Facilitation of Interagency Coordination: Interagency coordination is facilitated using ad-hoc and informal mechanisms. Interagency coordination is facilitated through operational committees, as well as informal mechanisms established by SEN and other DM-related agencies.²⁰



EMERGENCY OPERATIONS CENTERS

Emergency Operations Center: SEN maintains a sole-use and purpose-built Emergency Operations Center (EOC). Various “Centros Operaciones de Emergencia (COE),” or Emergency Operations Centers (EOC), exist in several departments throughout Paraguay. The COE located in Asunción is quite modern and sophisticated and was financed by Koyka, an institution within the Korean government.

Dedicated EOC Facility: The Emergency Operations Center (EOC) is in a dedicated facility. At SEN headquarters in Asunción, there is a sole-purpose incident command room that serves as the EOC during disaster events.

EOC Resources: SEN’s Emergency Operations Center (EOC) is equipped for minor incidents but may need additional equipment and resources for large-scale events. SEN’s Asunción-based Emergency Operations Center (EOC) can support 24/7 operations and has on-site generators. Internet bandwidth and network connectivity are limited. The San Pedro EOC is fully equipped and can support major disaster events. San Pedro’s location was chosen for its proximity to flood-prone areas; however, it is at least four hours from the capital of Asunción.

EOC Activation Readiness: SEN’s Emergency Operations Center (EOC) is capable of no-notice activation. SEN staff are always present at SEN headquarters in Asunción and can immediately activate the incident command room to support operations when needed.

EOC Activation Duration: SEN’s Emergency Operations Center (EOC) is staffed and equipped to ensure continuous operations. SEN’s Asunción-based Emergency Operations Center (EOC) can support 24/7 operations with SEN personnel.

EOC Resilience: SEN’s Emergency Operations Center (EOC) is physically protected from known hazards. The Emergency Operations Center (EOC) is not located in any known hazard zones. In addition, generators are available to support operations in the event of a power outage.

EOC Accessibility: The Emergency Operations Center (EOC) is easily accessible for key government officials. SEN headquarters is centrally located in Asunción within walking distance of most government buildings. The San Pedro EOC is not readily accessible by national-level government officials or SEN staff as it is located four hours outside of the city.

Backup EOC: A backup Emergency Operations Center (EOC) exists but has fewer capabilities than the

primary EOC. SEN maintains a “pop-up” EOC that can support general operations and coordination. However, this facility cannot support staff on a 24/7 basis.

Field-level Coordination Centers: SEN has the plans, procedures, and resources to establish multiple field-level coordination centers. Paraguay’s first regional EOC was opened in San Pedro in 2014 with corresponding supply warehouses to serve the departments of San Pedro, Concepción, Amambay, and Canindeyú in the country’s East-Central region. Funding for the project was provided by SOUTHCOM.³⁴

Long-term Community Recovery Facilitation Capacity: SEN does not have the plans, procedures, or resources to support long-term recovery. According to SEN officials, SEN does not have the capacity to support long-term recovery following a disaster event in Paraguay.²⁰

Communications Interoperability: Partial communications interoperability exists. SEN and the Paraguayan Army have partnered on a project, called the Portable Communications System, that would facilitate national coverage in case of emergency. SEN is working to strengthen the national communication system for warnings and crisis communication. It has acquired conventional communications equipment in addition to existing VHF/UHF, satellite telephony, portable equipment, cellular telephony, videoconferencing systems, voice and data transmission, and drones.²⁰

Responder Credentialing: Credentialing processes and systems do not exist. Responder credentialing is not available through SEN or any other DM-related agency in Paraguay.



CAPABILITIES & RESOURCES

SUB-THEME STATUS

- Limited or No Capacity
- Early Capacity Development
- Achievement with Significant Limitations
- Substantial Progress with Some Limitation
- Advanced Capacity



Most of Paraguay's emergency services at both the national and subnational levels are equipped with resources appropriate to manage known hazards, excluding food resources. Supplemental (surge) staffing capacity – drawn primarily from the military, stakeholder community, NGOs, the private sector, volunteer organizations, and other government agencies – is integrated through statutory provisions and only utilized in the most extreme situations. While technical staff rosters are kept, more formal mechanisms are needed to support staffing. Disaster equipment inventories are kept up to date but not maintained as a national database. Emergency shelter capacity generally maintained by the military is kept at adequate levels but is not necessarily suitable for disaster use. Every attempt is made to avoid the use of schools as shelters to avoid long-term use and for fast community recovery. However, the absence of recovery plans prevents the testing of shelter capacity for major disasters involving large numbers of displaced people. Through partial funding support from the US Southern Command (SOUTHCOM), five government-run purpose-built warehouses and staging facilities have been built to support emergency logistics in the capital of Asunción and throughout the interior of the country. One supplemental warehouse maintained by the Paraguayan Red Cross was heavily relied on during the 2018 flood response. The municipal law provisions the responsibility of keeping and maintaining commodities stockpiles delivered by SEN to municipal governments, specifically to the District and Departmental Emergency Councils. However, the current inventory documentation process is not inclusive of any stakeholder resources or supplies beyond SEN. Additionally, WASH (water, sanitation, and hygiene), hazardous materials (HAZMAT) response, and search & rescue are noted functional strengths, while safety and security, evacuation, and agriculture and psychosocial recovery remain capacity development priorities for SEN.



INSTITUTIONAL ARRANGEMENTS SUB-THEMES



Dedicated Facilities and Equipment



Human Resources



Inventory of Commodities and Supplies



Targeted Functional Capabilities



DEDICATED FACILITIES AND EQUIPMENT

Emergency Services Facilities Capacity: The capacity of Paraguay's emergency services facilities includes approximately one fire station for every 70,000 people in the country. Emergency services capacity includes 100 fire stations situated across the country to serve the needs of the population. Each fire station maintains its own authority and reports to itself.

Material Resources Available for DM: Most (more than 75 percent) of emergency services are equipped with resources appropriate to manage known hazards. Most of Paraguay's emergency services at both the national and subnational levels are equipped with resources appropriate to manage known hazards, excluding food resources.²⁰ Supplemental resource assistance for emergencies and disasters is provided to municipalities in coordination with SEN.

Supplemental DM Resources: Supplemental disaster management resource and equipment requirements are secured through a non-diverse arrangement with SEN. Supplemental resource assistance for emergencies and disasters is provided to the municipalities in coordination with SEN.^{6,35}

DM Equipment Inventories: Accurate and up-to-date inventories of disaster-relevant equipment are not maintained. Disaster-relevant equipment inventories are maintained in an informal capacity.

Shelter Capacity: Emergency shelters with the capacity to serve at least 50 percent of anticipated shelter needs have been identified, but alternate sheltering capabilities would likely have to be identified to address all requirements. To prevent the population from permanently inhabiting shelters, pre-established shelters are not designated within Paraguay. All shelters are temporary structures set up by the military; every attempt is made to avoid the use of schools as shelters due to their unsuitability and desire to support the return to normalcy following a disaster event.

Shelter Suitability Assessments: Shelters have not been assessed for suitability. Pre-established shelters are not designated within Paraguay. All shelters are temporary structures set up by the military in the event of an emergency; therefore, shelter suitability assessments are not conducted.

Shelter Equipment: Shelters are not specially equipped for disaster use. Since there are no pre-established shelters designated within Paraguay, the shelters are, as a result, not equipped for use during and after a disaster. Shelters are a reaction to an event, not proactively prepared.

Warehousing Capacity: Purpose-built warehouse and staging facilities exist to meet logistics operations requirements in a major disaster event. Purpose-built warehouses and staging facilities exist to support emergency logistics, both in the capital of Asunción and throughout the interior of the country. Supplemental warehousing capacity is provided in Asunción by the Paraguayan Red Cross.²⁰

Public Health Integration for DM: Public health and medical facilities are fully integrated into Paraguay's disaster management system. The Minister of Public Health and Social Welfare serves on the SEN Executive

Council. As such, integration between DM and public health is straightforward.



HUMAN RESOURCES

Emergency Services Staff: Paraguay maintains staff dedicated to emergency management at levels between one and two firefighters for every 1,000 people in the country. Paraguay's emergency services staff includes more than 7,000 volunteer firefighters, with approximately one firefighter for every 1,000 people in the country. Staff are dispersed amongst 100 fire stations situated across the country to serve the needs of the population.³⁶

Planning Staff: A cadre of trained staff exists with job functions dedicated to pre- and post-disaster emergency management activities and programs and is maintained at levels sufficient to meet programmatic needs. Sufficient staff dedicated to pre- and post-disaster planning are maintained under SEN's General Directorate of Risk Reduction.²⁰

Surge Staff Documentation and Procedures: Surge staffing needs are formally addressed in Paraguay's disaster plans and procedures, but the adequacy of staffing resources has not been verified. Surge staffing needs are identified and filled by SEN in collaboration with Paraguay's larger disaster management community. During times of emergency, the military may provide direct-hire support staff for SEN's operations. However, this function has yet to be tested as SEN hasn't had to request surge staffing support from other government agencies or external staffing sources.²⁰

Surge Staff Source: Surge capacity staff are drawn from throughout the disaster management stakeholder community, including NGOs, the private sector, and other government agencies. Surge staffing is only utilized in the most extreme situations. Legislation indicates that surge staffing support can be provided from throughout Paraguay's disaster management community. SEN supports the initial response to an event and coordinates with the Armed Forces, the Paraguayan Red Cross, and other government agencies to support continuous response operations.^{6,7,9,20}

Rosters of Trained Professionals: Rosters of trained professionals are maintained for most relevant technical needs. Decree No. 11632/13 assigns SEN responsibility for creating and maintaining rosters of trained professionals for technical needs associated with disaster management. Interviews with SEN confirmed that rosters of trained professionals are maintained for most technical needs related to disaster management.

City Pairing or Similar Technical Staffing Partnerships: City pairing arrangements, secondment schemes, or other similar mechanisms do not exist to support disaster-related technical staffing requirements. SEN has not established any technical staffing partnerships related to city pairing or secondment schemes.²⁰



INVENTORY OF COMMODITIES AND SUPPLIES

Generating Estimates of Post-disaster Commodity Needs: Estimates of post-disaster commodity needs are not maintained. Damage Assessment and Needs Analysis (EDAN) evaluations of the impacted area(s) are conducted by SEN following a disaster event. Resource needs are determined by the outcome(s) of EDAN evaluations, including “human, material, technical, and financial” needs in order to save lives and reduce material damage. The appropriate resources are then allocated to the impacted area(s) according to need and in coordination with mutual aid.⁹

Commodity Stockpile Quantities: Needs estimates are not available. However, commodity stockpiles are maintained at levels designed to meet anticipated needs, and contracts are in place to address anticipated deficiencies. Responsibility for the provision of equipment and supplies for social infrastructure is assigned to the municipalities.³⁵ Supplemental resource assistance for emergencies and disasters is provided to the municipalities in coordination with SEN.⁶

Location of Commodity Stockpiles: Commodity stockpiles are kept in distributed locations that enable access to all locations throughout Paraguay within 24-48 hours. Paraguay has taken steps to reduce the time of commodity delivery both in the capital of Asunción and throughout the interior of the country. SEN has expanded commodity storage to include six government-run warehouses in the following areas: ³⁷ Minga Guazú; Caaguazú; Saltos del Guairá; Santa Rosa del Aguaray; Mariano Roque Alonso; and Fernando de la Mora.

Basis of Commodity Stockpile Distribution: Commodity stockpile locations are based primarily on the location of warehousing facilities. SEN has established five fixed and three temporary prepositioning centers throughout the country. The centers are used to host staff and technical personnel, as well as to store supplies and equipment.

Commodity Contracts: Contracts with commodity providers exist but are not assessed for reliability during disasters. Contracts exist at the municipal level with commodity providers.²⁰ As established by law, municipal leadership can sign agreements with local businesses to supply resources in the event of a disaster.³⁵

DM Resource and Supply Inventories: Disaster management resource and supply inventories exist but do not span all agencies. A record of all supplies and resources received and delivered to the district and departmental Emergency Councils is required to be completed in order to facilitate the distribution of aid from SEN headquarters.⁹ However, the current inventory documentation process is not inclusive of any stakeholder resources or supplies beyond SEN.²⁰

Frequency of Resource and Supply Inventory Updates: Inventories are not updated on a regular schedule. Photos of the handwritten supply lists are shared with SEN headquarters via WhatsApp every four hours during an event for situational awareness and up-to-date resource tracking within SEN. However, this process seems to only occur during the event and not completed at any other time for preparedness or to restock.²⁰

Hosting of Resource and Supply Inventories: Disaster management resource and supply inventories are managed through an informal information system; a centralized system has not yet been developed. SEN stated that inventories are maintained in an informal capacity only.

Defined DM Logistics Capacity: Paraguay maintains a defined disaster logistics capability. Paraguay maintains a defined disaster logistics capability under SEN's General Directorate of Risk Reduction.²⁰ The General Directorate is further divided into the Preparedness Directorate and the Response Directorate, each of which includes components of the national logistics capability.¹⁰



TARGETED FUNCTIONAL CAPABILITIES

Government Support for Psychosocial Recovery: National-level support for psychosocial recovery exists, but implementation challenges remain. The Directorate of Charity and Social Assistance (DIBEN) is tasked with providing psychosocial support to the affected population during the response phase of an emergency or disaster event. DIBEN's psychosocial support activities are intended to be carried out within shelters.⁹ However, communication regarding the availability of psychosocial support during a disaster event remains a challenge.³⁸

Government Capacity to Support Evacuation: Evacuation support capacity exists at the national level to facilitate the evacuation efforts of departmental and local governments, but it is not comprehensive. Although dedicated national and subnational evacuation plans have not been developed according to SEN, evacuation responsibilities are designated in the 2005 National Disaster Response and Disaster Risk Reduction Plan.^{9,20}

National Plans and Strategies for WASH Needs: Water, sanitation, and hygiene (WASH) are addressed in plans, strategies, and policies, and information is provided regarding the mechanisms for support to impacted areas. WASH is referenced within the 2005 National Disaster Response and Disaster Risk Reduction Plan, wherein several agencies are tasked with the prioritization of WASH actions before, during, and after a disaster event.⁹

Government Capacity to Manage Safety and Security Needs: Safety and security are a defined disaster management function included in plans, policies, and procedures, and are assigned to an appropriate ministry. However, implementation challenges remain. Safety and security responsibilities are assigned to the National Police, under the Ministry of the Interior. However, according to Paraguay's most recent Atlas of Violence and Insecurity, the number of personnel responsible for guarding the safety of affected populations in Paraguay is generally seen to be insufficient.³⁹

National HAZMAT Response Capacity: HAZMAT response is supported through a centralized HAZMAT

response capacity. Law 2615/05 grants SEN the ability to use resources from the National Emergency Fund to temporarily contract with specialists in the event of an accident involving “chemical, radiological, and biological products.”⁶

Government Support for Search and Rescue Activities: National search and rescue capabilities exist. The following agencies are tasked with the prioritization of search and rescue activities: Ministry of the Interior-National Police, Paraguayan Red Cross, and the National Board of Firemen.⁹

Government Support for Agricultural Preparedness, Response, and Recovery: Support for the disaster-related needs of the agriculture sector are comprehensive and are addressed in plans, policies, and or strategies, but implementation challenges remain. Stakeholder interviews noted that insufficient support exists for adequate risk management within Paraguay’s agricultural sector and that the negative consequences of this are observed annually, including routine loss of production.³⁸



CAPACITY DEVELOPMENT

SUB-THEME STATUS

- Limited or No Capacity
- Early Capacity Development
- Achievement with Significant Limitations
- Substantial Progress with Some Limitation
- Advanced Capacity



Resolution 369/2018 established both the Department of Capacity Development in Disaster Risk Reduction and the Department of Recruitment and Training in Disaster Risk Reduction within SEN's General Directorate of Risk Management. However, training and exercise requirements remain largely focused on practical elements of DM, including first aid, firefighting, HAZMAT, and Damage Assessment and Needs Analysis (EDAN). Training and education have yet to be included in plans or strategies. Although capacity assessments are conducted, specific capacity development plans and strategies have not been developed for DM or DRR. While SEN provides training at the national, departmental, and local levels with certified exercise planners, a regularly scheduled comprehensive training program with a well-defined curriculum and a dedicated staff and budget are necessary. While higher-ed programs exist offering various DM and DRR programs, and the development of DRR programs is underway for K-12 schools, these programs need to be integrated into the national curriculum to better drive action. There is also a need to hold regularly scheduled reviews of the DM legislation, plans, strategies, and standard operating procedures (SOPs) that will allow for an integration of lessons learned from current disasters and effecting adaptive change.



CAPACITY DEVELOPMENT SUB-THEMES



Capacity Development
Plans and Strategies



Training and Education
Programs and Facilities



Monitoring and Evaluation
Processes and Systems



CAPACITY DEVELOPMENT PLANS AND STRATEGIES

Training and Exercise Requirements and/or Recommendations: Training and exercise requirements do not exist for Paraguay. Although SEN provides specific induction training for all new SEN hires based on USAID-approved courses, official training and exercise requirements have not been established for Paraguay.

Position-specific Competency Requirements: Recommended position specific competencies have been identified but are not associated with any training or education strategies. Informal position-specific competencies provide guidance for the hiring of general SEN staff. As these competencies have not been formalized, they do not inform training or education strategies. However, SEN does provide induction training for all new SEN staff, regardless of experience.²⁰

Coordination of CD Efforts: Paraguay has a designated government office tasked with coordination and support of disaster management and disaster risk reduction capacity development. The Department of Capacity Development in Disaster Risk Reduction and the Department of Recruitment and Training in Disaster Risk Reduction exist within SEN's General Directorate of Risk Management.

Strategy-driven Efforts: Disaster management and disaster risk reduction capacity plans and strategies are not used to drive capacity development efforts. According to SEN, plans and strategies focus on response-related activities and are too general to drive capacity development efforts for the country.

DM and DRR Capacity and Resource Needs Assessments: Disaster management and disaster risk reduction capacity and resource needs assessments are conducted, but not according to any defined schedule or deliberative planning process. Damage Assessment and Needs Analysis (EDAN) assessments are conducted for impacted area(s) by SEN following a disaster event. However, SEN has verified that EDAN assessments are not conducted according to a defined schedule or with sufficient planning.⁹

Coordination with Regional/Global CD Efforts: Disaster management and disaster risk reduction capacity development efforts are coordinated with regional and global efforts. SEN verified that EDAN assessments are not conducted according to a defined schedule or with sufficient planning.⁹

National Science and Technology (S&T) Agenda: The national science and technology agenda addresses disaster management and disaster risk reduction needs. The National Council of Science and Technology (CONACYT) addresses risk management and needs reduction for the science, technology, and innovation policies of Paraguay.



TRAINING AND EDUCATION PROGRAMS AND FACILITIES

Conduct of DM and DRR Training: SEN maintains a formal DM/disaster risk reduction training program with a training facility, a dedicated staff, and a recurring budget. Both the Department of Capacity Development in Disaster Risk Reduction and the Department of Recruitment and Training in Disaster Risk Reduction within SEN's General Directorate of Risk Management conduct DM and DRR trainings.

Scope of Training and Education Curriculum: DM and disaster risk reduction training curricula are built on the core DM phases and support operational and functional needs. SEN provides training at the national, departmental, and local levels. Specific, short trainings and diploma programs are offered, but these are not well structured. As training is not provided on a routine basis for all municipalities and typically focuses on high-risk areas, additional training coverage is needed.

Training Methods: A centralized in-person training facility and mobile staff provide training throughout Paraguay upon request. Training is offered by request at SEN headquarters in Asunción as well as on-site at regional localities and governates. For off-site training, SEN offers support with the relevant trainers and materials.²⁰

Training Catalog and Schedule: A catalog of available courses exists throughout the year but is not complemented by a structured annual training schedule. Throughout the year, SEN provides USAID-approved workshops and training courses, several of which are referenced on SEN's website.³¹

Training Records: Training records are maintained in a centralized system. Training records are maintained digitally in a centralized location. Records are updated after every training.²⁰

Program to Support Exercises: Exercise efforts are managed by staff with other regular (non-exercise) day-to-day job functions. DM exercise efforts are supported by multiple departments and agencies, many of which fall outside of SEN.²⁰

Exercise Evaluation Standards: Exercise evaluation standards exist, and they are common throughout Paraguay. Formalized exercise evaluation standards are maintained based on standards outlined in USAID manuals. SEN provides training for its areas of expertise; all other areas are supported by the relevant agencies associated with the focus of the exercise(s).²⁰

Structured Annual Exercise Schedule: General recommendations for exercise schedules are provided, but no structured annual exercise schedule exists. A structured annual exercise schedule does not currently exist. Training and exercises are conducted based on request; institutions typically put in requests for these activities at the beginning of each year.^{9,20}

National-level Exercise: A national-level exercise is not conducted. Although the National Emergency Fund is authorized to facilitate the implementation of an annual drill in Asunción and two drills a year in the interior of Paraguay, a national-level exercise is not conducted on a routine basis.^{9,20}

Support for Sub-jurisdictional Exercises: SEN provides departments with limited technical, advisory, financial, or material support for exercises. SEN can assist departments and municipalities with requests for material and advisory exercise support, dependent upon the availability of resources. However, financial assistance is not provided for local government exercises, as municipalities are required to provide their own funding for “risk reduction and emergency response.”^{6,20}

Exercise Participation Requirements: Government agencies with DM functions are not required to participate in disaster exercises. There are no legal participation requirements for exercises. All relevant DM agencies are invited to participate in training and exercises, and agency participation is voluntary. Local governments hold primary responsibility for both initiating and conducting exercises, which are coordinated through SEN by request.²⁰

Stakeholder Involvement in Training and Exercises: NGO and private sector stakeholders are invited to participate in training and exercises. All relevant DM entities are invited to participate in training and exercises, including non-governmental and private sector partners. However, participation is not mandatory.²⁰

DM Programs in the Higher-Ed Community: Higher-education community support for DM professionalization is very limited in number and the scope of offerings. DM professionalization is supported in a limited way by Paraguay’s higher education community. Training programs, formal courses, and other forms of organized professionalization are offered by few institutions.

Higher-Ed Program and Degree Offerings: Bachelor’s and master’s degree programs are offered in support of DM professionalization. The Universidad Católica Nuestra Señora de la Asunción (UCNSA) recently developed a master’s degree in “Disaster Risk Management and Adaptation to Climate Change” with some extension activities linked to public institutions and municipal governments.^{20,40} In collaboration with the University Network of Latin America and the Caribbean for the Management and Reduction of Risks of Emergencies and Disasters (REDULAC/DRR), UCNSA also offers an International Diploma in “Risk Management and Disaster Risk Reduction.”^{41,42}

National DM Curriculum: DM and disaster risk reduction curriculum for K-12 schools is under development. Updated in 2017, the National Education Plan for Risk Management (PNEGER) identifies goals and indicators for strengthening disaster risk reduction in Paraguay’s education sector. While an official DM education program has yet to be fully developed for the country, the Ministry of Education and Culture (MEC) has committed to strengthening Paraguay’s culture of risk awareness by implementing concrete actions elaborated within the PNEGER.⁴³

Formal Public Awareness Program: Public awareness, preparedness, and resilience-building programs face implementation challenges. A formal public awareness, preparedness, and resilience-building program does not exist for the country’s general population.²⁰

Public Education Methods: Disaster preparedness information is provided to a generalized audience through media or other active campaigns. The 2011 National Education Plan for Risk Management (PNEGER) was updated in 2017 by the Ministry of Education and Culture (MEC) in collaboration with SEN and USAID to address the following: public education, including initial education, basic school, middle school, and higher education; and, curricular adjustments at the departmental, institutional, and classroom levels.^{43,44}

Community Centers and Public Awareness/Education: Community centers and community organiza-

tions are engaged in the promotion of disaster awareness, preparedness, and training. However, this is not done uniformly throughout the country. Collaboration exists between community organizations, including women's committees, peasant producers, and others. However, this collaboration is often passive and is initiated at the request of SEN or other relevant government agencies.²⁰

Disaster Preparedness Information for the Private Sector: The private sector is provided with disaster preparedness and resilience information, but not with financial or technical support. Support is provided to the private sector, primarily in the form of newsletters from the Directorate of Meteorology and Hydrology (DMH). Newsletters focus on hydrological concerns and weather forecasts for major cities. In addition, SEN provides the private sector with preparedness suggestions based on DMH forecasts.²⁰



MONITORING AND EVALUATION PROCESSES AND SYSTEMS

Standard Evaluation Procedures: The evaluation and revision of plans, strategies, and standard operating procedures (SOPs) occurs, but procedures and practices are not standardized. SEN evaluates and revises plans, strategies, and SOPs on an as-needed basis. Formal processes for the evaluation and revision of such documents have not yet been established.²⁰

Review of Plans, Strategies, and SOPs: Plans, strategies, and standard operating procedures (SOPs) are reviewed and revised, but no revision schedule exists. Risk management and reduction documentation is examined on an as-needed basis. Formal processes for the evaluation and revision of plans, strategies, and SOPs have not yet been established.²⁰

Review of DM Legislation: Disaster management-relevant legislation is reviewed and updated only after major disaster events or developments. The review and revision of DM-relevant legislation is highly variable.²⁰

Requirements for Post-disaster Reviews: Post-event reviews occur after all major disaster events, irrespective of whether or not requirements exist. Required Damage Assessment and Needs Analysis (EDAN) reviews are to be conducted of the impacted area(s) by SEN following a disaster event.⁹

Evaluations Incorporated into Plans, Policies, and/or SOPs: Evaluations of adverse events, drills, and/or exercises occur, but there is no evidence that outcomes influence or are otherwise linked to plans, policies, and/or SOPs. Following a disaster event, SEN is tasked with conducting Damage Assessment and Needs Analysis (EDAN) evaluations of the impacted area(s).⁹ Evidence to verify that the outcomes of EDAN evaluations influence or link to DM plans, policies, or SOPs is lacking.



COMMUNICATION & INFORMATION MANAGEMENT

- Limited or No Capacity
- Early Capacity Development
- Achievement with Significant Limitations
- Substantial Progress with Some Limitation
- Advanced Capacity



Risk assessment requirements are guided by legislative and planning documents in Paraguay. However, significant challenges exist, including a lack of standardized procedures, poor enforcement mechanisms, and acknowledged gaps in resource availability. While vulnerability assessment is successfully incorporated into the formal risk assessment protocols, the inclusion of climate change and local and indigenous knowledge is lacking. There is also a lack of a centralized system and a reported insufficient capacity for producing and hosting risk assessment and mapping data. Monitoring for all known hazards, including droughts, floods, hazardous materials, storms, and tornadoes, is conducted through technically specialized agencies. Real-time, 10-day forecast models exist for meteorological and hydrological hazards. Paraguay's national Early Warning System (SAT), operated through the Center for Information and Early Warning (CIAT), has been modernized with recent funding from the Inter-American Development Bank (IADB). The current Doppler radar system is outdated. Hazard monitoring systems across the board need to be continuous, reliable, and timely through proper funding of technology upgrades. SEN also acknowledged the need to standardize and test the procedures for early warning and notification to include key stakeholders, vulnerable populations,

CURRENT STATUS

Limited or No Capacity



Advanced Capacity

INSTITUTIONAL ARRANGEMENTS SUB-THEMES



Hazard and Risk Analysis Systems



Monitoring and Notification



Disaster Assessment



Information Collection, Management, and Distribution



Media and Public Affairs



HAZARD AND RISK ANALYSIS SYSTEMS

Risk Assessment Processes and Standards: Risk assessment is performed at the department level, but no standardized process exists. Hazard and risk assessments are conducted by SEN's Department of Vulnerability, Threat, and Risk Analysis.¹⁰ SEN maintains informal requirements for risk assessments, which are completed according to need without established protocols or regulations.²⁰

Risk Assessment Requirements for Planning: Requirements for risk assessment exist, but there are no enforcement mechanisms. Although there is intention to utilize assessments for risk management and reduction in planning efforts across Paraguay, there are only informal requirements for risk assessments, and no enforcement.²⁰

Risk Assessment Staffing Capacity: Risk assessment staff exist at levels sufficient to address national needs, but departmental support is insufficient. Sufficient qualified personnel are maintained to manage risk assessment needs under SEN's Department of Vulnerability, Threat, and Risk Analysis.¹⁰ However, there is an acknowledged gap in resource availability, particularly in emergency situations.

Vulnerability Measured in Risk Assessments: Vulnerability is measured using complex and comprehensive assessment criteria. The Atlas of Disaster Risks of the Republic of Paraguay (Atlas de Riesgos de Desastres de la República del Paraguay) includes vulnerability as a main component.⁴⁵

Climate Change Included in Risk Assessments: The inclusion of climate change measures is hindered by implementation challenges. A formalized process for the inclusion of climate change criteria has not been developed for risk assessments.²⁰

Local and Indigenous Knowledge in Risk Assessments: Local and indigenous knowledge is not included in risk assessments. The inclusion of empirical and ancestral knowledge in the collection of data related to the reduction of vulnerabilities and risks is mandated.⁷ However, the inclusion of local and indigenous knowledge has not been fully implemented in practice.²⁰

Hosting of Risk Assessment Information: Risk assessments utilize GIS technology, but no centralized system exists to support risk assessment reporting. A centralized GIS system is under development by Parque Tecnológico Itaipu (PTI) to host risk assessment reporting and consolidate all available data into one

geodatabase. PTI is also working to establish protocols for data formatting and exchange.^{20,46}

Risk Mapping Requirements: Risk mapping requirements exist at all levels (national, subnational, local), but capacity is insufficient. Risk mapping requirements exist at both the national and subnational levels for the country. Requirements include the classification of threats, vulnerabilities, and risks, and are based on the use of the Space Assessment Multicriteria tool.⁴⁵

Risk Mapping Capacity: Risk mapping capabilities exist but require additional development to meet risk mapping needs. SEN and other relevant government agencies maintain staff trained in the generation of cartographic products. Risk mapping capacity is supplemented through interagency staff collaboration and consultation services with professionals from the private sector.^{20,45}

Risk Assessment Link to Development Processes: Risk assessments do not inform the development process. Risk assessments do not currently inform the development process in Paraguay.²⁰



MONITORING AND NOTIFICATION

Existence of Hazard Monitoring: Monitoring of all major hazards is occurring. Hazard monitoring and risk assessment activities are implemented across Paraguay by a multitude of actors.

Coordination of Hazard Monitoring: Some coordination of hazard monitoring occurs, and additional coordination activities remain in development. Several agencies are involved in the coordination of hazard monitoring activities across Paraguay.²⁰ Hazard monitoring and warning are managed primarily by the Center for Information and Early Warning (CIAT).

Population in Areas Served by Monitoring Efforts: Monitoring of hazards benefits more than 75 percent of Paraguay's population. One hundred percent of Paraguay's population resides in areas covered by the country's hazard monitoring systems.²⁰

Doppler Radar Coverage: Between 25 percent and 75 percent of Paraguay's land area is covered by Doppler radar. Approximately 25-50 percent of Paraguay is covered by an older Doppler radar system in need of update.²⁰

Hazard Monitoring Responsibility: Hazard monitoring is managed by agencies or offices with relevant or hazard-specific missions. Although SEN holds responsibility for issuing early warnings, coordination with the Directorate of Meteorology and Hydrology (DMH) is required for SEN to issue the appropriate warnings.²⁰

Hazard Monitoring Methods: Hazard monitoring efforts do not utilize up-to-date methods and technologies. Paraguay's hazard monitoring systems are routinely out-of-date and broken. Continuous, reliable, and timely hazard information is often not readily available, thereby limiting the effectiveness of the country's

preparedness measures for potential disaster events.²⁰

Assignment of Notification/Early Warning Responsibilities: Notification and early warning functions are not consolidated and assigned to SEN or an agency with DM communications responsibilities. Notification and early warning functions are neither consolidated nor assigned to SEN.²⁰ Instead, several agencies are involved in the coordination of hazard monitoring activities across Paraguay.³⁸ The country does not yet maintain an official early warning system.

Standard Procedures for Early Warning: Standard procedures do not exist to facilitate notification and early warning. There is no official early warning system for Paraguay. As such, standard procedures have not been developed to facilitate notification and early warning.

Early Warnings Communication Channels: Early warnings are communicated through radio, television, and social media. Warnings are not provided through landline phones, mobile (cellular) phones, or sirens. There is no official early warning system in Paraguay. Imminent dangers such as forecasts of severe storms, hailstorms, frost, and floods are communicated to the population by the Directorate of Meteorology and Hydrology (DMH) through social media platforms and the press.²⁰

Targeted Early Warning Capabilities: Early warning systems can target specific locations according to risk for some hazards in certain locations. The Directorate of Meteorology and Hydrology (DMH) provides meteorological warnings for cities and departments in which there are forecasts.

Early Warning Systems Coverage Area: Less than 25 percent of Paraguay's population is served by early warning systems. Paraguay does not currently maintain an official early warning system; none of the country's population is served by early warning in any formal capacity.

Testing of Early Warning Systems: Early warning systems are not tested. Due to the lack of an official early warning system for the country, such tests are not conducted.²⁰

Training and Education for Warning Recipients: Populations served by early warning systems are not provided with pre-disaster training or education about message meaning and appropriate response. With no official early warning system for the country, training and education focused on early warning are not provided to the population.²⁰

Population Targeting of Early Warning Messages: Early warning systems do not have the capacity to address the needs of specific populations. An official early warning system has not been adopted for Paraguay.²⁰ As such, the needs of vulnerable populations are not addressed in an early warning capacity, thereby increasing their potential to be affected by a disaster event.



DISASTER ASSESSMENT

Disaster Assessment Capabilities: Capabilities exist to conduct disaster assessments. SEN maintains a Department of Damage Assessment and Needs Analysis (EDAN); assessments are conducted for the impacted area(s) by SEN following a disaster event.⁹

Disaster Assessment Requirements: Disaster assessments are a requirement under the declarations process, and they are regularly used to inform declarations decision making. Disaster assessments are a requirement under Paraguay's disaster declarations process as outlined in Law 2615/05.^{6,20} SEN's Emergency Operations Center (COE) unit is responsible for determining the necessity of requesting an emergency declaration and thus instituting disaster assessments under SEN's Department of Damage Assessment and Needs Analysis (EDAN).⁶

Nationally Authorized Assessment Methodology: A nationally authorized assessment methodology exists, but universal application is hindered by implementation challenges. In support of Damage Assessment and Needs Analysis (EDAN) assessments, under the EDAN department, SEN currently has 35 people trained to support basic needs assessments following a disaster event. However, SEN acknowledged that the EDAN framework is not always effectively implemented by SEN staff.^{10,20}

Assessment Resource Capacity: Resource capacity is sufficient with the assistance of NGO partners. SEN works closely with non-governmental organizations to conduct Damage Assessment and Needs Analyses (EDAN) to support basic needs assessments following a disaster event.²⁰

Assessments and Incident Action Planning: Assessment outcomes are generally a key driver behind incident action planning. SEN coordinates with the relevant organizations and authorities to advance assistance and resources for emergency management.²⁰

Stakeholder Engagement in the Assessment Process: Multi-stakeholder engagement is not required, but it is common. No official requirement exists for stakeholder involvement in disaster assessments, but assessments typically do engage all relevant DM stakeholders.²⁰



INFORMATION COLLECTION, MANAGEMENT, AND DISTRIBUTION

Data Collection and Storage Standards: No official data standards exist for Paraguay. Official standards have not been established for data collection and storage in Paraguay.²⁰

Format of Data: Data are not primarily in digital format at the national or departmental levels. Data exist in hard-copy format and have not been digitized. SEN does have access to spatial data from the Atlas de Riesgos de Desastres de la República del Paraguay, but there is currently no repository for the data, and the data are not easily readable.^{20,45}

Data Sharing: Data sharing is informal and inconsistent and is not typically shared between different levels of government. Data sharing between government agencies is facilitated by official request. However, data are often not readily available or accessible for sharing between agencies or different levels of government.²⁰

GIS-Based Data Management System to Leverage a Common Operating Picture: A central information system and common operating picture (COP) capabilities are in development. GIS capacity exists. Currently, a centralized repository for data storage and a web-based application for viewing and accessing data do not exist for Paraguay. However, Parque Tecnológico Itaipu (PTI) is in the process of developing a national geoportals and consolidating all available data into one geodatabase. PTI is also working to establish protocols for data formatting and exchange.^{20,46}

Disaster Database Linked to the National Statistics Agency: Disaster loss information is collected, but it is not linked to the national statistics system. SEN maintains a database with disaster loss statistics.²⁰ However, this database is not shared directly with the INE.²⁰

Facilitation of Information Sharing: DM information sharing occurs through disparate systems or platforms. The majority of DM information sharing occurs informally via WhatsApp groups, social media platforms, and email. Information sharing between government organizations is facilitated through official data requests, or data-sharing agreements.^{20,38}



MEDIA AND PUBLIC AFFAIRS

Public Information Officer: Paraguay utilizes a single point of contact for public affairs across all government DM functions. SEN is assigned responsibility for communicating information related to emergencies

and disasters to Paraguay's population, including responsibility for issuing informational press bulletins to the public regarding disaster events.⁹

Documented Communications Strategy: Communications strategies are articulated in a more general strategic instrument. Although a formalized communications strategy has not been established, Paraguay's general communications strategy for related to emergencies and disasters emergencies and disasters, SEN is responsible for issuing informational press bulletins to the public regarding disaster events.⁹

Dedicated Media Briefing Space: The jurisdiction provides a dedicated media briefing space co-located or close to the DM facility. Three dedicated media briefing spaces are maintained: the Minister's office, the Emergency Operations Center (COE), and the Auditorium Hall. All three spaces are co-located at SEN's headquarters in Asunción and are accessible to the media and the general public.²⁰

Media Training: Media training on disaster-specific communication is offered to key officials and government leadership. Media training is offered to all personnel involved in DM with training available throughout the year at SEN headquarters in Asunción, as well as at departmental and municipal offices by request.²⁰

Information Dissemination Formats: Processes exist to obtain and disseminate public information in multiple formats and through multiple channels. SEN is responsible for communicating information related to emergencies and disasters, including responsibility for issuing informational press bulletins to the public regarding disaster events.⁹

Pre-scripted Information Bulletins: Pre-scripted information bulletins have been developed for all major hazards. SEN's Early Warning Department under the Directorate of Management and Control of Information holds responsibility for the preparation of informational bulletins. Bulletins are disseminated by SEN's Directorate of Communication and Public Information.²⁰

Public Information Audiences: Public information capabilities address a uniform audience in their methods and messaging. Public information capabilities are addressed to a broad audience.²⁰

Tracking Publicly Generated Information: Publicly generated information is tracked and used, but no dedicated policies or procedures exist to do so. SEN's internal processes facilitate the tracking and use of publicly generated information (e.g., social media).⁹



NATIONAL RECOMMENDATIONS

NATIONAL RECOMMENDATIONS

The following national recommendations are presented based on the findings of Paraguay's National Disaster Preparedness Baseline Assessment, conducted by the Pacific Disaster Center in coordination with SEN and other disaster management stakeholders in Paraguay. The recommendations focus on strengthening the culture of disaster risk reduction through comprehensive disaster management and disaster risk governance.

1

ADVANCE THE IMPLEMENTATION OF NATIONAL PLATFORMS FOR CLIMATE CHANGE ADAPTATION AND SUSTAINABLE DEVELOPMENT THROUGHOUT PARAGUAY.

- Develop national projects to promote Paraguay's climate change adaptation legislation and align Paraguay's strategies with international climate change adaptation goals and objectives. Requirements to establish plans for each phase of disaster management.
- Include all relevant stakeholders in the Sustainable Development Goals Commission for the implementation and monitoring of Paraguay's commitments related to the sustainable development goals (SDGs), in order to encourage wider awareness of and alignment with the SIGOB Platform.
- As outlined in the 2018 update of Paraguay's National Policy for Disaster Risk Management and Reduction, continue to integrate national platforms for disaster risk reduction, climate change adaptation, and sustainable development through inclusive stakeholder collaboration, policy alignment, and project development.

2

FORMALIZE THE ENGAGEMENT OF NON-GOVERNMENTAL STAKEHOLDERS, INCLUDING THE PRIVATE SECTOR, IN DISASTER MANAGEMENT AND DISASTER RISK REDUCTION INITIATIVES.

- Promote non-governmental stakeholder partnership through continuous collaboration with SEN and other relevant government agencies for all phases of disaster management.
- As outlined in Law 2615 and its Regulations, expand the execution of public-private partnerships (PPPs) beyond the public works sector to encourage consistent private sector support for and engagement in disaster management and disaster risk reduction initiatives.
- Encourage the development of formal non-governmental organization associations with established and active membership of NGOs, with and without defined disaster management program areas or missions, in coordination with SEN.

3

STRENGTHEN DISASTER MANAGEMENT LEGISLATION TO FACILITATE THE DEVELOPMENT OF A COMPREHENSIVE DISASTER MANAGEMENT SYSTEM FOR THE COUNTRY.

- Prioritize an implementation timeline as outlined in Decree No. 11632 and Decree No. 3713.
- Explicitly integrate vertical cooperation mechanisms and a means to conduct requisition of human and material resources during disaster events into disaster management legislation, to compliment the disaster declarations process.
- Consider the inclusion of provisions related to exports, price fixing, evacuation, and curfew during a state of emergency beyond the granting of credits to finance public expenses “on the margin of the budget,” as outlined in the Constitution.
- Coordinate activities and requirements, including code enforcement, land use regulations, and sustainable development practices, for all legislation that guides or supports disaster risk reduction.

4

INCREASE FINANCIAL RESOURCES DESIGNATED FOR DISASTER MANAGEMENT THROUGH THE STRATEGIC DIVERSIFICATION OF FUNDS.

- **Identify non-traditional sources of funding to supplement the national disaster management budget and ensure coverage of:**
 - Programmatic costs;
 - Administration and operational needs;
 - Training, education, and research and development, as outlined in Law 2615 and Decree No. 11632; and
 - Sufficient capacity development support for lower level jurisdictions in coordination with SEN as outlined in Law 2615.
- **Diversify disaster management funding streams including:**
 - Recurring grant programs for preparedness and disaster risk reduction;
 - Catastrophic risk insurance related to disasters for the public sector;
 - Low-interest loan programs for coverage of recovery expenses for a diverse range of stakeholder groups; and
 - Microfinance credit schemes and expedited remittances through formalized arrangements and structures.

5

BUILD COMPREHENSIVE DISASTER MANAGEMENT AND RISK REDUCTION STRATEGIES TO ALIGN WITH SUSTAINABLE DEVELOPMENT AND CLIMATE ADAPTATION.

- Formally integrate national goals and policies in sustainable development, disaster management, and climate adaptation to unify resilience efforts in Paraguay.
- Institute regular reviews of and updates to plans and policies in coordination with all relevant disaster management stakeholders, including non-governmental organizations and the private sector.
- Expand disaster management guidance beyond SEN's four-volume "toolbox" to include facilitated support from SEN technical staff for the full spectrum of disaster management stakeholders.

6

BROADEN PLANS TO INCLUDE CONTINUITY OF OPERATIONS AND LONG-TERM RECOVERY.

- Formally integrate national goals and policies in sustainable development, disaster management, and climate adaptation to unify resilience efforts in Paraguay.
- Institute regular reviews of and updates to plans and policies in coordination with all relevant disaster management stakeholders, including non-governmental organizations and the private sector.
- Expand disaster management guidance beyond SEN's four-volume "toolbox" to include facilitated support from SEN technical staff for the full spectrum of disaster management stakeholders.

7

INCREASE PUBLIC ORGANIZATION AND ENGAGEMENT IN DISASTER MANAGEMENT EFFORTS THROUGHOUT PARAGUAY.

- Institutionalize public engagement in disaster management at all levels of government via community exercises, neighborhood watch or planning groups, community emergency response teams and brigades, and other relevant activities to promote public awareness and support for disaster management.
- Encourage private sector and business community engagement in disaster management exercises, events, and trainings through official requirements for participation and business continuity planning for emergency situations
- Incorporate household and individual disaster preparedness surveys and assessments into SEN's planning and operations, with staff trained and designated to assess adequate preparedness levels for the population.

8

INSTITUTIONALIZE PARAGUAY'S UNIFIED COMMAND SYSTEM AND STRUCTURES AS A STANDARD OF PRACTICE DURING DISASTER EVENTS OF ALL SIZE AND SCOPE.

- Identify and document Unified Command leadership for all major hazards to minimize confusion regarding incident management roles and responsibilities.
- Enable transparent and expedited integration of non-governmental and private sector resources into response activities through standardized incident management practices to promote effective interagency coordination.

9

INCREASE THE CAPACITY FOR EMERGENCY OPERATIONS.

- Update Asunción-based EOC equipment and technology to increase Internet bandwidth and network connectivity for operations support.
- Establish a permanent backup EOC facility with the capacity to support staff on a 24/7 basis for major response operations.
- Strengthen the national communications system for warnings and crisis communication, including the Portable Communications System, in coordination with the Paraguayan Army and SEN to promote full communications interoperability nationwide in the event of a disaster.
- Develop and implement a responder credentialing system for Paraguay, and ensure this system is routinely tested during disaster events.

10

INCREASE THE CAPACITY FOR EMERGENCY OPERATIONS.

- Institutionalize routine documentation and review of disaster-relevant resources, stockpiles, and equipment in a centralized, digital inventory.
- In coordination with the Ministry of Education and Sciences (MEC), identify and designate emergency shelters with the capacity to serve 100 percent of anticipated shelter needs, as outlined in the 2005 National Disaster Response and Disaster Risk Reduction Plan.
- Establish official procedures to ensure that all shelters are assessed for suitability and specially equipped for disaster use.

11

MAINTAIN SUFFICIENT COMMODITY AND SUPPLY INVENTORIES TO ADEQUATELY SUPPORT POST-DISASTER NEEDS OF THE POPULATION.

- Utilize scenario-based planning to estimate post-disaster commodity needs (e.g., food, water, pharmaceuticals) for the population.
- Increase resource stockpiles to levels sufficient to meet anticipated needs for the population in the event of a disaster, and ensure these stockpiles are appropriately distributed throughout the country according to assessed risk.
- Establish and institutionalize the organization and management of all disaster management resources and supply inventories through a digitized central information system, which is regularly reviewed and updated.

12

BUILD HUMAN RESOURCE CAPACITIES IN SUPPORT OF NATIONWIDE DISASTER MANAGEMENT EFFORTS.

- Recruit and train additional staff dedicated to emergency management. .
- Formalize and diversify the identification of surge staffing resources from throughout the disaster management stakeholder community, including non-governmental organizations, the private sector, and other government agencies, through the National Volunteer Council initiative.
- Promote the development and use of city pairing arrangements and other similar mechanisms to address disaster-related technical staffing requirements.

13

STRENGTHEN NATIONWIDE SUPPORT FOR FUNCTIONAL CAPABILITIES DIRECTLY RELATED TO EFFECTIVE DISASTER MANAGEMENT POLICIES AND PROCEDURES.

- Align support for functional capabilities with objectives outlined in the 2005 National Disaster Response and Disaster Risk Reduction Plan, including the prioritization
- and implementation of:
 - Psychosocial recovery, in coordination with the Directorate of Charity and Social Assistance (DIBEN) and the Paraguayan Red Cross;
 - Evacuation support at both the national and subnational levels, in coordination with the Ministry of the Interior – National Police and including the development of dedicated national and subnational evacuation plans.
 - HAZMAT response, in coordination with the HAZMAT regulation authority, ARRN.
 - Disaster-related needs of the agriculture sector, in coordination with the Ministry of Agriculture and Livestock (MAG), the national Agricultural Policy, and the National Plan for Disaster Risk Management and Adaptation to Climate Change in the Agricultural Sector of Paraguay 2016-2030.

14

INCREASE DISASTER MANAGEMENT AND DISASTER RISK REDUCTION TRAINING AND EDUCATION OPPORTUNITIES NATIONWIDE.

- Designate specific training facilities in both a centralized location and throughout the country to facilitate equitable training coverage for all stakeholders.
- Prioritize funding for dedicated training staff and resources at both the national and departmental levels through SEN's Department of Training under the Dirección General de Gestión de Riesgos.
- Increase availability of training through the development of a structured annual training schedule and catalog that supports comprehensive training throughout the year.
- Establish a training curriculum for a diverse audience of stakeholders, through partnerships with academic and non-governmental actors, to address a comprehensive and expanding set of training and education requirements for the country's disaster management and disaster risk reduction needs
- Establish a formal exercise program with dedicated staff coordinated by SEN's Department of Training.
- Develop and implement a structured annual exercise program with required participation from all government agencies with disaster management functions in Paraguay.
- Utilize the recently updated National Education Plan for Risk Management (PNEGER) to develop and implement an official disaster management education program for Paraguay's K-12 schools through the Ministry of Education and Sciences (MEC), to increase public awareness and preparedness, including local community centers and private sector partners.

15

ENHANCE MONITORING AND EVALUATION PRACTICES FOR PLANS, SOPS, AND LEGISLATION.

- Standardize procedures to guide routine evaluation and revision of legislation – including plans, strategies, and standard operating procedures (SOPs) – by SEN according to an established timeline.
- Use evaluation outcomes to improve plans, policies, and SOPs.

16

ESTABLISH A STANDARD RISK ASSESSMENT PROCESS, INCLUSIVE OF RISK MAPPING REQUIREMENTS FOR THE NATIONAL AND SUBNATIONAL LEVELS.

- Utilize training to ensure nationwide communication of and adherence to a standard risk assessment standard.
- Formalize requirements for risk assessment and risk mapping at all levels of government.
- Recruit and train additional staff for the fulfillment of comprehensive risk assessment and risk mapping needs at both the national and subnational level.
- Formalize the inclusion of climate change criteria in risk assessments through collaboration with relevant stakeholders, particularly through research associations with the academic and private sectors. Align with national and international climate change adaptation strategies.
- Align risk assessment practices with mandates outlined in Decree No. 11632/13, which calls for the inclusion of empirical and ancestral knowledge in the collection of data and information for Paraguay.
- Support Parque Tecnológico Itaipu (PTI) in the ongoing development of a centralized geoportal for the country and, once complete, conduct training to institutionalize access to and use of this system by all relevant stakeholders to support risk assessment reporting.
- Institutionalize methods and standards for effective data collection and storage at lower levels of government, to increase the availability and quality of base data for effective risk mapping at both the national and subnational level.
- Endorse the use of risk assessment results to support evidence-based decision making in all phases of disaster management as well as Paraguay's development processes.

17

STRENGTHEN NATIONAL HAZARD MONITORING CAPACITY.

- Institutionalize coordination between agencies tasked with monitoring responsibilities for major hazards.
- Prioritize the necessary updates for the country's Doppler radar and associated hazard monitoring systems to facilitate nationwide coverage, as well as the consistent availability of reliable and timely hazard information.
- Develop and implement an official early warning system with nationwide coverage and inclusive of standard procedures to facilitate notification and early warning.
- Build capacity to target specific locations and populations, including vulnerable groups, according to risk.
- Implement routine testing of the early warning system, as well as training and education to enhance awareness of and appropriate responses to warnings by the population.
- Increase early warning notification capacity through the expansion of communication platforms, including mobile phones and sirens.

18

INSTITUTIONALIZE STANDARDS FOR DAMAGE AND NEEDS ASSESSMENTS.

- Conduct training at the national, departmental, and municipal levels to ensure that post-disaster assessments and data are standardized and compatible.
- Establish official requirements for non-governmental stakeholder involvement in disaster assessments to promote greater interagency collaboration.

19

FORMALIZE AND INCREASE DATA AND INFORMATION SHARING AT ALL LEVELS OF GOVERNMENT THROUGH THE DIGITIZATION OF DATA.

- Establish a formal link between SEN's disaster loss statistics database and INE disaster-related statistics database, to increase data transparency and interagency communication.

20

DEVELOP AND IMPLEMENT A FORMALIZED COMMUNICATIONS STRATEGY.

- Expand SEN's public information capacity to include the capability to communicate with special-needs and vulnerable populations.
- Establish a dedicated policy for the tracking and use of publicly generated information, including social media, for disaster management purposes.

21

PLAN FOR INCREASING POPULATION PRESSURES.

- Closely monitor population changes to anticipate resource constraints that could increase risk of crime, conflict, or hazard.
- Consider specific resource and infrastructure constraints of localities to support sustainable development. Engage local stakeholders, including vulnerable and marginalized groups, to promote equity.
- Ensure building codes properly reflect hazard zones and are enforced to prevent crowding and reduce risk in disaster-prone areas. Work to build new infrastructure that uses the latest technology and international best practices to reduce environmental impacts.
- Ensure that health care capacities reflect existing vulnerabilities and resource gaps, as well as changes to population dynamics. Use evidence-based decision making to shift resource allocations and fund new construction.

22

MITIGATE ENVIRONMENTAL STRESS.

- Promote sustainable agriculture through agroforestry projects, including incentives for international best practices in sustainable farming.
- Pilot new agricultural projects to determine effective ways to adjust to specific regional climate change impacts and meet the demands on agricultural resources.
- Monitor the effects of deforestation on hazard susceptibility and frequency. Promote water and soil conservation to reduce the impacts of climate change.
- Balance the tradeoffs between forest protection and economic development, considering innovative practices to reduce overall environmental impacts.

23

REDUCE MARGINALIZATION AND PROMOTE GENDER EQUALITY.

- Continue efforts to monitor and reduce gender-based discrimination and bias. Promote policies that support economic and educational opportunities for women, including equal income, employment, and access to credit.
- Actively engage women and other marginalized groups in disaster management and community plans. Provide equal opportunities throughout society to reduce disparities and incorporate feedback mechanisms into policies and programs to ensure effective implementation.

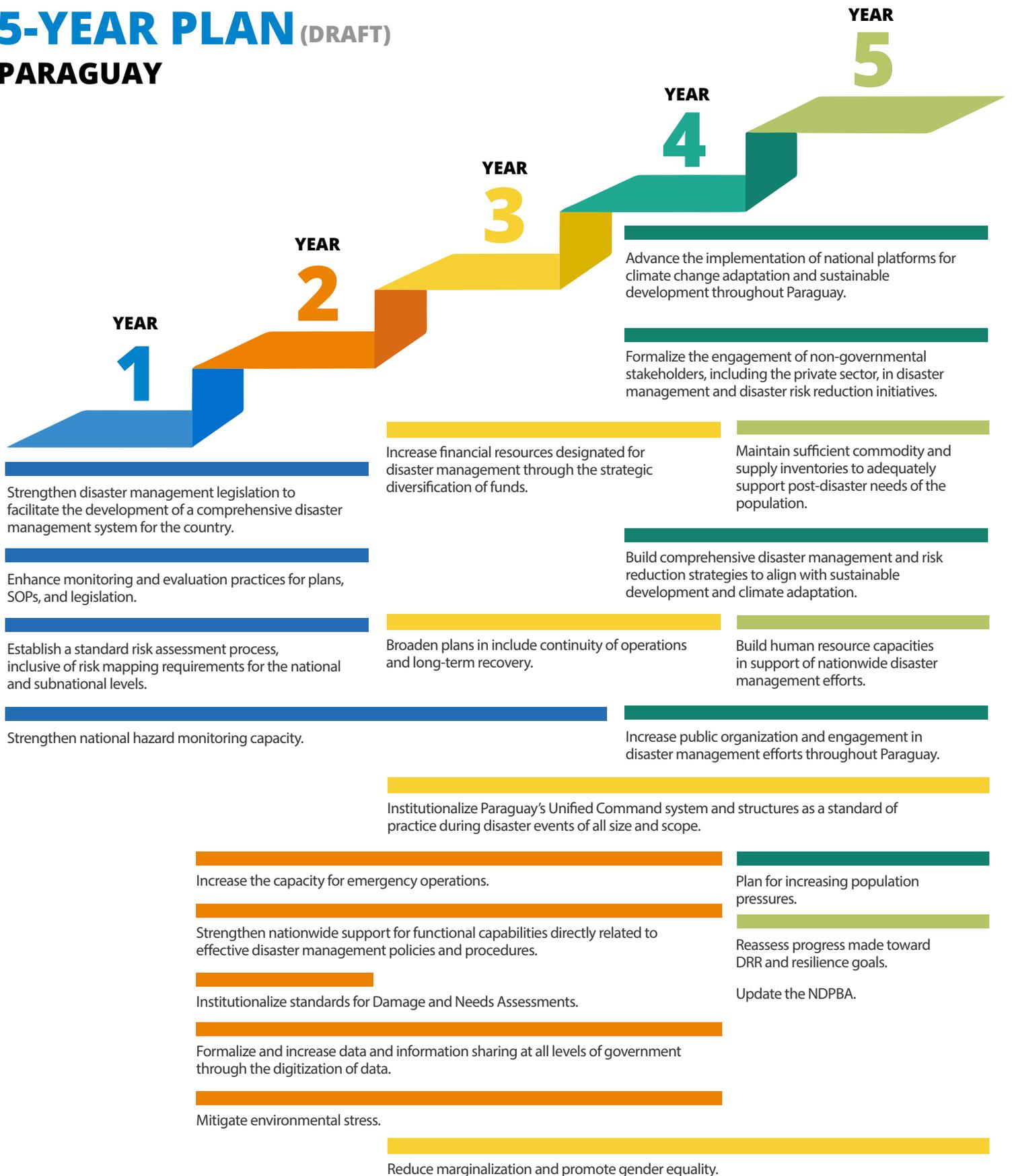
24

REASSESS PROGRESS MADE TOWARD DRR AND RESILIENCE GOALS.

- Update the NDPBA, including both the RVA and DMA analyses, to track progress toward reducing vulnerabilities, increasing coping capacities, and building disaster management capabilities in support of Paraguay's Disaster Risk Reduction and Sustainable Development Goals for a more resilient nation.

5-YEAR PLAN (DRAFT)

PARAGUAY





DEPARTMENT RISK PROFILES

SUBNATIONAL ASSESSMENT RESULTS

Download Province Risk profiles:
<https://www.pdc.org/ndpba-pry-department-profiles>

DEPARTMENT RISK PROFILES

The subnational report developed for each department offers a more detailed understanding of risk in Paraguay. These are provided separately from this report (linked to the left) and include drivers of vulnerability, coping capacity, and resilience; a comparison of each department with the overall country; and strategic, data-driven, actionable recommendations.

Each departmental recommendation looks at one of the top four drivers of resilience through the lens of the existing national disaster management structure in Paraguay. The recommendations are designed to be concise, actionable, and supported by the data.

APPLYING RESULTS

Characterizing risk in terms of multi-hazard exposure, vulnerability, and coping capacity, the RVA provides necessary justification to support policy decisions that will protect lives and reduce losses from disasters. The RVA results allow decision makers examine the drivers of risk for each district in Paraguay, providing evidence to support the identification, assessment, and prioritization of investments that will have the greatest impact on disaster risk reduction. The NDPBA RVA results establish a subnational foundation for monitoring risk and vulnerability over time and enhance the DRR decision making process through improved access to temporal and spatial data for all districts in Paraguay.



NDPBA

APPENDIX A

RVA METADATA

Download Appendix A:

<https://www.pdc.org/ndpba-pry-appendix-a>



NDPBA

APPENDIX B

DMA SURVEY RESULTS

Download Appendix B:

<https://www.pdc.org/ndpba-pry-appendix-b>

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