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Nicaragua Department Profiles

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

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Boaco

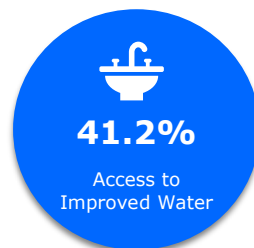
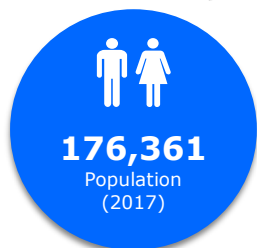
**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

Department: Boaco

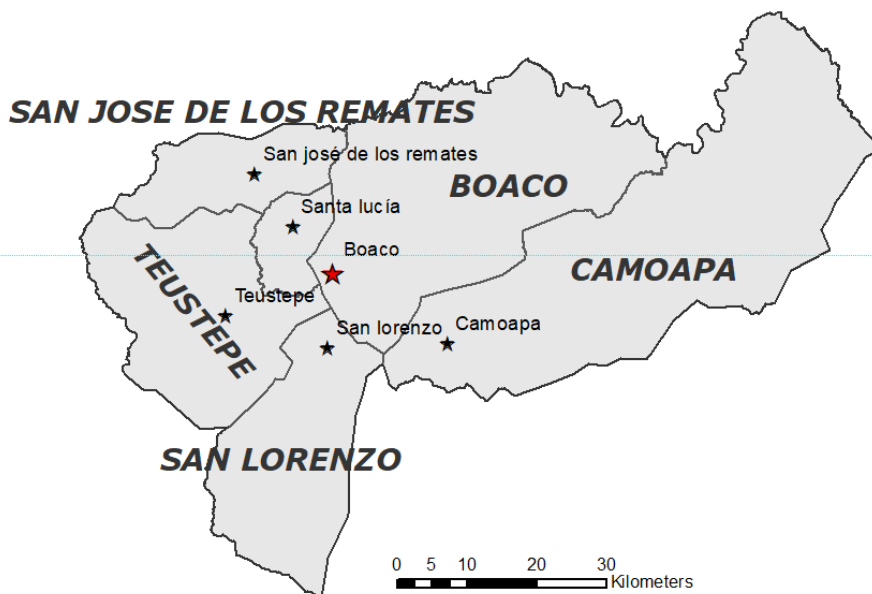
Department Capital: Boaco

Area: 4,177 km²

Located in central Nicaragua, Boaco features the mountain Monolito de Quizaltepe, as well as thriving agriculture, cattle, and craft industries.



Municipality	Population
San José de los Remates	8,447
Boaco	61,051
Camoapa	39,533
Santa Lucía	9,060
Teustepe	32,027
San Lorenzo	26,243



**Multi-Hazard Risk Rank:
Low (13 of 17)**

**Lack of Resilience Rank:
Medium (8 of 17)**

RVA Component Scores

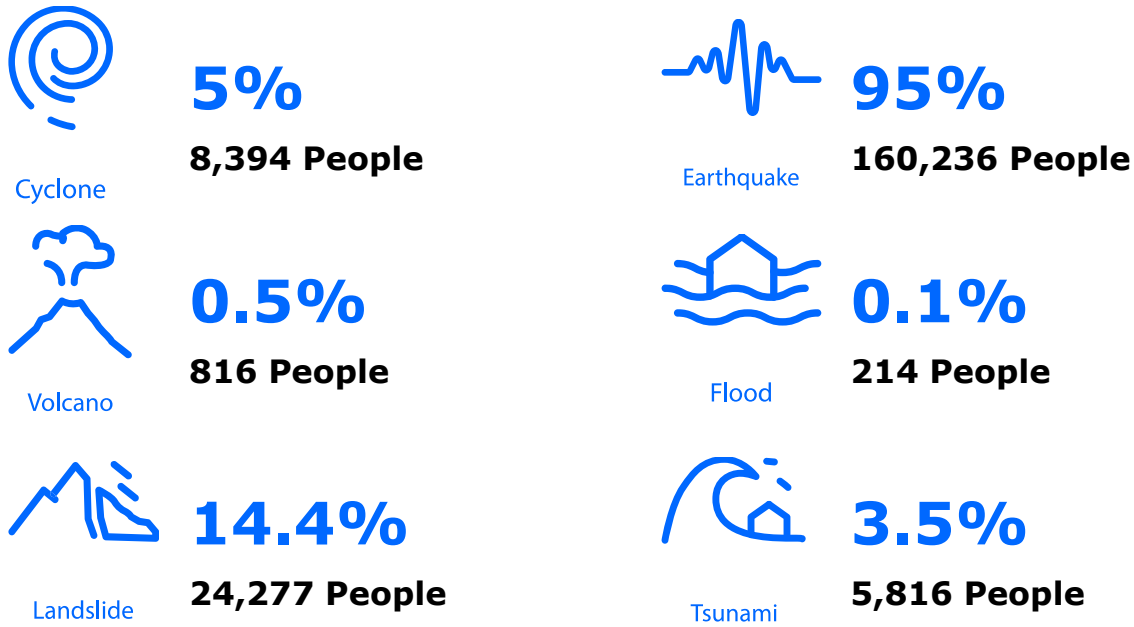
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Medium		Low		Medium		Very Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.437	13	0.555	8	0.199	13	0.492	8	0.382	14

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 13 of 17 Departments (Score: 0.199)

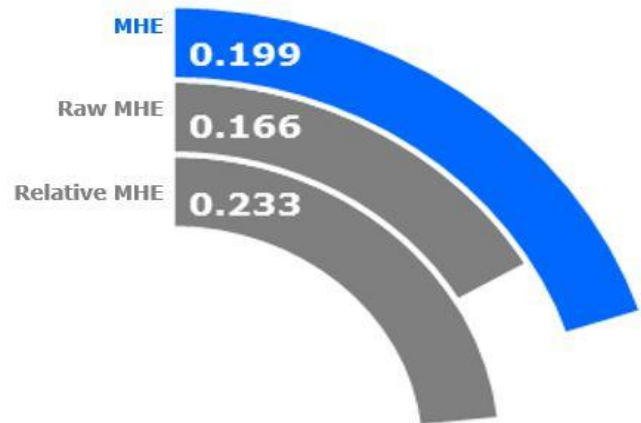
Table 2. Estimated ambient population² exposed to each hazard



Case Study: Clean Water, Sanitation & Education

El Porvenir (NGO in Nicaragua) is working to enhance the resilience of women and young children through integrated clean water projects. El Porvenir works with local communities to ensure that Boaco's watershed remains protected and sustainable. The organization is also working with schools to teach children basic health, clean water, and water management practices.

<https://www.ngoaidmap.org/projects/17857>



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 8 of 17 Departments (Score: 0.492)

Vulnerability in Boaco is primarily driven by Gender Inequality, Economic Constraints, and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

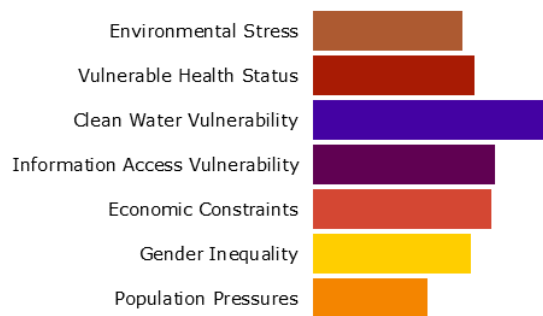









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	45.2% Province at Drought Risk	11.5% Erosion Risk	101.0 Livestock per km ²		
	Vulnerable Health Status	12.0 Infant Mortality Rate	49.1 Maternal Mortality Rate	74.5 yrs Average Life Expectancy	1.6% Acute Malnutrition (Children < 5)	3.5% Population Disabled
	Clean Water Vulnerability	41.2% Households with Access to Improved Water	20.1% Households with Access to Flush Toilets			
	Information Access Vulnerability	34.8% Illiteracy	4.8 yrs Average Years of Schooling	88.1% Primary School Enrollment	95.0% Households without Internet	34.7% Households without TV 42.1% Households without Radio
	Economic Constraints	61.1 Economic Dependency Ratio	75.9% Population in Poverty			
	Gender Inequality	41.7% Female Seats in Government	1.09 Female to Male Secondary Education Enrollment	0.53 Female to Male Labor Ratio		
	Population Pressures	1.86% Average Annual Population Change	2.63% Average Annual Urban Population Change			

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 14 of 17 Departments (Score: 0.382) Boaco exhibits weaker Coping Capacity in the areas of Environmental Capacity and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

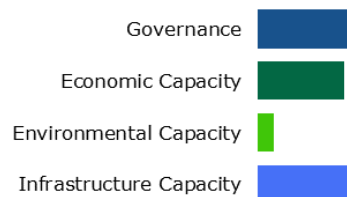


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	6.6% Households that Receive Remittances	93.2% Employment Rate (Male)	43.4% Employment Rate (Female)	15.3% Population in Highest Welfare Quintile	\$261.8 Annual Nominal Global Revenue per Capita	
	Governance	88.0% Crime Complaints Cleared	1018.6 Crime Rate per 100k Persons	81.3% Households without Garbage Collection	47.0% Voter Participation (2016 Election)		
	Environmental Capacity	7.4% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		9.0 Hospital Beds per 10,000 Persons	12.3 Nurses per 10,000 Persons	7.8 Physicians per 10,000 Persons	22.3 km Average Distance to Nearest Hospital	86.6% Children Completed Immunization Schedule
	Communications Capacity		9.8% Households with Access to Fixed Phone Line	72.7% Households with Access to Mobile Phone			
	Transportation Capacity		58.3 km Average Distance to Nearest Port or Airport	0.29 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 8 of 17 Departments (Score: 0.555)

Boaco's score and ranking are due to medium Vulnerability combined with very low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



**Clean Water
Vulnerability**



**Economic
Capacity**



Governance

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 13 of 17 Departments (Score: 0.437)

Boaco's score and ranking are due to low Multi-Hazard Exposure combined with medium Vulnerability and very low Coping Capacity scores.

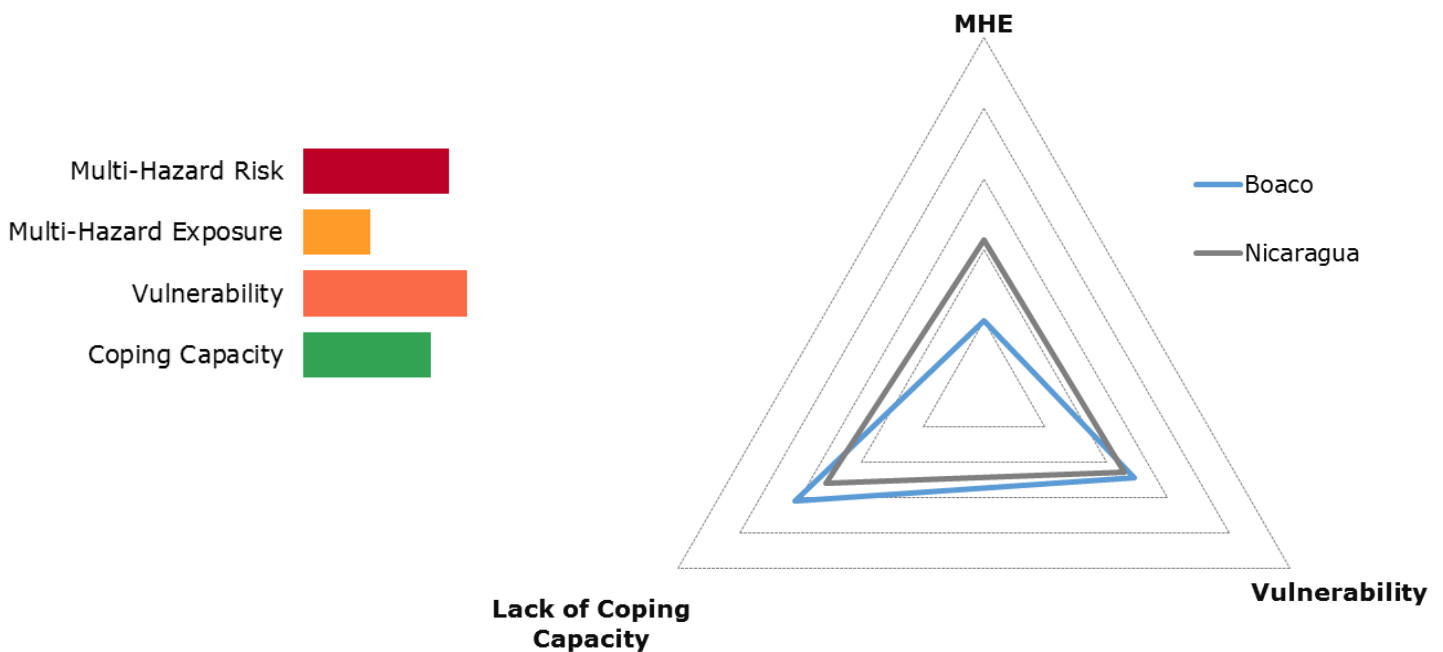


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Low population pressures

Ranked 11 of 17 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Recommendations

01

Reduce clean water vulnerability

Invest in public water and sewer infrastructure to ensure equitable access to safe, clean drinking water and sanitation.

02

Increase economic capacity

Foster small-business development and invest in business education and human capital to raise economic stability.

03

Improve governance

Provide additional support for local police, firefighters, and emergency medical resources to improve public safety and increase crime clearance rates. In addition, promote civic engagement and voter participation in local and national elections to improve public voice and accountability. Finally, seek partnerships with the private sector to increase the provision of services, such as garbage collection.



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Carazo

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

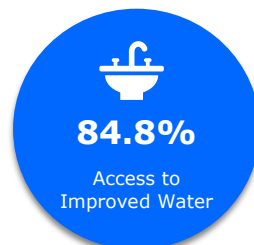
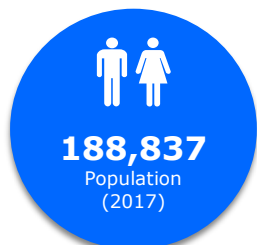
Department: Carazo



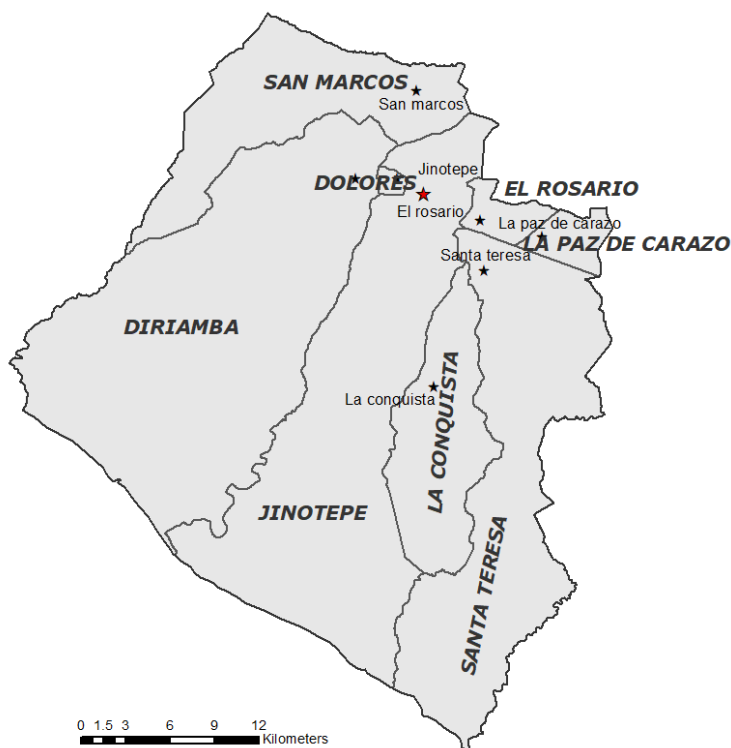
Department Capital: Jinotepe

Area: 1,081 km²

Carazo is located on the Pacific Coast of Nicaragua and is known for its sea-turtle wildlife reserves, volcanic rock quarries, and agricultural production.



Municipality	Population
San Marcos	32,671
Jinotepe	47,616
Dolores	8,488
Diriamba	64,647
El Rosario	7,616
La Paz de Carazo	5,658
Santa Teresa	18,098
La Conquista	4,043



**Multi-Hazard Risk Rank:
Medium (10 of 17)**

**Lack of Resilience Rank:
Low (11 of 17)**

RVA Component Scores

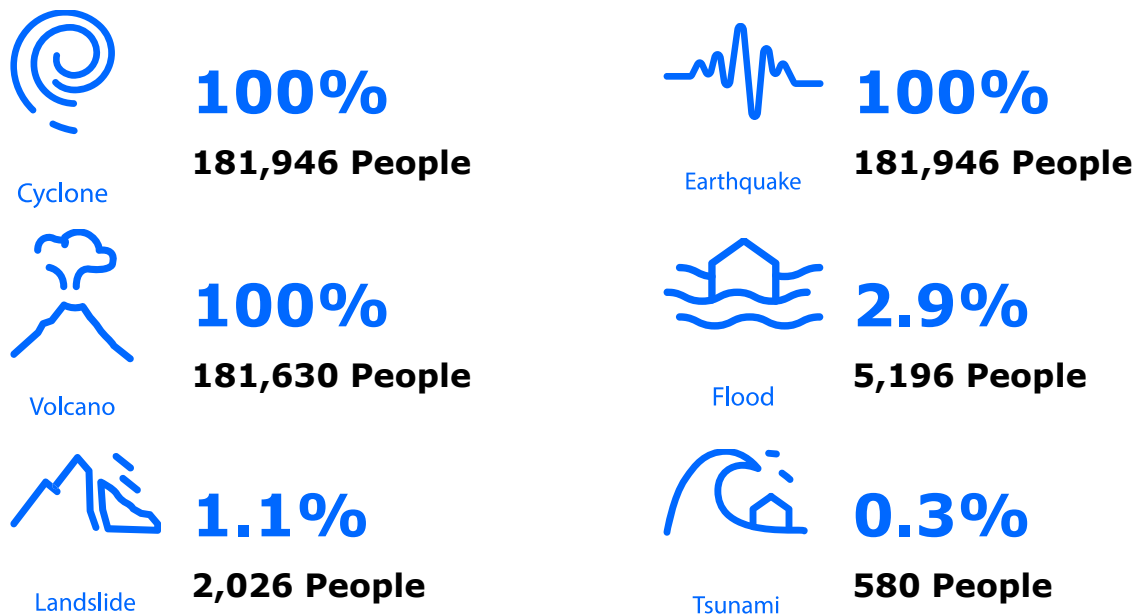
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Low		High		Low		Medium	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.469	10	0.388	11	0.632	6	0.322	13	0.546	7

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 6 of 17 Departments (Score: 0.632)

Table 2. Estimated ambient population² exposed to each hazard



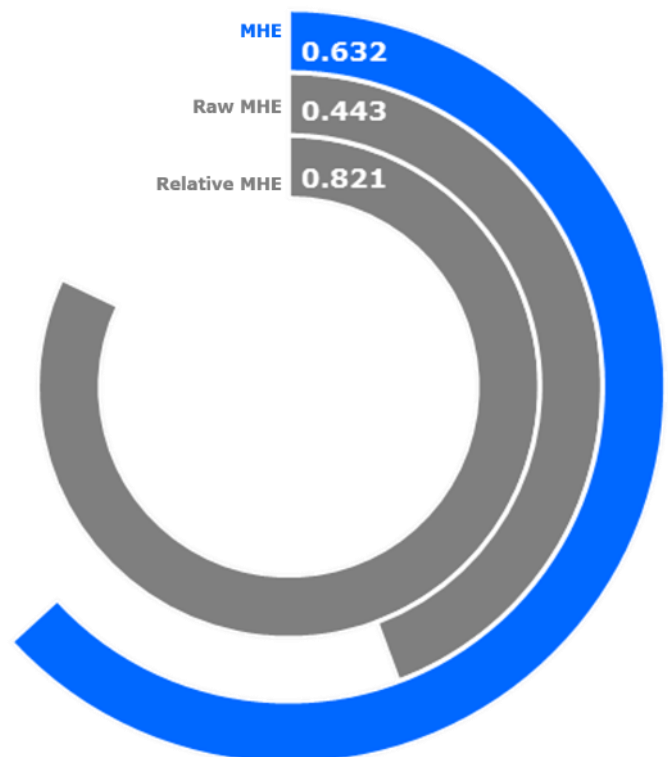
Case Study: Namotivas Development Program

World Vision is working in Carazo to improve the well-being of children using a long-term approach focused on the underlying causes of poverty.

Activities within the program include:

- Growing community gardens;
- Educating parents on childhood illness;
- Tutoring primary school students; and
- Training community members on emergency preparedness and other response activities.

<https://www.ngoaidmap.org/projects/14893>



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 13 of 17 Departments (Score: 0.322) Vulnerability in Carazo is primarily driven by Vulnerable Health Status and Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

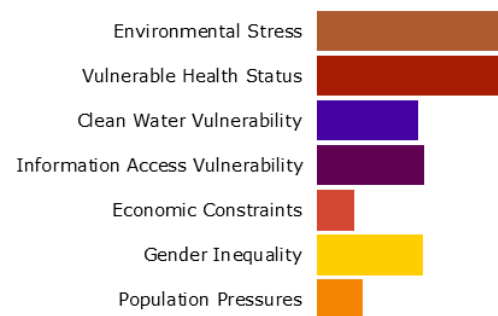


Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	100% Province at Drought Risk	30.0% Erosion Risk	69.3 Livestock per km ²			
	Vulnerable Health Status	15.0 Infant Mortality Rate	25.0 Maternal Mortality Rate	73.4 yrs Average Life Expectancy	3.3% Acute Malnutrition (Children <5)	2.9% Population Disabled	
	Clean Water Vulnerability	84.8% Households with Access to Improved Water	35.0% Households with Access to Flush Toilets				
	Information Access Vulnerability	16.2% Illiteracy	6.9 yrs Average Years of Schooling	88.4% Primary School Enrollment	94.8% Households without Internet	11.9% Households without TV	64.5% Households without Radio
	Economic Constraints	50.8 Economic Dependency Ratio	55.9% Population in Poverty				
	Gender Inequality	43.8% Female Seats in Government	0.86 Female to Male Secondary Education Enrollment	0.29 Female to Male Labor Ratio			
	Population Pressures	1.49% Average Annual Population Change	1.97% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 7 of 17 Departments (Score: 0.546) Carazo exhibits weaker Coping Capacity in the areas of Environmental Capacity and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

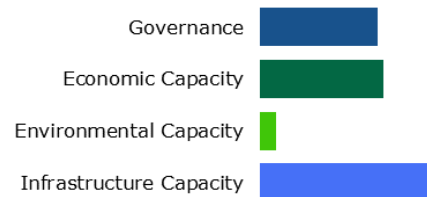


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	9.6% Households that Receive Remittances	83.0% Employment Rate (Male)	58.8% Employment Rate (Female)	23.4% Population in Highest Welfare Quintile	\$766.7 Annual Nominal Global Revenue per Capita	
	Governance	91.5% Crime Complaints Cleared	2172.3 Crime Rate per 100k Persons	53.3% Households without Garbage Collection	62.5% Voter Participation (2016 Election)		
	Environmental Capacity	7.3% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		13.8 Hospital Beds per 10,000 Persons	20.6 Nurses per 10,000 Persons	10.8 Physicians per 10,000 Persons	13.0 km Average Distance to Nearest Hospital	91.4% Children Completed Immunization Schedule
	Communications Capacity		12.5% Households with Access to Fixed Phone Line	79.3% Households with Access to Mobile Phone			
	Transportation Capacity		26.5 km Average Distance to Nearest Port or Airport	0.79 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 11 of 17 Departments (Score: 0.388)

Carazo's score and ranking are due to low Vulnerability combined with medium Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Governance



Environmental Capacity



Vulnerable Health Status

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 10 of 17 Departments (Score: 0.469)

Carazo's score and ranking are a product of high Multi-Hazard Exposure combined with low Vulnerability and medium Coping Capacity scores.

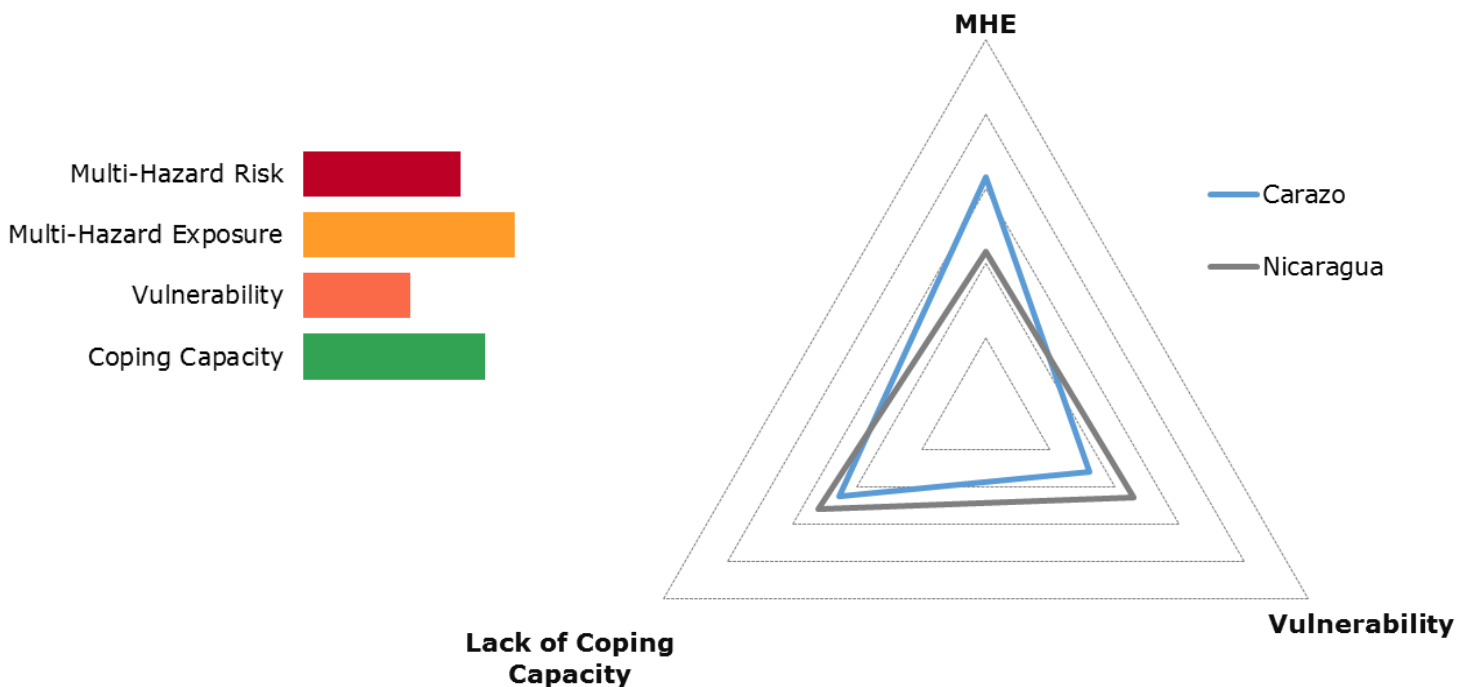


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Very low economic constraints

Ranked 16 of 17 departments, low economic constraints indicate that Carazo may be able to invest in additional mitigation and preparedness measures at the local and community level.



Highest overall infrastructure capacity

Ranked 1 of 17 departments, well developed infrastructure – communication, health care, transportation - facilitates the exchange of information, and physical distribution of goods and services to the population.



Very low population pressures

Ranked 14 of 17 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Recommendations

01

Invest in public safety and crime prevention

Provide additional support for local police, firefighters, and emergency medical resources to improve public safety and decrease crime rates.

02

Reduce vulnerable health status

Invest in public welfare services to decrease malnutrition, support the disabled population, and decrease infant and maternal mortality.



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Chinandega

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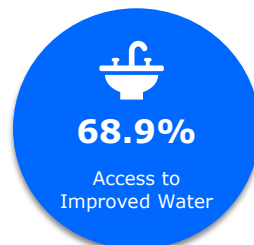
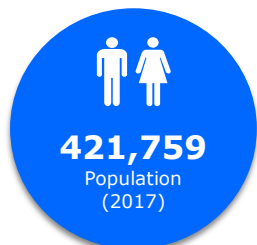
Department: Chinandega



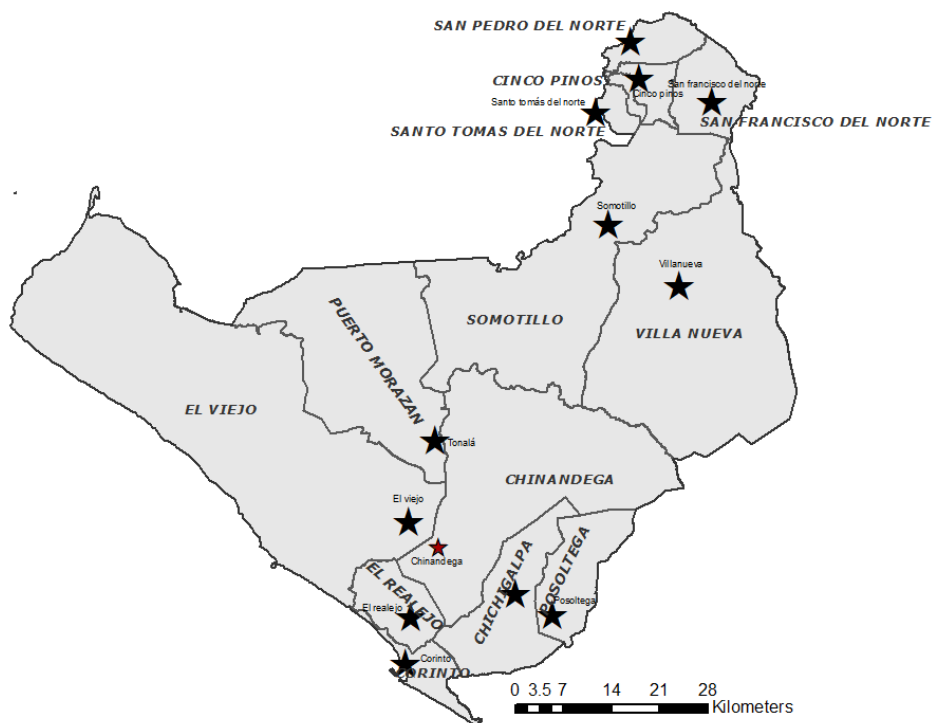
Department Capital: Chinandega

Area: 4,822 km²

Chinandega is a northwestern province located on the border with Honduras. Chinandega is primarily an agricultural department and is home to the country's largest sugar mills and rum factory.



Municipality	Population
San Pedro del Norte	5,146
San Francisco del Norte	7,340
Cinco Pinos	7,262
Santo Tomás del Norte	8,332
El Viejo	87,783
Puerto Morazán	16,152
Somotillo	33,223
Villanueva	28,400
Chinandega	133,808
El Realejo	10,008
Corinto	18,351
Chichigalpa	46,787
Posoltega	19,167



**Multi-Hazard Risk Rank:
High (7 of 17)**

**Lack of Resilience Rank:
Low (12 of 17)**

RVA Component Scores

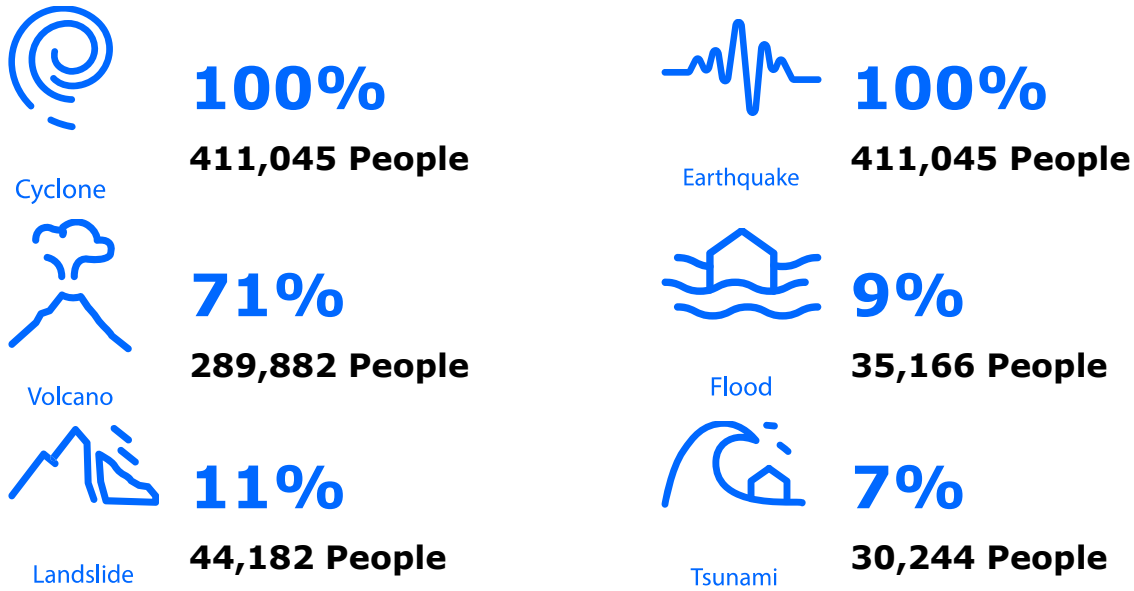
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Low		Very High		Low		High	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.494	7	0.376	12	0.729	3	0.329	11	0.577	6

Multi-Hazard Exposure (MHE)

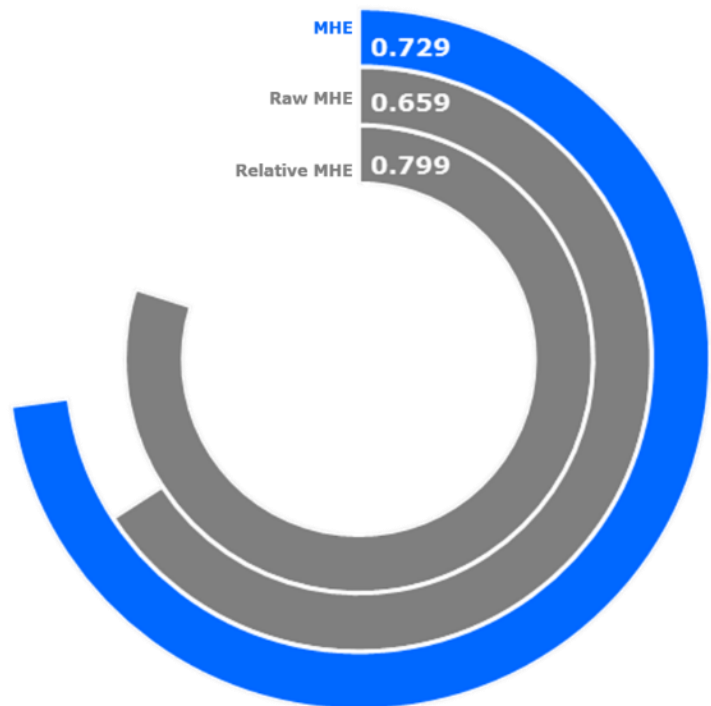
Multi-Hazard Exposure¹ Rank: 3 of 17 Departments (Score: 0.729)

Table 2. Estimated ambient population² exposed to each hazard



San Cristobal Volcano

The Department of Chinandega contains the highest, as well as one of the most active, volcanos in Nicaragua. San Cristobal Volcano, also known as El Viego, frequently experiences minor to mid-level eruptions. INETER monitors activity at San Cristobal routinely, and the Department of Chinandega is prepared for a major evacuation in the event of a significant eruption.



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 11 of 17 Departments (Score: 0.329) Vulnerability in Chinandega is primarily driven by Vulnerable Health Status and Population Pressures. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

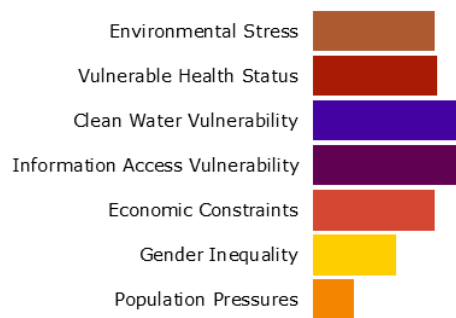









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	13.4% Province at Drought Risk	32.1% Erosion Risk	85.7 Livestock per km ²			
	Vulnerable Health Status	11.7 Infant Mortality Rate	10.4 Maternal Mortality Rate	71.9 yrs Average Life Expectancy	1.9% Acute Malnutrition (Children <5)	1.9% Population Disabled	
	Clean Water Vulnerability	68.9% Households with Access to Improved Water	29.3% Households with Access to Flush Toilets				
	Information Access Vulnerability	19.6% Illiteracy	5.9 yrs Average Years of Schooling	88.3% Primary School Enrollment	95.7% Households without Internet	20.7% Households without TV	63.1% Households without Radio
	Economic Constraints	56.8 Economic Dependency Ratio	68.2% Population in Poverty				
	Gender Inequality	42.3% Female Seats in Government	1.19 Female to Male Secondary Education Enrollment	0.34 Female to Male Labor Ratio			
	Population Pressures	1.33% Average Annual Population Change	2.08% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 6 of 17 Departments (Score: 0.577) Chinandega exhibits weaker Coping Capacity in the areas of Health Care and Communications Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

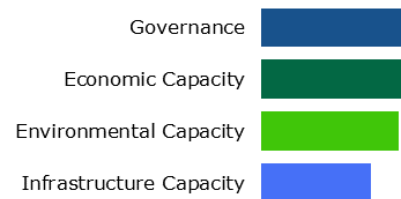


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	11.4% Households that Receive Remittances	82.1% Employment Rate (Male)	53.9% Employment Rate (Female)	14.5% Population in Highest Welfare Quintile	\$2,358 Annual Nominal Global Revenue per Capita	
	Governance	89.9% Crime Complaints Cleared	896.3 Crime Rate per 100k Persons	64.1% Households without Garbage Collection	68.6% Voter Participation (2016 Election)		
	Environmental Capacity	33.0% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		8.8 Hospital Beds per 10,000 Persons	14.9 Nurses per 10,000 Persons	8.4 Physicians per 10,000 Persons	20.5 km Average Distance to Nearest Hospital	82.4% Children Completed Immunization Schedule
	Communications Capacity		9.1% Households with Access to Fixed Phone Line	71.2% Households with Access to Mobile Phone			
	Transportation Capacity		36.2 km Average Distance to Nearest Port or Airport	0.30 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 12 of 17 Departments (Score: 0.376)

Chinandega's score and ranking are due to low Vulnerability combined with high Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Communications Infrastructure



Health Care Capacity



Transportation Infrastructure

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 7 of 17 Departments (Score: 0.494)

Chinandega's score and ranking are due to very high Multi-Hazard Exposure combined with low Vulnerability and high Coping Capacity scores.

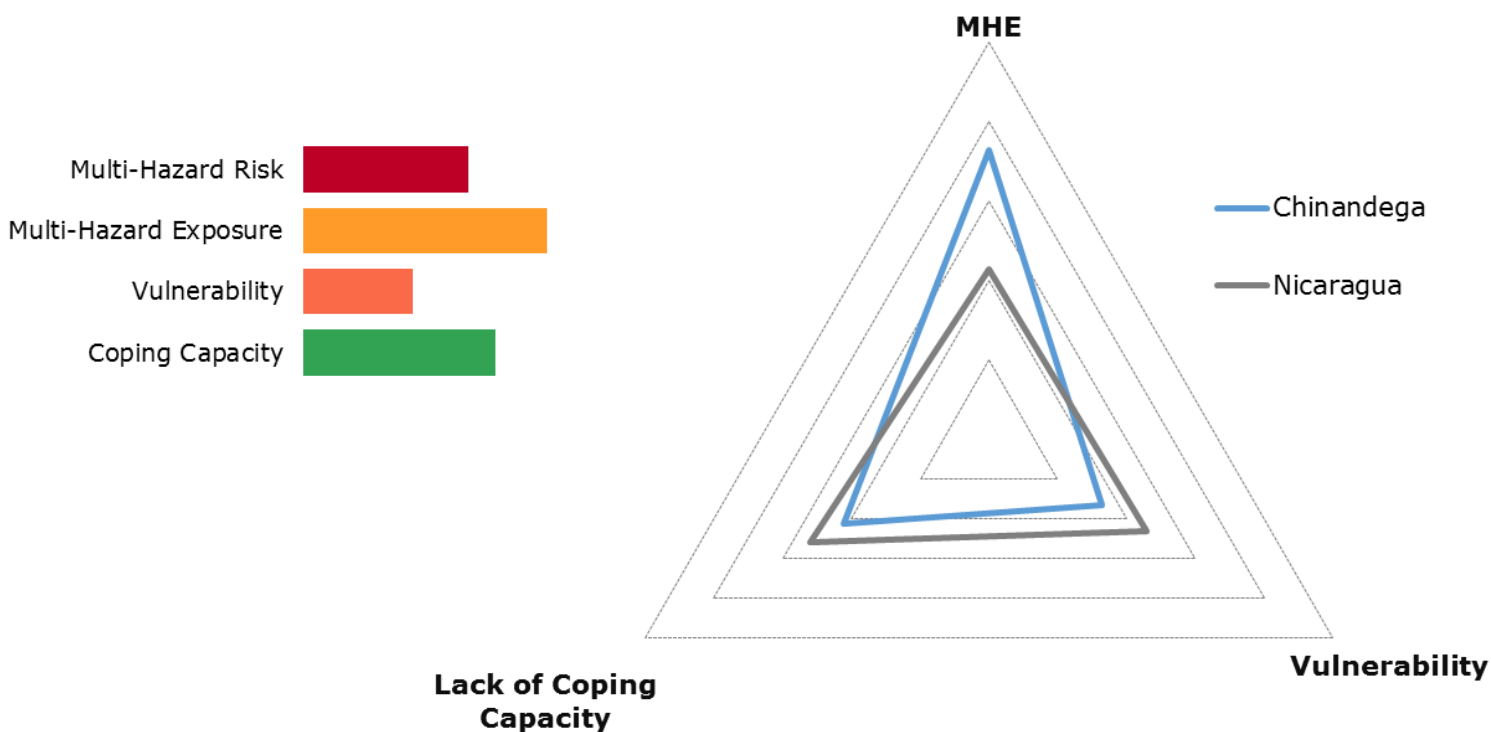


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Very low population pressures

Ranked 15 of 17 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.



High overall governance

Ranked 2 of 17 departments, high governance could facilitate the implementation of disaster management initiatives into departmental and municipal communities.

Recommendations

01

Invest in infrastructure

Similar to Matagalpa, limited infrastructure inhibits the capacity to communicate and exchange information, in addition to limiting the physical distribution of goods and services, and restricting access to health care in Chinandega. Health-care, transportation and communication infrastructures require upgrading and investment to increase connectivity and welfare in the department. Focused investments in these areas will increase coping capacity and resilience.

02

Institutionalize multi-hazard planning and education

Multi-Hazard Risk in Chinandega is driven primarily by exposure. Develop a departmental multi-hazard mitigation plan to acknowledge exposure to multiple hazards. Engage the public in this process to promote an understanding of multi-hazard risk.



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Chontales

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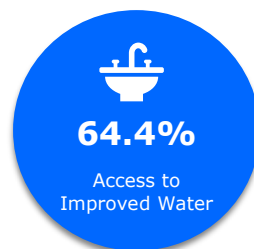
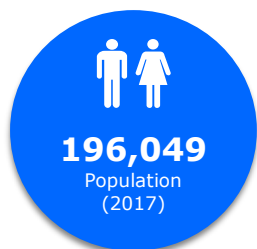
Department: Chontales



Department Capital: Juigalpa

Area: 6,481 km²

Chontales is located in central Nicaragua on the shores of Lake Nicaragua. This department is the cattle and dairy region of the country, supplying the majority of Nicaragua's dairy products.



Municipality	Population
Comalapa	22,530
San Francisco de Cuapa	10,048
Juigalpa	61,688
La Libertad	14,779
Santo Domingo	14,268
Santo Tomás	19,429



**Multi-Hazard Risk Rank:
Very Low (16 of 17)**

**Lack of Resilience Rank:
Medium (9 of 17)**

RVA Component Scores

Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Medium		Very Low		Medium		Medium	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.366	16	0.463	9	0.172	15	0.419	9	0.493	9

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 15 of 17 Departments (Score: 0.172)

Table 2. Estimated ambient population² exposed to each hazard



Cyclone

2.1%

3,661 People



Earthquake

87.7%

154,182 People



Volcano

0%

0 People



Flood

1.4%

2,450 People



Landslide

10%

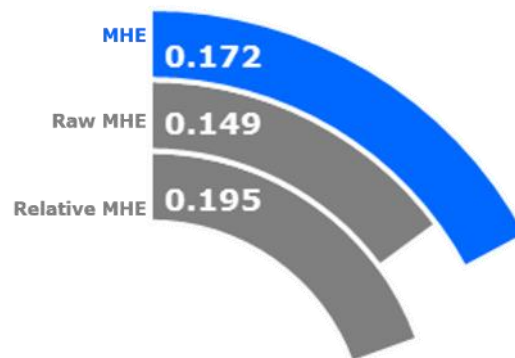
17,532 People



Tsunami

5.6%

9,901 People



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 9 of 17 Departments (Score: 0.419) Vulnerability in Chontales is primarily driven by Gender Inequality, Clean Water Vulnerability, and Information Access Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department’s overall Vulnerability score.

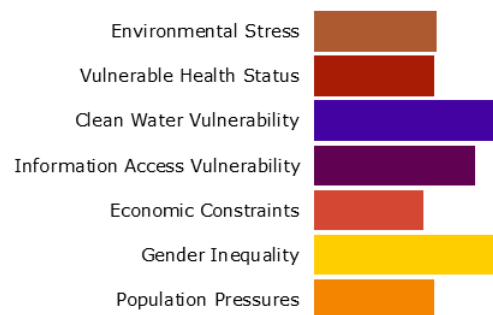


Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	23.7% Province at Drought Risk	15.8% Erosion Risk	96.4 Livestock per km ²			
	Vulnerable Health Status	16.5 Infant Mortality Rate	N/A Maternal Mortality Rate	73.5 yrs Average Life Expectancy	0.5% Acute Malnutrition (Children < 5)	2.4% Population Disabled	
	Clean Water Vulnerability	64.4% Households with Access to Improved Water	23.3% Households with Access to Flush Toilets				
	Information Access Vulnerability	28.1% Illiteracy	5.3 yrs Average Years of Schooling	86.0% Primary School Enrollment	93.3% Households without Internet	30.8% Households without TV	49.1% Households without Radio
	Economic Constraints	54.1 Economic Dependency Ratio	68.9% Population in Poverty				
	Gender Inequality	35.0% Female Seats in Government	1.04 Female to Male Secondary Education Enrollment	0.49 Female to Male Labor Ratio			
	Population Pressures	2.07% Average Annual Population Change	2.44% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country’s normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 9 of 17 Departments (Score: 0.493)

Chontales exhibits weaker Coping Capacity in the area of Environmental Capacity. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

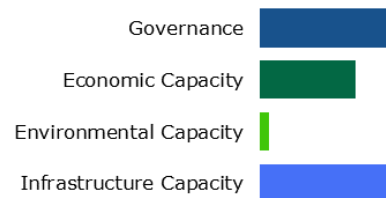


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	6.3% Households that Receive Remittances	87.0% Employment Rate (Male)	44.7% Employment Rate (Female)	20.9% Population in Highest Welfare Quintile	\$709.5 Annual Nominal Global Revenue per Capita	
	Governance	87.2% Crime Complaints Cleared	1,447 Crime Rate per 100k Persons	54.6% Households without Garbage Collection	95.8% Voter Participation (2016 Election)		
	Environmental Capacity	5.9% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		10.3 Hospital Beds per 10,000 Persons	17.8 Nurses per 10,000 Persons	9.8 Physicians per 10,000 Persons	29.9 km Average Distance to Nearest Hospital	86.7% Children Completed Immunization Schedule
	Communications Capacity		14.8% Households with Access to Fixed Phone Line	82.4% Households with Access to Mobile Phone			
	Transportation Capacity		40.0 km Average Distance to Nearest Port or Airport	0.21 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 9 of 17 Departments (Score: 0.463)

Chontales' score and ranking are due to medium Vulnerability combined with medium Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Gender Inequality



Economic Capacity



Environmental Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 16 of 17 Departments (Score: 0.366)

Chontales' score and ranking are due to very low Multi-Hazard Exposure combined with medium Vulnerability and medium Coping Capacity scores.

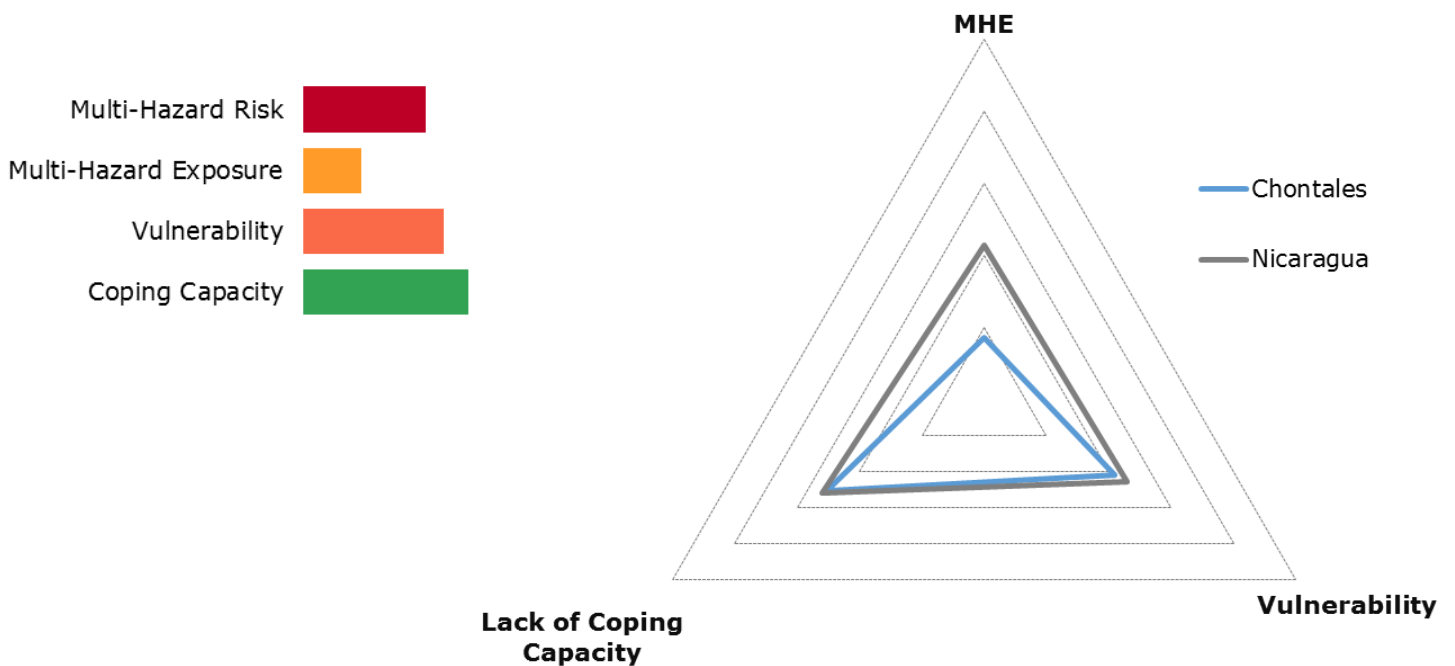


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Very low vulnerable health status

Ranked 16 of 17 departments, low health vulnerability indicates a population that will be more resilient to the negative health impacts associated with major disaster events.

Recommendations

01

Promote gender equality

Support equal-educational enrollment at all levels; access to the labor market, wages, and credit; and political representation to reduce vulnerability.

02

Increase economic capacity

Foster small-business development and invest in business education and human capital to raise economic stability and increase employment.



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Estelí

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

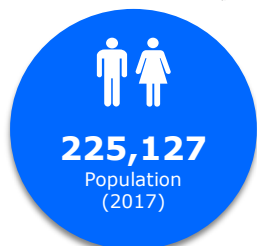
Department: Estelí



Department Capital: Estelí

Area: 2,230 km²

Estelí is a small province located in the northern part of Nicaragua, primarily known for its tobacco industry, nature reserves, and archaeological sites.



Municipality	Population
Pueblo Nuevo	23,768
Condega	30,556
Estelí	125,245
San Juan de Limay	15,350
La Trinidad	22,653
San Nicolás	7,555



**Multi-Hazard Risk Rank:
Very Low (17 of 17)**

**Lack of Resilience Rank:
Very Low (15 of 17)**

RVA Component Scores

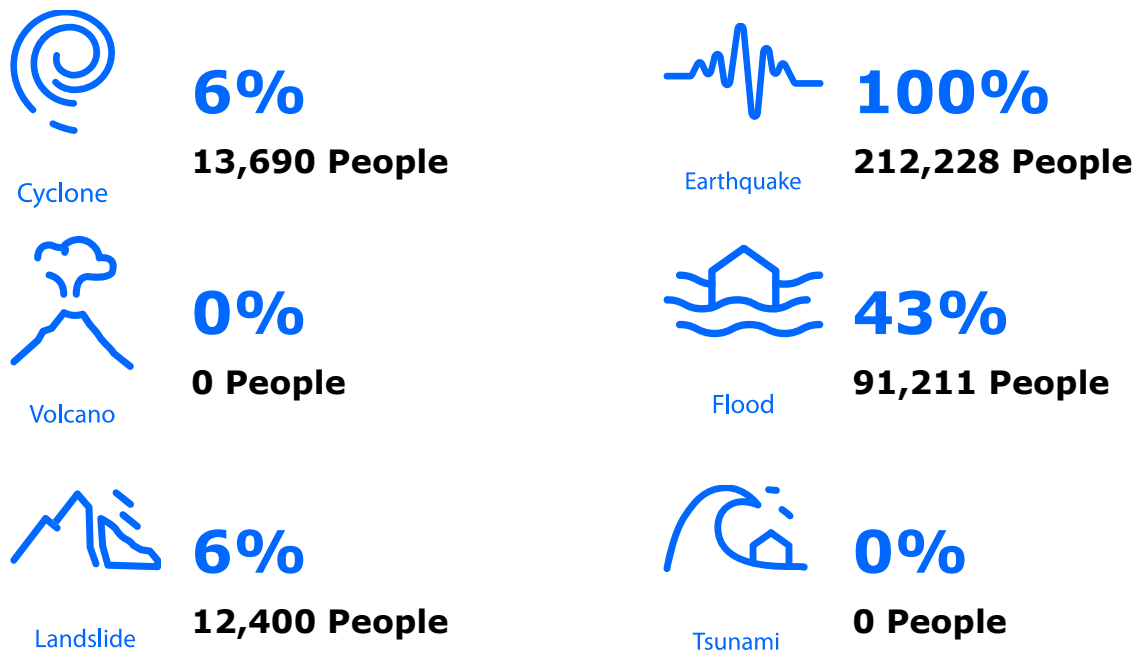
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Very Low		Medium		Very Low		Very High	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.331	17	0.334	15	0.325	9	0.303	16	0.636	2

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 9 of 17 Departments (Score: 0.325)

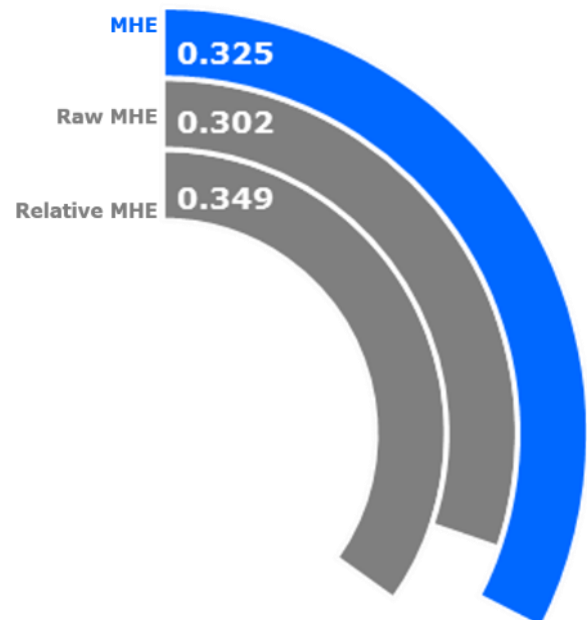
Table 2. Estimated ambient population² exposed to each hazard



12 neighborhoods in Estelí reside in flood-hazard zones. Specific plans exist to evacuate these populations in the event of flooding.

Case Study: Department Exercise

Estelí follows the national guideline of fostering a culture of prevention. Monthly gatherings with representatives from each government sector are conducted to discuss and update preparedness and response plans. In a May 2017 exercise, 77 neighborhoods, 82 communities, all government ministries, and the private sector (tobacco companies, shop owners, gas stations) participated in a municipal-wide exercise to practice response to the specific hazards that impact the region. After-action reports were completed immediately. Concerns included a lack of available resources (equipment and people).



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 16 of 17 Departments (Score: 0.303) Vulnerability in Estelí is primarily driven by Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

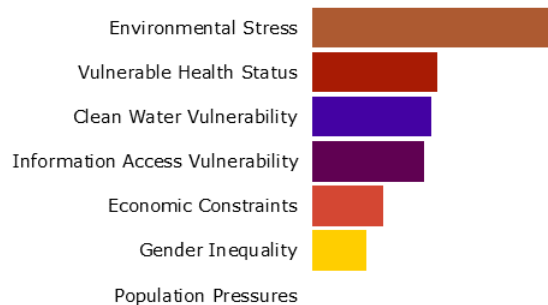









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	100% Province at Drought Risk	55.8% Erosion Risk	75.5 Livestock per km ²		
	Vulnerable Health Status	11.7 Infant Mortality Rate	19.8 Maternal Mortality Rate	74.3 yrs Average Life Expectancy	1.5% Acute Malnutrition (Children < 5)	2.6% Population Disabled
	Clean Water Vulnerability	67.5% Households with Access to Improved Water	40.8% Households with Access to Flush Toilets			
	Information Access Vulnerability	19.1% Illiteracy	6.15 yrs Average Years of Schooling	90.5% Primary School Enrollment	93.4% Households without Internet	20.8% Households without TV 58.2% Households without Radio
	Economic Constraints	52.5 Economic Dependency Ratio	61.2% Population in Poverty			
	Gender Inequality	58.3% Female Seats in Government	1.01 Female to Male Secondary Education Enrollment	0.31 Female to Male Labor Ratio		
	Population Pressures	1.13% Average Annual Population Change	1.67% Average Annual Urban Population Change			

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 2 of 17 Departments (Score: 0.636) Estelí exhibits weaker Coping Capacity in the areas of Economic Capacity and Transportation Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

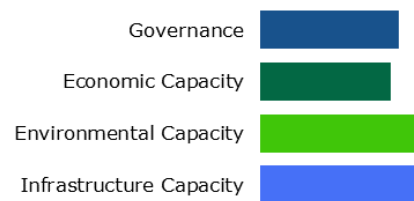


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	12.2% Households that Receive Remittances	76.7% Employment Rate (Male)	53% Employment Rate (Female)	24.4% Population in Highest Welfare Quintile	\$1,084 Annual Nominal Global Revenue per Capita	
	Governance	92.5% Crime Complaints Cleared	1809.7 Crime Rate per 100k Persons	53.9% Households without Garbage Collection	66.9% Voter Participation (2016 Election)		
	Environmental Capacity	37.0% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		13.9 Hospital Beds per 10,000 Persons	19.4 Nurses per 10,000 Persons	12.5 Physicians per 10,000 Persons	9.8 km Average Distance to Nearest Hospital	95.1% Children Completed Immunization Schedule
	Communications Capacity		18.2% Households with Access to Fixed Phone Line	78.9% Households with Access to Mobile Phone			
	Transportation Capacity		77.7 km Average Distance to Nearest Port or Airport	0.57 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 15 of 17 Departments (Score: 0.334)

Estelí's score and ranking are a product of very low Vulnerability combined with very high Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Environmental Stress



Transportation Capacity



Economic Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 17 of 17 Departments (Score: 0.343)

Estelí's Multi-Hazard Risk score and ranking are due to medium Multi-Hazard Exposure combined with very low Vulnerability and very high Coping Capacity scores.

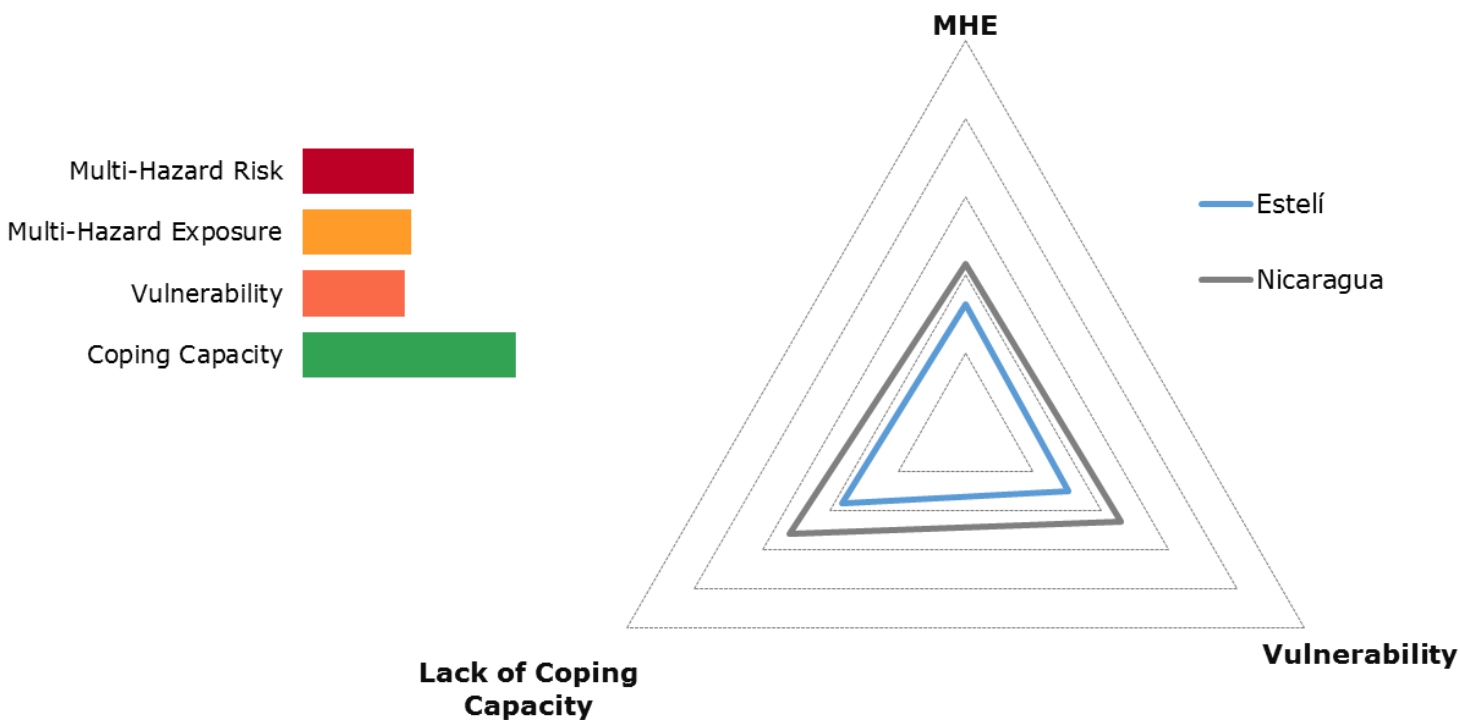


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Inclusive exercise

Department level exercises are inclusive of all stakeholders, including SINAPRED staff, private companies, government organizations, NGOs, and the public.



Very low overall vulnerability

Ranked 16 of 17 departments, low overall vulnerability indicates that Guatemala department is less susceptible to the negative impacts of a disaster and will likely recover faster after an event.



Highest health care capacity

Ranked 1 of 17 departments, high health care capacity indicates that the population will have access to healthcare services before, during, and after a disaster.

Recommendations

01

Reduce environmental stress

Invest in drought- and erosion-mitigation projects to reduce environmental stress and degradation.



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Granada

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

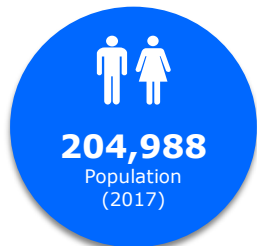
Department: Granada



Department Capital: Granada

Area: 1,040 km²

Granada is one of North America's oldest cities and is the oldest city in Nicaragua. Located along the coast of Lake Nicaragua, Granada is known for colonial-era architecture, nature reserves, and its bewitched villages.



Municipality	Population
Diriá	7,144
Diriomo	27,593
Granada	129,217
Nandaime	41,034

**Multi-Hazard Risk Rank:
Medium (8 of 17)**

**Lack of Resilience Rank:
Very Low (16 of 17)**



RVA Component Scores

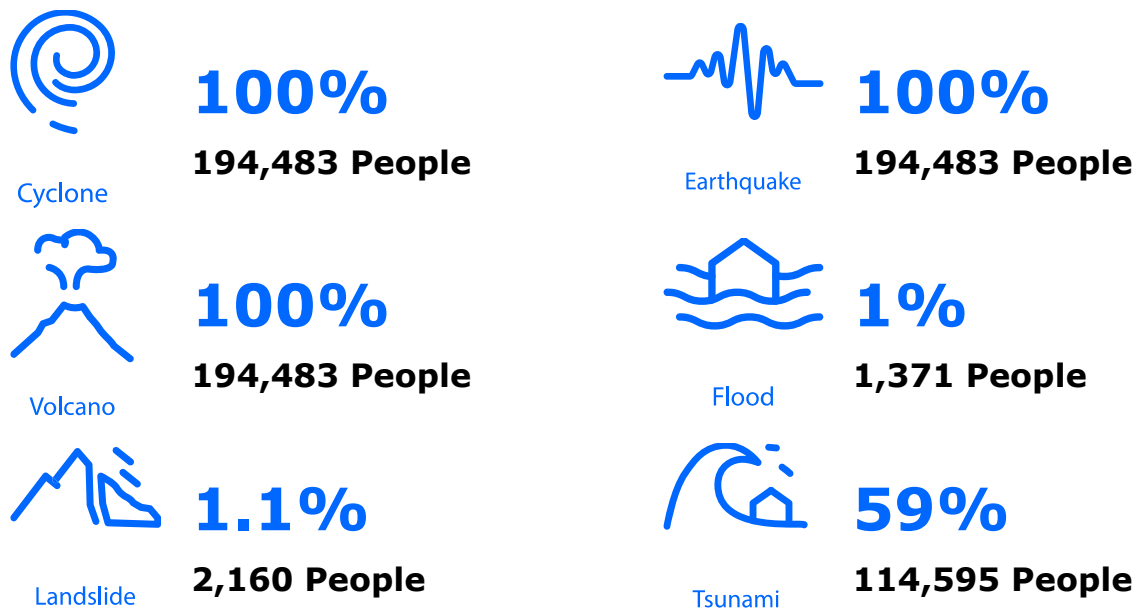
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Very Low		Very High		Low		Very High	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.474	8	0.334	16	0.754	2	0.324	12	0.656	1

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 2 of 17 Departments (Score: 0.754)

Table 2. Estimated ambient population² exposed to each hazard

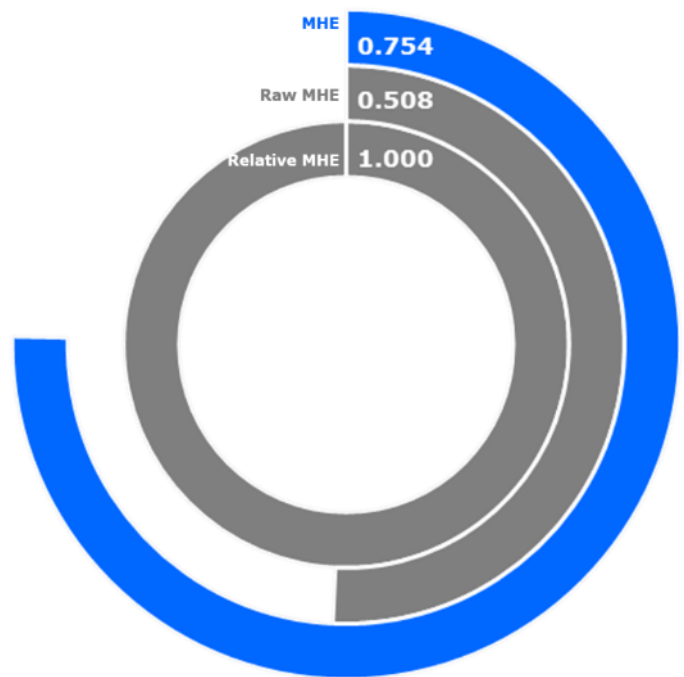


Case Study: Cocibolca Development Program

World Vision is working in Granada to improve the well-being of children using a long-term approach focused on the underlying causes of poverty. Activities within the program include:

- Growing community gardens;
- Educating parents on childhood illness;
- Tutoring primary school students; and
- Training community members on emergency preparedness and other response activities.

<https://www.ngoaidmap.org/projects/14755>



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 12 of 17 Departments (Score: 0.324)

Vulnerability in Granada is primarily driven by Population Pressures and Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

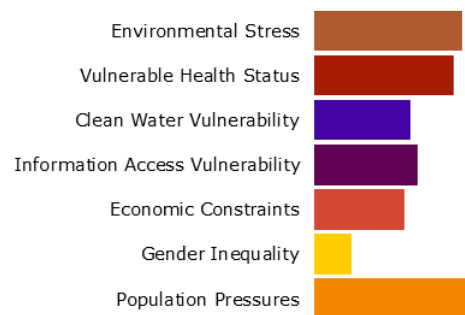


Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	100% Province at Drought Risk	12.9% Erosion Risk	69.8 Livestock per km ²			
	Vulnerable Health Status	11.0 Infant Mortality Rate	24.4 Maternal Mortality Rate	76 yrs Average Life Expectancy	5.1% Acute Malnutrition (Children < 5)	1.7% Population Disabled	
	Clean Water Vulnerability	80.7% Households with Access to Improved Water	39.2% Households with Access to Flush Toilets				
	Information Access Vulnerability	16.3% Illiteracy	6.9 yrs Average Years of Schooling	86.0% Primary School Enrollment	91.0% Households without Internet	10.0% Households without TV	74.7% Households without Radio
	Economic Constraints	56.1 Economic Dependency Ratio	61.1% Population in Poverty				
	Gender Inequality	50.0% Female Seats in Government	1.17 Female to Male Secondary Education Enrollment	0.29 Female to Male Labor Ratio			
	Population Pressures	2.25% Average Annual Population Change	2.88% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 1 of 17 Departments (Score: 0.656) Granada exhibits weaker Coping Capacity in the areas of Health Care Capacity and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department’s overall Coping Capacity score.

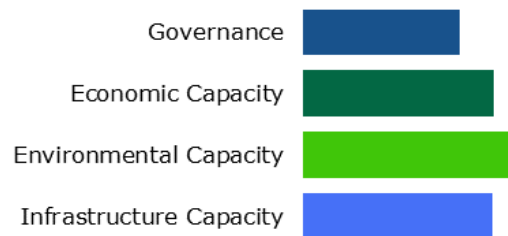


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	13.2% Households that Receive Remittances	79.3% Employment Rate (Male)	56.4% Employment Rate (Female)	26.4% Population in Highest Welfare Quintile	\$1,747 Annual Nominal Global Revenue per Capita	
	Governance	91.0% Crime Complaints Cleared	1881.0 Crime Rate per 100k Persons	47.9% Households without Garbage Collection	67.9% Voter Participation (2016 Election)		
	Environmental Capacity	42.8% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		7.8 Hospital Beds per 10,000 Persons	13.8 Nurses per 10,000 Persons	10.1 Physicians per 10,000 Persons	11.9 km Average Distance to Nearest Hospital	88.3% Children Completed Immunization Schedule
	Communications Capacity		18.3% Households with Access to Fixed Phone Line	86.2% Households with Access to Mobile Phone			
	Transportation Capacity		19.4 km Average Distance to Nearest Port or Airport	0.50 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 16 of 17 Departments (Score: 0.334)

Granada's score and ranking are due to low Vulnerability combined with very high Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Population Pressures



Governance



Health Care Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 8 of 17 Departments (Score: 0.474)

Granada's Multi-Hazard Risk score and ranking are driven primarily by very high Multi-Hazard Exposure combined with very low Vulnerability and high Coping Capacity scores.

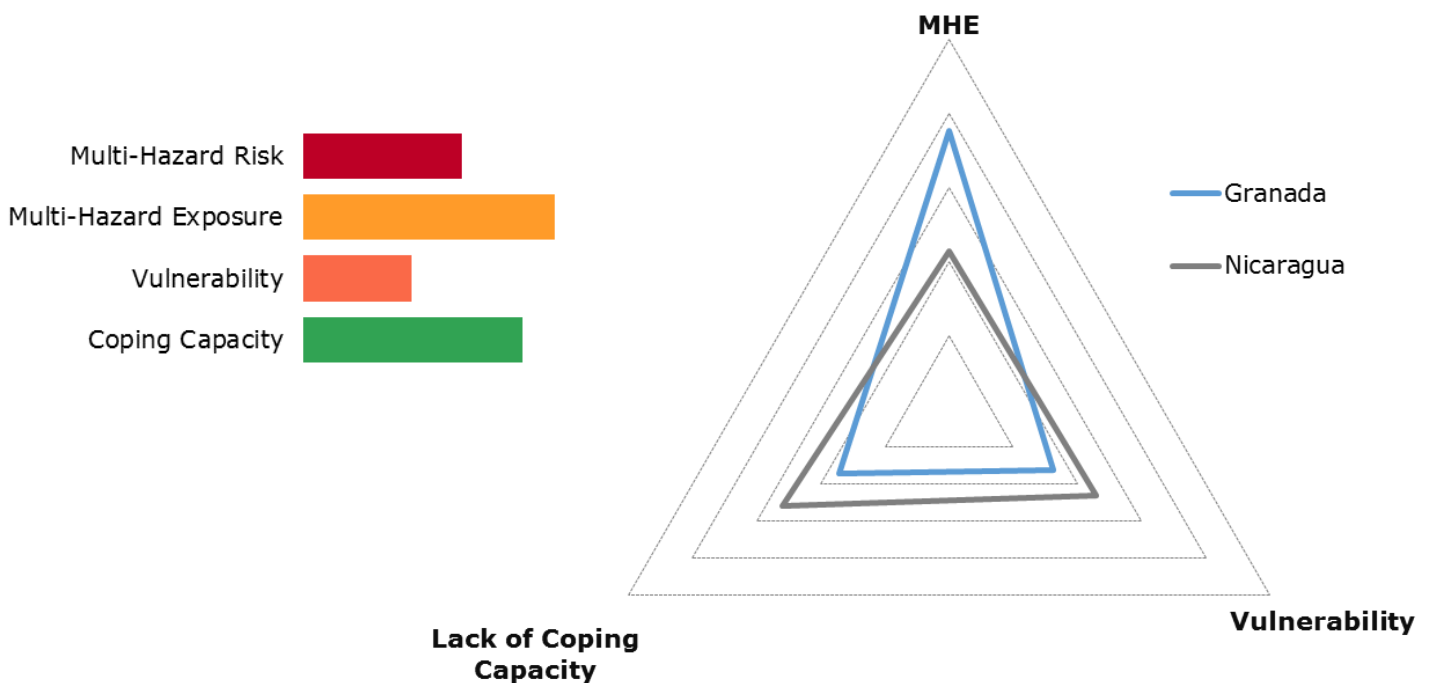


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Highest coping capacity

Ranked 1 of 17 departments, high coping capacity indicates the department's ability, using existing skills and resources, to face and manage adverse conditions, emergencies, or disasters.



Very low gender inequality

Ranked 15 of 17 departments, low gender inequality indicates that vulnerable populations are more likely to have their needs met under 'normal' conditions and may be less susceptible during times of disaster.

Recommendations

01

Institutionalize multi-hazard planning and education

Like the departments of Managua and Chinandega, Multi-Hazard Risk in Granada is driven primarily by exposure. Develop a departmental multi-hazard mitigation plan to acknowledge exposure to multiple hazards. Engage the public in this process to promote an understanding of multi-hazard risk.

02

Invest in public safety and crime prevention

Provide additional support for local police, firefighters, and emergency medical resources to improve public safety and decrease crime rates.



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Jinotega

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

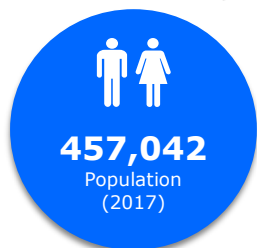
Department: Jinotega



Department Capital: Jinotega

Area: 9,222 km²

Jinotega is in the north-central region of Nicaragua. The department produces 80% of Nicaragua's coffee for global export, as well as providing hydropower to much of the country via Lake Apanas.



Municipality	Population
Wiwilí de Jinotega	82,317
El Cuá	65,711
San Jose del Bocay	63,132
Sta. María de Pantasma	46,566
San Rafael del Norte	22,028
San Sebastián de Yalí	35,358
La Concordia	7,273
Jinotega	134,657

**Multi-Hazard Risk Rank:
High (5 of 17)**

**Lack of Resilience Rank:
Very High (3 of 17)**



RVA Component Scores

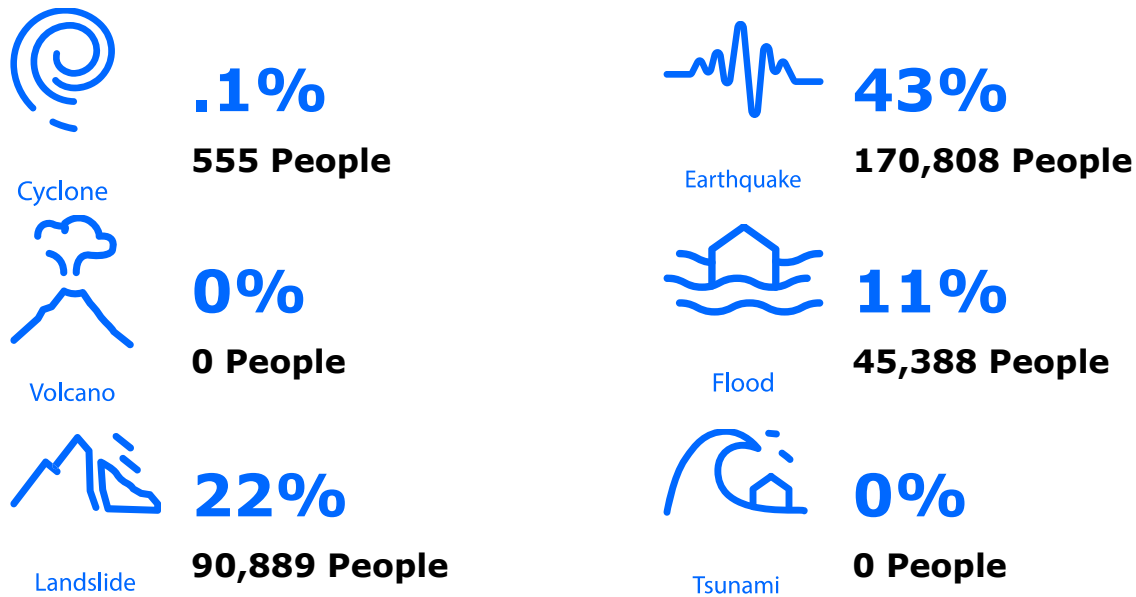
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Very High		Very Low		Very High		Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.498	5	0.651	3	0.190	14	0.728	2	0.425	11

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 14 of 17 Departments (Score: 0.190)

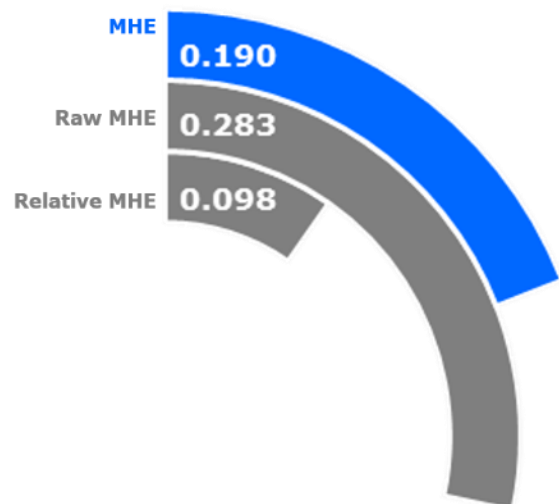
Table 2. Estimated ambient population² exposed to each hazard



Case Study

Jinotega is a highly food insecure department. WFP is currently running a program that provides access to education with a daily meal to pre and primary school children. Along with a meal, children are provided a nutritional education, gardens, and improvements to school infrastructure. WFP hopes increase the disaster resilience of these vulnerable communities.

<https://reliefweb.int/sites/reliefweb.int/files/resources/Nicaragua%20Country%20Brief%20February%202017%20OIM.pdf>



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 2 of 17 Departments (Score: 0.728) Vulnerability in Jinotega is primarily driven by very high Information Access Vulnerability, Gender Inequality, Economic Constraints, Vulnerable Health Status, Population Pressures, and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

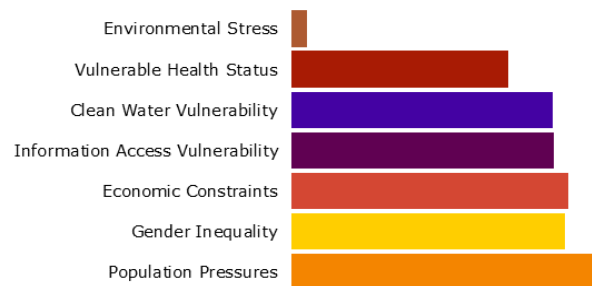









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	7.8% Province at Drought Risk	11.6% Erosion Risk	59.1 Livestock per km ²			
	Vulnerable Health Status	17.2 Infant Mortality Rate	115.0 Maternal Mortality Rate	68.7 yrs Average Life Expectancy	1.3% Acute Malnutrition (Children < 5)	2.3% Population Disabled	
	Clean Water Vulnerability	36.5% Households with Access to Improved Water	9.4% Households with Access to Flush Toilets				
	Information Access Vulnerability	37.2% Illiteracy	3.9 yrs Average Years of Schooling	74.8% Primary School Enrollment	98.7% Households without Internet	57.2% Households without TV	29.1% Households without Radio
	Economic Constraints	76.6 Economic Dependency Ratio	83.5% Population in Poverty				
	Gender Inequality	37.5% Female Seats in Government	1.2 Female to Male Secondary Education Enrollment	0.67 Female to Male Labor Ratio			
	Population Pressures	3.23% Average Annual Population Change	4.48% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 11 of 17 Departments (Score: 0.425) Jinotega exhibits weaker Coping Capacity in the areas of Economic Capacity and Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

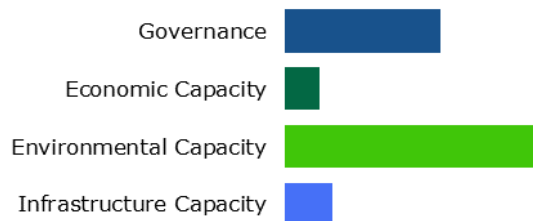


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	2.2% Households that Receive Remittances	91.5% Employment Rate (Male)	30.2% Employment Rate (Female)	4.7% Population in Highest Welfare Quintile	\$255.0 Annual Nominal Global Revenue per Capita	
	Governance	92.9% Crime Complaints Cleared	582.6 Crime Rate per 100k Persons	84.1% Households without Garbage Collection	47.4% Voter Participation (2016 Election)		
	Environmental Capacity	52.9% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		7.6 Hospital Beds per 10,000 Persons	8.8 Nurses per 10,000 Persons	7.1 Physicians per 10,000 Persons	32.5 km Average Distance to Nearest Hospital	81.3% Children Completed Immunization Schedule
	Communications Capacity		2.2% Households with Access to Fixed Phone Line	47.5% Households with Access to Mobile Phone			
	Transportation Capacity		78.9 km Average Distance to Nearest Port or Airport	0.25 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 3 of 17 Departments (Score: 0.651)

Jinotega's score and ranking are due to very high Vulnerability combined with low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



**Information
Access
Vulnerability**



**Gender
Inequality**



**Infrastructure
Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 5 of 17 Departments (Score: 0.498)

Jinotega's score and ranking are driven primarily by its very low Vulnerability and high Coping Capacity scores, despite having very low Multi-Hazard Exposure.

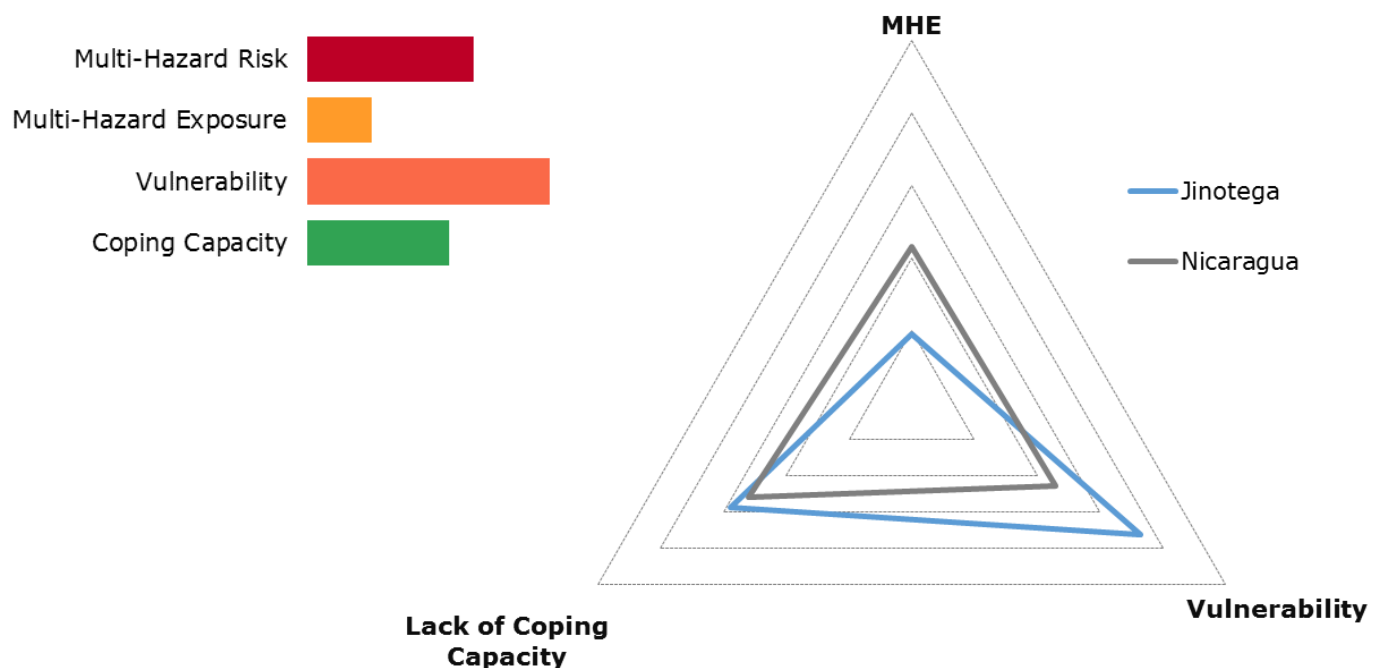


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Lowest overall environmental stress

Ranked 17 of 17 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.



High overall governance

Ranked 4 of 17 departments, high governance could facilitate the implementation of disaster management initiatives into departmental and municipal communities.

Recommendations

01

Increase information access

Invest in educational programs, including non-traditional, community-based approaches to increase educational attainment and adult literacy. Support comprehensive efforts to increase access to information mediums (phone, internet, TV, radio) and distribute disaster-preparedness and hazard-warning information in multiple formats and across multiple platforms, ensuring that vulnerable communities receive easily understandable and actionable disaster-related information.

02

Promote Gender Equality

Support equal educational enrollment at all levels; access to the labor market, wages and credit; and political representation to reduce vulnerability.



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León

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

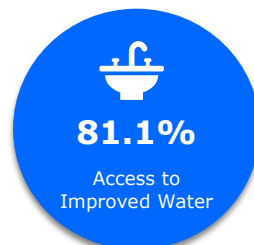
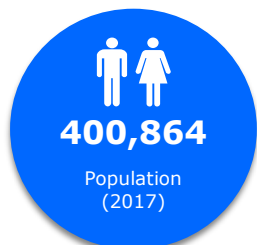
Department: León



Department Capital: León

Area: 5,138 km²

León is located on the Pacific Coast of Nicaragua. This department is known for its historic cultural sites, volcanic mountains, and Pacific Coast beaches.



Municipality	Population
Achuapa	14,882
El Sauce	31,301
Santa Rosa del Peñón	10,745
El Jicaral	11,613
Larreynaga	32,584
Telica	25,708
Quezalguaque	9,649
León	194,924
La Paz Centro	31,833
Nagarote	37,625



**Multi-Hazard Risk Rank:
Low (12 of 17)**

**Lack of Resilience Rank:
Very Low (14 of 17)**

RVA Component Scores

Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Very Low		High		Very Low		Very High	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.468	12	0.347	14	0.710	5	0.310	14	0.616	3

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 5 of 17 Departments (Score: 0.710)

Table 2. Estimated ambient population² exposed to each hazard



100%

389,921 People

Cyclone



100%

389,956 People

Earthquake



77%

300,373 People

Volcano



3.3%

12,700 People

Flood



10%

39,774 People

Landslide



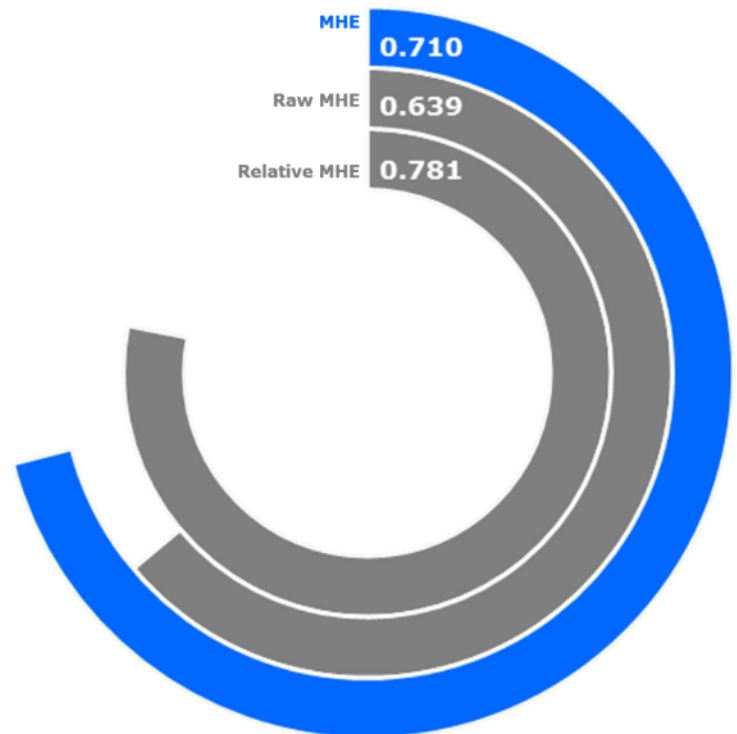
1.2%

4,498 People

Tsunami

Case Study: León CODEPRED

The CODEPRED in León operates 24/7 regardless of activation level (i.e., ongoing response or no response). Employees at CODEPRED do 12 hours shifts. The response coordination group includes representatives from civil defense, national police, MINSA, fire department, MINED, and the volunteer fire department.



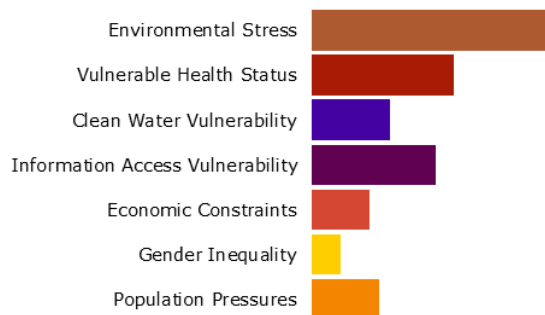
¹ Multi-Hazard Exposure: Average exposure of the population to hazards.








² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 14 of 17 Departments (Score: 0.310) Vulnerability in León is primarily driven by Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

Table 3. Component scores for each vulnerability sub-component



	Environmental Stress	100% Province at Drought Risk	40.9% Erosion Risk	89.5 Livestock per km ²			
	Vulnerable Health Status	10.6 Infant Mortality Rate	24.6 Maternal Mortality Rate	76.5 yrs Average Life Expectancy	4.4% Acute Malnutrition (Children < 5)	2.5% Population Disabled	
	Clean Water Vulnerability	81.1% Households with Access to Improved Water	44.8% Households with Access to Flush Toilets				
	Information Access Vulnerability	17.9% Illiteracy	6.6 yrs Average Years of Schooling	87.2% Primary School Enrollment	95.3% Households without Internet	14.8% Households without TV	62.0% Households without Radio
	Economic Constraints	51.1 Economic Dependency Ratio	60.5% Population in Poverty				
	Gender Inequality	50.0% Female Seats in Government	1.12 Female to Male Secondary Education Enrollment	0.28 Female to Male Labor Ratio			
	Population Pressures	1.55% Average Annual Population Change	2.24% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 3 of 17 Departments (Score: 0.616) León exhibits weaker Coping Capacity in the area of Environmental Capacity. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

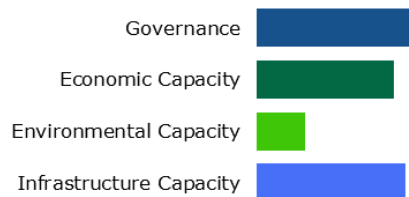


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	11.3% Households that Receive Remittances	77.5% Employment Rate (Male)	55.9% Employment Rate (Female)	25.9% Population in Highest Welfare Quintile	\$1,309 Annual Nominal Global Revenue per Capita
	Governance	93.9% Crime Complaints Cleared	1230.1 Crime Rate per 100k Persons	60.0% Households without Garbage Collection	70.7% Voter Participation (2016 Election)	
	Environmental Capacity	14.2% Protected or Reforested Land				
	Infrastructure Capacity					
	Health Care Capacity		11.1 Hospital Beds per 10,000 Persons	16.0 Nurses per 10,000 Persons	11.1 Physicians per 10,000 Persons	19.2 km Average Distance to Nearest Hospital
	Communications Capacity		15.9% Households with Access to Fixed Phone Line	79.5% Households with Access to Mobile Phone		
	Transportation Capacity		29.5 km Average Distance to Nearest Port or Airport	0.40 km Total Length of Road per km ² (area)		

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 14 of 17 Departments (Score: 0.347)

León's score and ranking are due to very low Vulnerability combined with very high Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Environmental Stress



Environmental Capacity



Vulnerable Health Status

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 12 of 17 Departments (Score: 0.468)

León's score and ranking are due to high Multi-Hazard Exposure combined with very low Vulnerability and very high Coping Capacity scores.

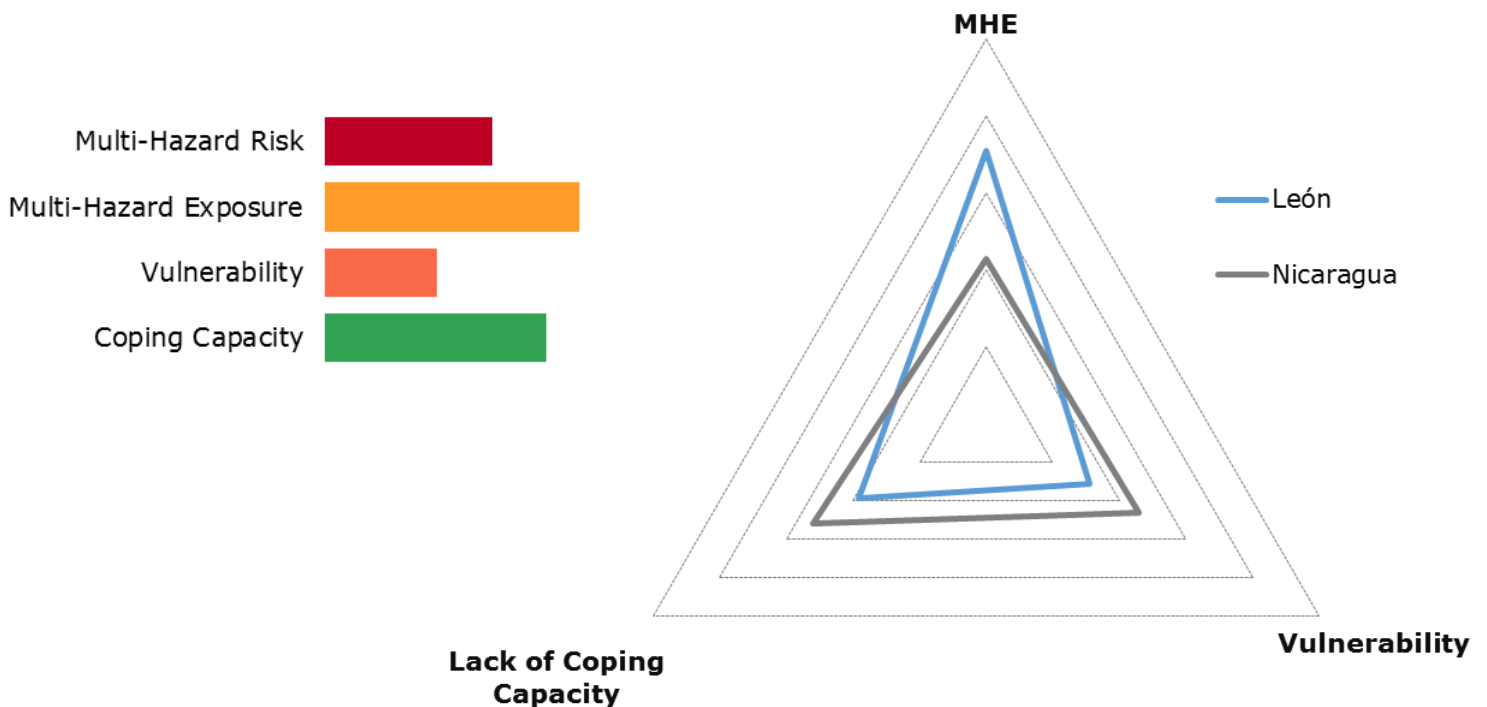


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Low overall vulnerability

Ranked 14 of 17 departments, low overall vulnerability indicates that León department is less susceptible to the negative impacts of a disaster and will likely recover faster after an event.



Highest overall governance

Ranked 1 of 17 departments, high governance could facilitate the implementation of disaster management initiatives into departmental and municipal communities.

Recommendations

01

Reduce environmental stress

Invest in drought- and erosion-mitigation projects to reduce environmental stress and degradation.

02

Reduce vulnerable health status

Invest in public welfare services to support the disabled population and reduce maternal mortality.



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Madriz

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

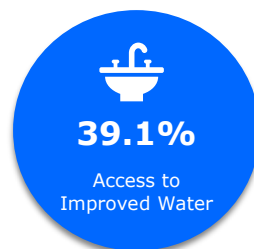
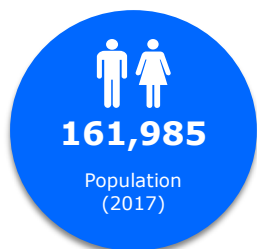
Department: Madriz



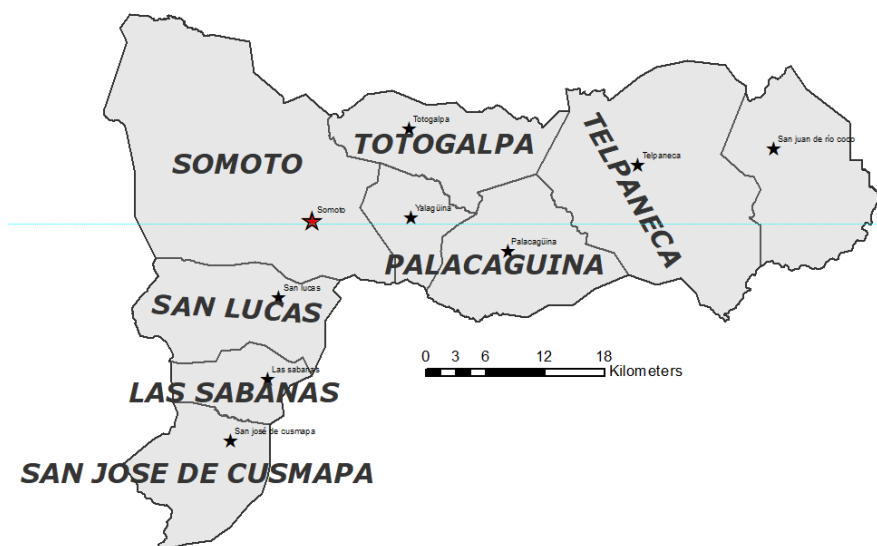
Department Capital: Somoto

Area: 1,708 km²

Madriz is a small province located on the northern border of Nicaragua. Madriz is known for its pine and oak forests, coffee plantations, and artisanal handicrafts.



Municipality	Population
Somoto	38,582
Totogalpa	15,406
Telpaneca	23,075
San Juan de Río Coco	28,205
Coco	28,205
Palacagüina	15,539
Yalagüina	12,450
San Lucas	15,598
Las Sabanas	5,071
San José de Cusmapa	8,059



Multi-Hazard Risk Rank: Low (14 of 17)

Lack of Resilience Rank: High (6 of 17)

RVA Component Scores

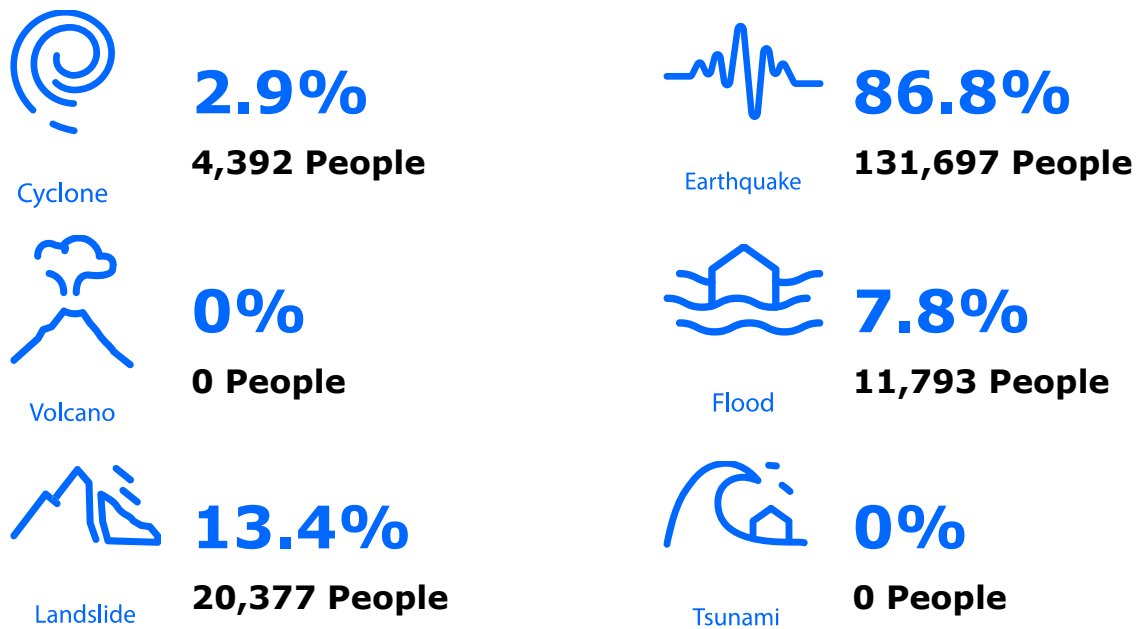
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		High		Very Low		High		Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.433	14	0.568	6	0.164	16	0.558	5	0.421	12

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 16 of 17 Departments (Score: 0.164)

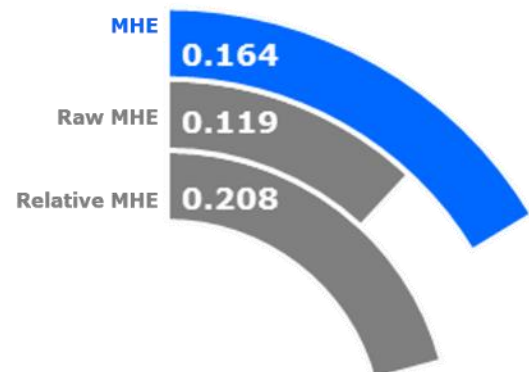
Table 2. Estimated ambient population² exposed to each hazard



Case Study: Food Security in Madriz

Heifer International is working with local farmers to increase food security and climate change resilience. Thirty-eight cooperatives are working with Heifer to restore their main livelihood, coffee and food production, and rehabilitate 2,387 acres of farmland. The overall goal of the project is to strengthen food security and increase the household incomes of small farmers.

<https://www.ngoaidmap.org/projects/5043>



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 5 of 17 Departments (Score: 0.558) Vulnerability in Madriz is primarily driven by high Environmental Stress and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

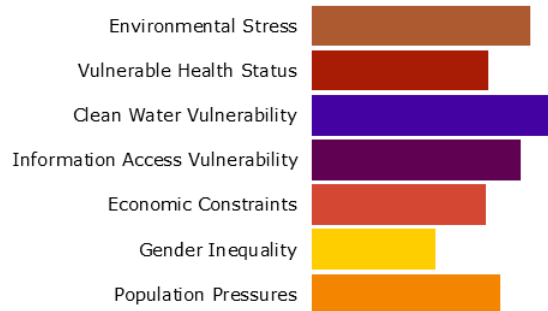









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	91.4% Province at Drought Risk	64.5% Erosion Risk	58.8 Livestock per km ²			
	Vulnerable Health Status	13.0 Infant Mortality Rate	66.6 Maternal Mortality Rate	71.2 yrs Average Life Expectancy	0.8% Acute Malnutrition (Children <5)	3.0% Population Disabled	
	Clean Water Vulnerability	39.1% Households with Access to Improved Water	19.4% Households with Access to Flush Toilets				
	Information Access Vulnerability	30.2% Illiteracy	5.1 yrs Average Years of Schooling	82.3% Primary School Enrollment	95.7% Households without Internet	46.8% Households without TV	44.0% Households without Radio
	Economic Constraints	61.7 Economic Dependency Ratio	74.2% Population in Poverty				
	Gender Inequality	50.0% Female Seats in Government	1.06 Female to Male Secondary Education Enrollment	0.54 Female to Male Labor Ratio			
	Population Pressures	2.39% Average Annual Population Change	3.16% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 12 of 17 Departments (Score: 0.421) Madriz exhibits weaker Coping Capacity in the areas of Economic Capacity, Environmental Capacity, and Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

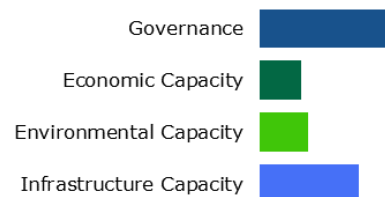









Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	3.8% Households that Receive Remittances	82.4% Employment Rate (Male)	38.1% Employment Rate (Female)	10.2% Population in Highest Welfare Quintile	\$295.1 Annual Nominal Global Revenue per Capita	
	Governance	94.2% Crime Complaints Cleared	807.2 Crime Rate per 100k Persons	90.5% Households without Garbage Collection	48.1% Voter Participation (2016 Election)		
	Environmental Capacity	14.1% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		8.9 Hospital Beds per 10,000 Persons	14.7 Nurses per 10,000 Persons	9.0 Physicians per 10,000 Persons	11.1 km Average Distance to Nearest Hospital	90.1% Children Completed Immunization Schedule
	Communications Capacity		7.6% Households with Access to Fixed Phone Line	60.7% Households with Access to Mobile Phone			
	Transportation Capacity		111.7 km Average Distance to Nearest Port or Airport	0.68 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 6 of 17 Departments (Score: 0.568)

Madriz's score and ranking are due to high Vulnerability combined with low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Economic Capacity



Infrastructure Capacity



Clean Water Vulnerability

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 14 of 17 Departments (Score: 0.433)

Madriz's score and ranking are due to very low Multi-Hazard Exposure combined with high Vulnerability and low Coping Capacity scores.

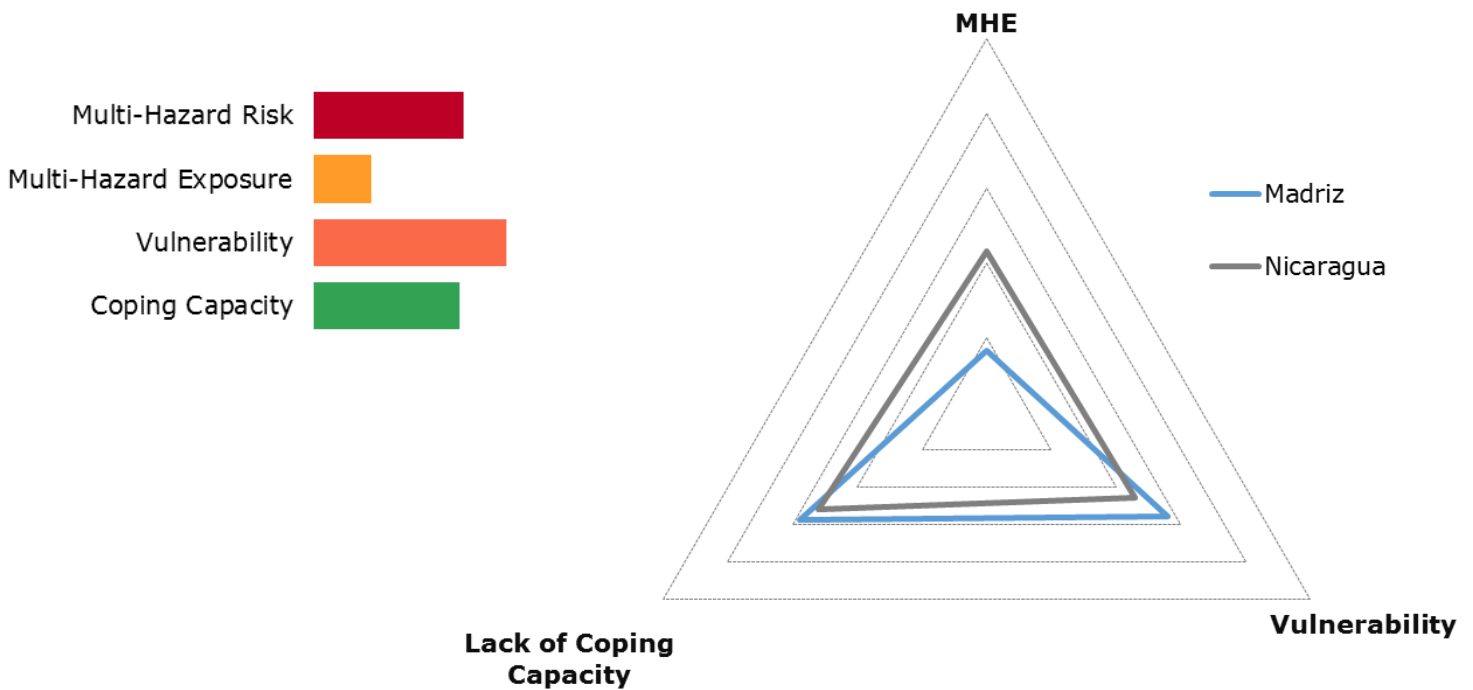


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



High health care capacity

Ranked 5 of 17 departments, high health care capacity indicates that the population will have access to healthcare services before, during, and after a disaster.



High overall governance

Ranked 6 of 17 departments, high governance could facilitate the implementation of disaster management initiatives into departmental and municipal communities.

Recommendations

01

Increase economic capacity

Foster small-business development and invest in business education and human capital to raise economic stability and increase employment.

02

Invest in infrastructure

Limited infrastructure inhibits the capacity to communicate and exchange information, reduces access to health care, and limits the physical distribution of goods and services in Madriz. Health care, transportation, and communication infrastructures require upgrading and investment to increase connectivity and welfare in the department. Focused investments in these areas will increase coping capacity and resilience.

03

Reduce clean water vulnerability

Invest in public water and sewer infrastructure to ensure equitable access to safe, clean drinking water and sanitation.



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Managua

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

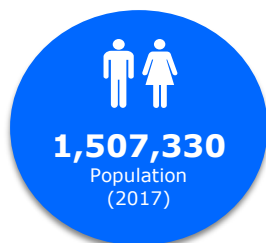
Department: Managua



Department Capital: Managua

Area: 3,465 km²

Managua is located in western Nicaragua on the southwestern shore of Lake Managua. It includes Nicaragua's capital city of Managua and is the economic, political, educational, and cultural center of the nation.



Municipality	Population
San Francisco Libre	11,109
Tipitapa	144,700
Mateare	52,679
Villa El Carmen	36,035
Ciudad Sandino	102,383
Managua	1,057,296
Ticuantepe	38,874
El Crucero	15,488
San Rafael del Sur	48,766



**Multi-Hazard Risk Rank:
High (4 of 17)**

**Lack of Resilience Rank:
Very Low (17 of 17)**

RVA Component Scores

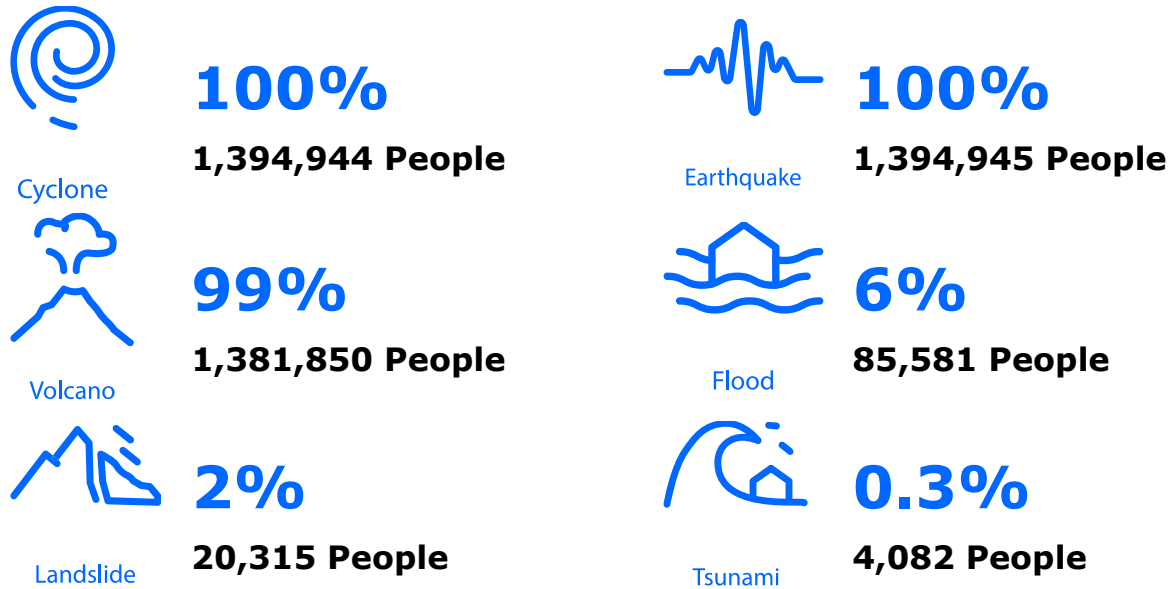
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Very Low		Very High		Very Low		High	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.515	4	0.314	17	0.915	1	0.221	17	0.592	5

Multi-Hazard Exposure (MHE)

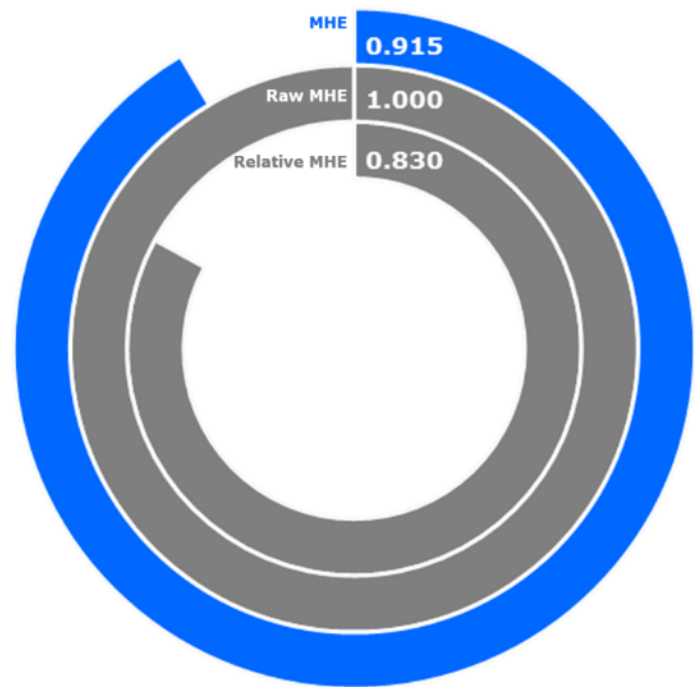
Multi-Hazard Exposure¹ Rank: 1 of 17 Departments (Score: 0.915)

Table 2. Estimated ambient population² exposed to each hazard



More Ambulances for Managua

According to interviews with the Nicaraguan Red Cross, the population in Managua increases from 1.6 million to 2.5 million during daylight hours. This rise in human numbers puts a strain on emergency resources, particularly ambulances. Managua has 12 ambulances designated for emergency response, falling short of the minimum estimated number of 25 ambulances needed to meet the standard of 1 ambulance per every 100,000 people. Although the Ministry of Health has 25 ambulances, only 15 are usable and these are dedicated to the transportation of patients between hospitals. This is just one example of a resource shortfall for an effective disaster-management system.



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 17 of 17 Departments (Score: 0.221) Vulnerability in Managua is primarily driven by Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

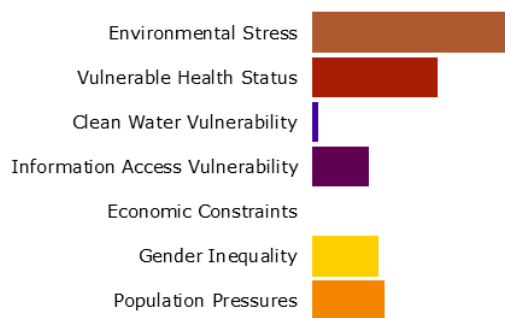









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	100% Province at Drought Risk	27.8% Erosion Risk	81.1 Livestock per km ²			
	Vulnerable Health Status	15.7 Infant Mortality Rate	12.8 Maternal Mortality Rate	77.3 Average Life Expectancy	2.6% Acute Malnutrition (Children < 5)	1.8% Population Disabled	
	Clean Water Vulnerability	90.5% Households with Access to Improved Water	61.6% Households with Access to Flush Toilets				
	Information Access Vulnerability	10.0% Illiteracy	7.4 yrs Average Years of Schooling	86.6% Primary School Enrollment	89.9% Households without Internet	8.5% Households without TV	63.2% Households without Radio
	Economic Constraints	49.2 Economic Dependency Ratio	48.7% Population in Poverty				
	Gender Inequality	32.1% Female Seats in Government	1.27 Female to Male Secondary Education Enrollment	0.19 Female to Male Labor Ratio			
	Population Pressures	1.75% Average Annual Population Change	2.05% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 5 of 17 Departments (Score: 0.592) Managua exhibits weaker Coping Capacity in the areas of Environmental Capacity and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

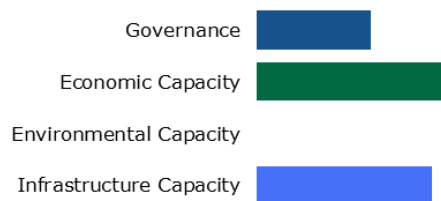









Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	10.4% Households that Receive Remittances	79.7% Employment Rate (Male)	64.6% Employment Rate (Female)	36.8% Population in Highest Welfare Quintile	\$5,994 Annual Nominal Global Revenue per Capita	
	Governance	87.8% Crime Complaints Cleared	2400.1 Crime Rate per 100k Persons	29.3% Households without Garbage Collection	72.1% Voter Participation (2016 Election)		
	Environmental Capacity	3.9% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		11.1 Hospital Beds per 10,000 Persons	13.8 Nurses per 10,000 Persons	12.4 Physicians per 10,000 Persons	16.8 km Average Distance to Nearest Hospital	77.7% Children Completed Immunization Schedule
	Communications Capacity		29.6% Households with Access to Fixed Phone Line	85.4% Households with Access to Mobile Phone			
	Transportation Capacity		15.3 km Average Distance to Nearest Port or Airport	0.43 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 17 of 17 Departments (Score: 0.314)

Managua's score and ranking are due to very low Vulnerability combined with high Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Environmental Stress



Environmental Capacity



Governance

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 4 of 17 Departments (Score: 0.515)

Managua's Multi-Hazard Risk score and ranking are driven primarily by very high Multi-Hazard Exposure combined with very low Vulnerability and high Coping Capacity scores.

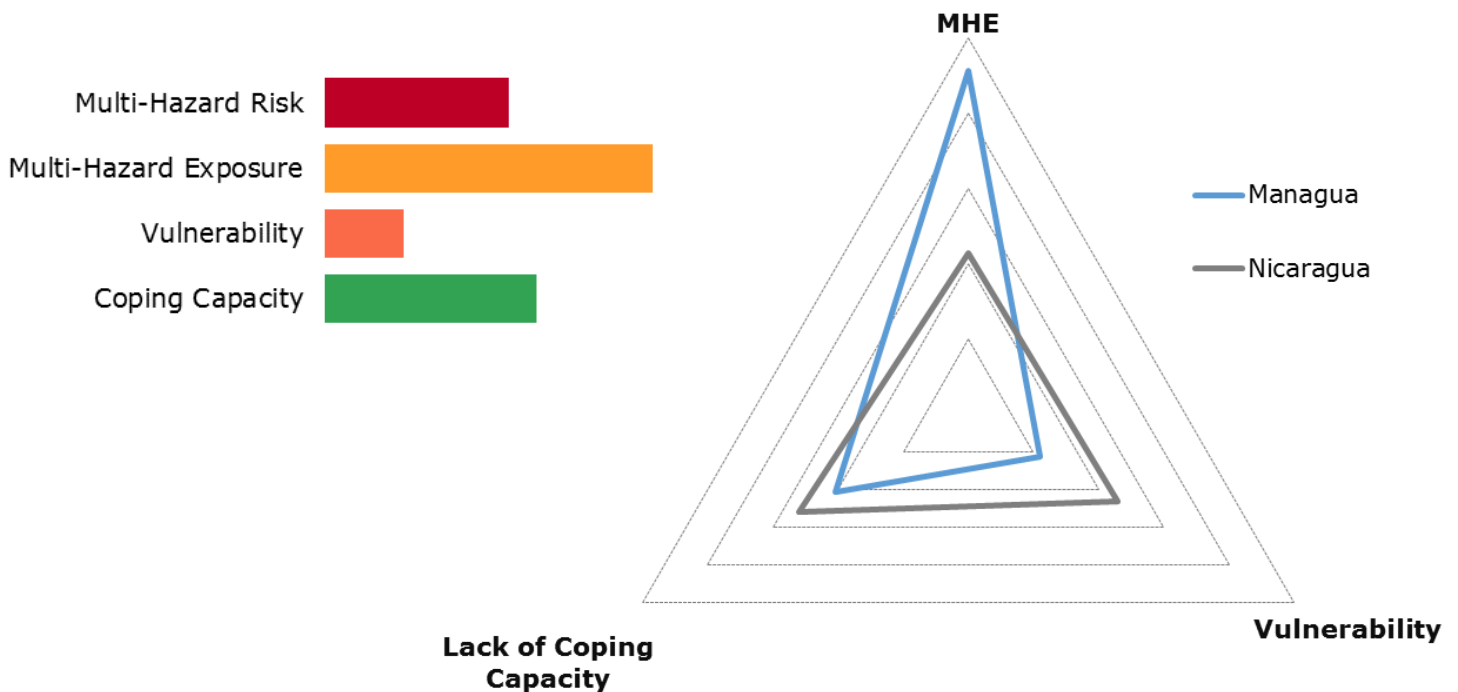


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Lowest overall vulnerability

Ranked 17 of 17 departments, low overall vulnerability indicates that Managua department is less susceptible to the negative impacts of a disaster and will likely recover faster after an event.



Lowest economic constraints, clean water vulnerability, and information access vulnerability

Ranked 17 of 17 departments in each subcomponent, indicating a highly resilient population.



Highest communications capacity

Ranked 1 of 17 departments, well developed communication networks facilitate the coordinated action among local, departmental, and national actors.

Recommendations

01

Institutionalize multi-hazard planning and education

Multi-Hazard Risk in Managua is driven primarily by exposure. Develop a departmental multi-hazard mitigation plan to acknowledge exposure to multiple hazards. Engage the public in this process to promote an understanding of multi-hazard risk.

02

Invest in public safety and crime prevention

Provide additional support for local police, firefighters, and emergency medical resources to improve public safety and decrease crime rates.

03

Reduce environmental stress

Invest in drought- and erosion-mitigation projects to reduce environmental stress and degradation.



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Masaya

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

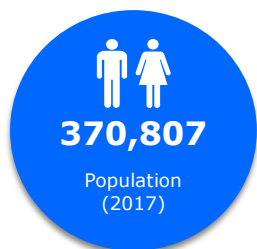
Department: Masaya



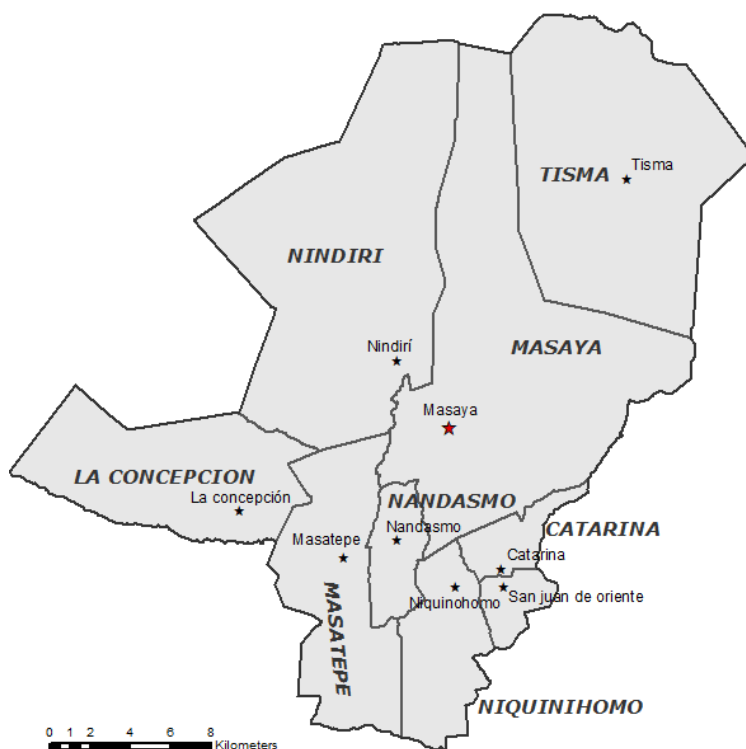
Department Capital: Masaya

Area: 611 km²

Masaya is Nicaragua's smallest department. The department is known for being "La Cuna Del Folklore" (The Cradle of Folklore) and has an active volcano within its boundaries, Masaya Volcano.



Municipality	Population
Nindirí	53,811
Masaya	177,269
Tisma	12,200
La Concepción	41,716
Masatepe	38,655
Nandasmo	14,787
Catarina	8,723
San Juan de Oriente	7,216
Niquinohomo	16,430



Multi-Hazard Risk Rank: Medium (9 of 17)

Lack of Resilience Rank: Low (13 of 17)

RVA Component Scores

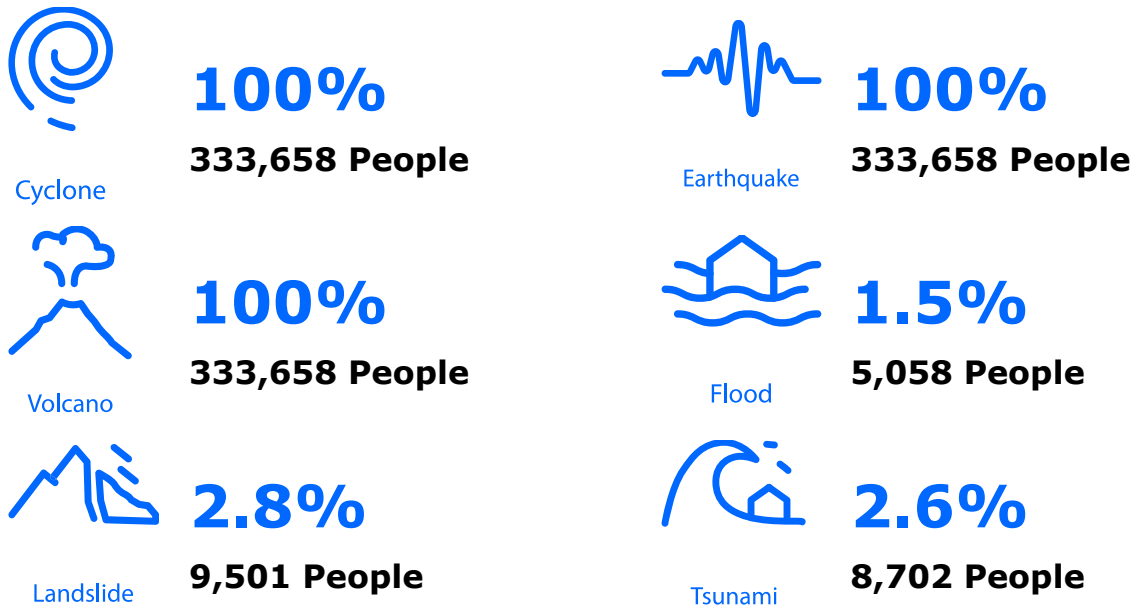
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Low		High		Very Low		High	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.473	9	0.349	13	0.720	4	0.307	15	0.609	4

Multi-Hazard Exposure (MHE)

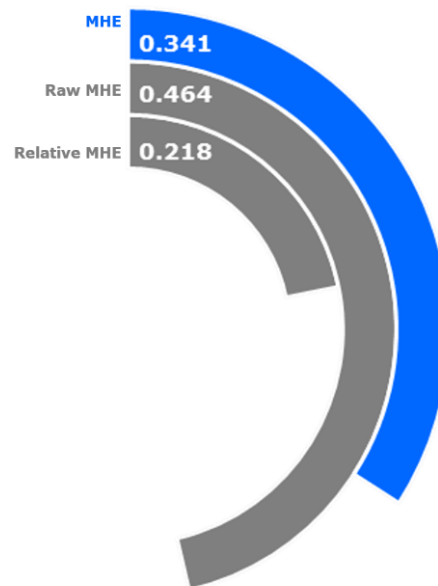
Multi-Hazard Exposure¹ Rank: 4 of 17 Departments (Score: 0.720)

Table 2. Estimated ambient population² exposed to each hazard



Case Study

Masaya has 19 critical communities that become isolated after four hours of rain. Once it has been raining for four hours, Medical and police brigades are activated. These brigades are constantly training and exercising for disaster events. During Hurricane Otto, the population was evacuated to safe areas and there was no loss of life.



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 15 of 17 Departments

(Score: 0.307) Vulnerability in Masaya is primarily driven by Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

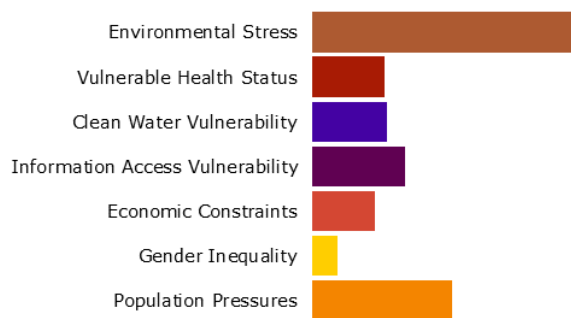









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	100% Province at Drought Risk	27.2% Erosion Risk	112.7 Livestock per km ²			
	Vulnerable Health Status	12.0 Infant Mortality Rate	14.0 Maternal Mortality Rate	74.9 Average Life Expectancy	0.2% Acute Malnutrition (Children < 5)	1.3% Population Disabled	
	Clean Water Vulnerability	93.5% Households with Access to Improved Water	37.4% Households with Access to Flush Toilets				
	Information Access Vulnerability	15.9% Illiteracy	6.7 yrs Average Years of Schooling	89.4% Primary School Enrollment	93.0% Households without Internet	10.3% Households without TV	62.9% Households without Radio
	Economic Constraints	53.5 Economic Dependency Ratio	58.2% Population in Poverty				
	Gender Inequality	50.0% Female Seats in Government	1.16 Female to Male Secondary Education Enrollment	0.18 Female to Male Labor Ratio			
	Population Pressures	1.96% Average Annual Population Change	2.91% Average Annual Urban Population Change				

³ Vulnerability: The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 4 of 17 Departments (Score: 0.609) Masaya exhibits weaker Coping Capacity in the area of Health Care Capacity. The bar chart on the right indicates the socioeconomic themes contributing to the department’s overall Coping Capacity score.

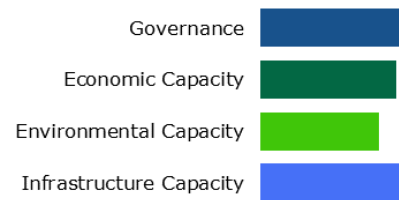


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	6.3% Households that Receive Remittances	76.2% Employment Rate (Male)	62.8% Employment Rate (Female)	20.2% Population in Highest Welfare Quintile	\$2,713 Annual Nominal Global Revenue per Capita
	Governance	93.9% Crime Complaints Cleared	1292.8 Crime Rate per 100k Persons	68.2% Households without Garbage Collection	53.6% Voter Participation (2016 Election)	
	Environmental Capacity	29.1% Protected or Reforested Land				
	Infrastructure Capacity					
	Health Care Capacity		6.0 Hospital Beds per 10,000 Persons	8.6 Nurses per 10,000 Persons	5.7 Physicians per 10,000 Persons	8.36 km Average Distance to Nearest Hospital
	Communications Capacity		14.7% Households with Access to Fixed Phone Line	80.5% Households with Access to Mobile Phone		82.2% Children Completed Immunization Schedule
	Transportation Capacity		16.1 km Average Distance to Nearest Port or Airport	1.05 km Total Length of Road per km ² (area)		

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 13 of 17 Departments (Score: 0.349)

Masaya's score and ranking are due to very low Vulnerability combined with high Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Environmental Stress



Health Care Capacity



Population Pressures

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 9 of 17 Departments (Score: 0.473)

Masaya's score and ranking are due to high Multi-Hazard Exposure combined with very low Vulnerability and high Coping Capacity scores.

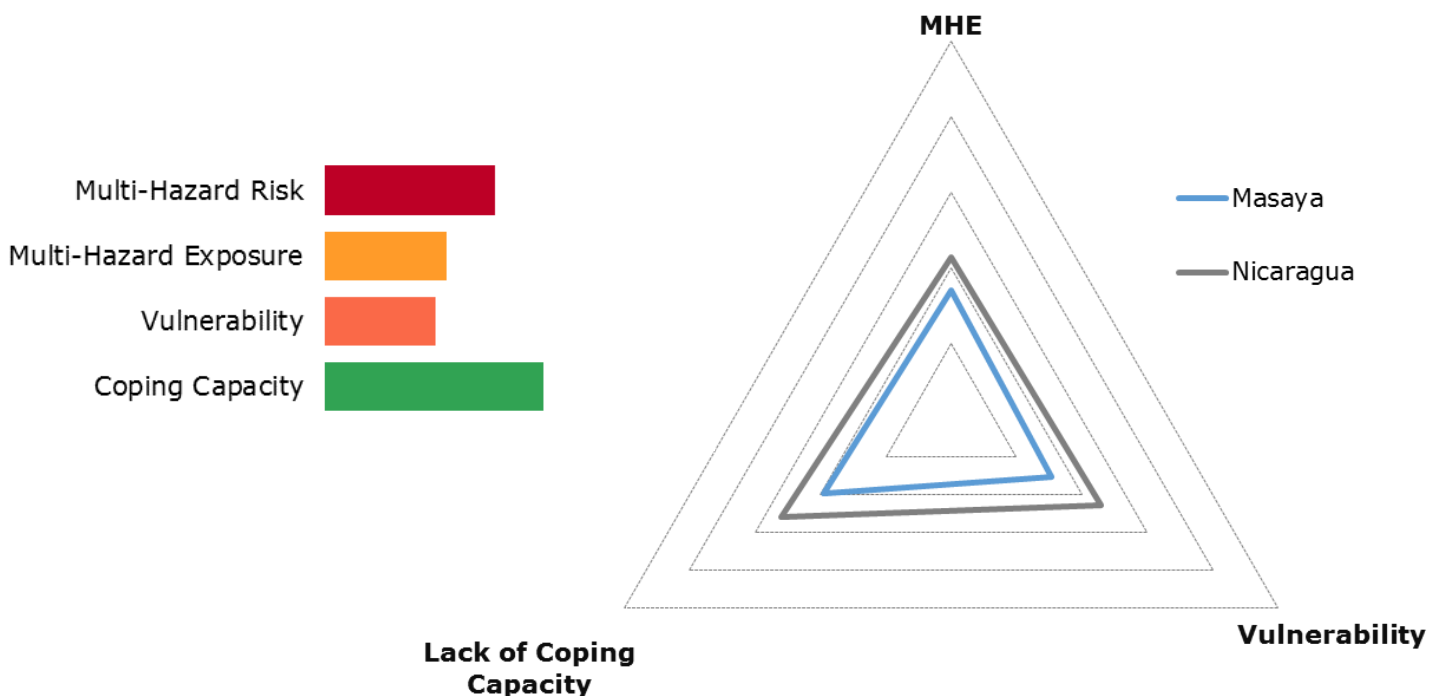


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Lowest gender inequality

Ranked 17 of 17 departments, low gender inequality indicates that vulnerable populations are more likely to have their needs met under 'normal' conditions and may be less susceptible during times of disaster.



Lowest vulnerable health status

Ranked 17 of 17 departments, low health vulnerability indicates a population that will be more resilient to the negative health impacts associated with major disaster events.



Highest transportation capacity

Ranked 1 of 17 departments, well developed transportation networks facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

Recommendations

01

Reduce environmental stress

Invest in drought- and erosion-mitigation projects, and sustainable livestock-management practices to reduce environmental stress and degradation.

02

Invest in health infrastructure and resources

Invest in physical and human resources in the health sector to improve health-care capacity in the department.



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Matagalpa

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

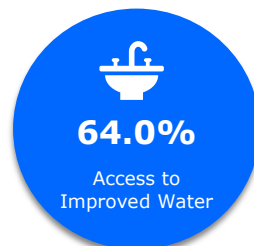
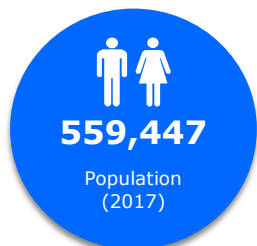
Department: Matagalpa



Department Capital: Matagalpa

Area: 6,804 km²

Matagalpa is located in central Nicaragua and is the second-largest department in population size. It is one of the most mountainous departments and the most diversified in terms of production of goods.



Municipality	Population
Rancho Grande	39,054
Río Blanco	35,454
El Tuma-La Dalia	72,700
San Isidro	19,760
Sébaco	37,097
Matagalpa	155,835
San Ramón	38,201
Matiguás	47,239
Muy Muy	16,857
Esquipulas	18,095
San Dionisio	18,637
Terrabona	14,349
Ciudad Darío	46,169



**Multi-Hazard Risk Rank:
High (6 of 17)**

**Lack of Resilience Rank:
High (5 of 17)**

RVA Component Scores

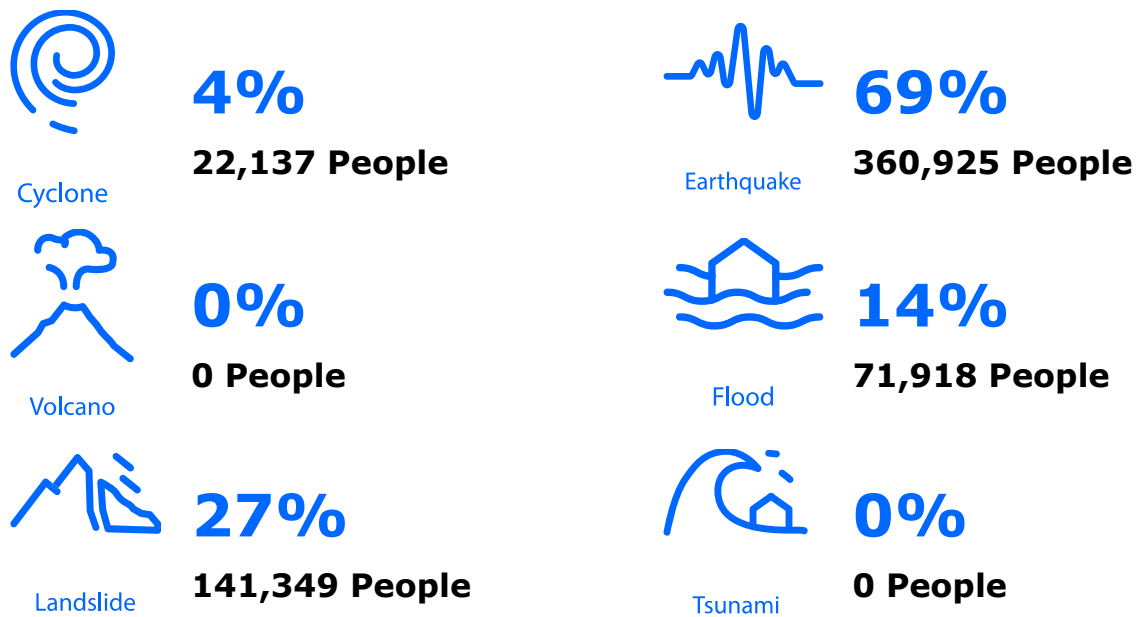
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		High		Medium		Medium		Very Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.495	6	0.572	5	0.341	8	0.512	7	0.369	15

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 8 of 17 Departments (Score: 0.341)

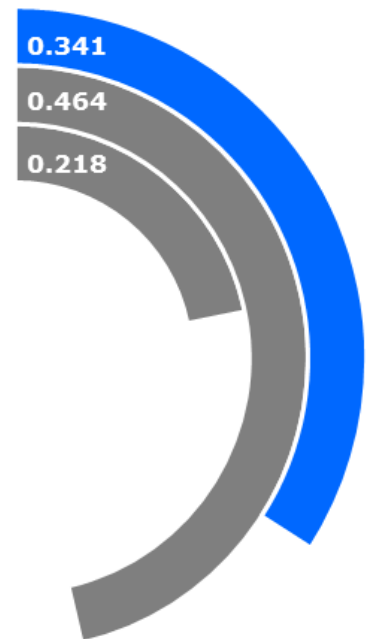
Table 2. Estimated ambient population² exposed to each hazard



Early Warning in Matagalpa

Matagalpa designed and recently instituted a Joint Early Warning System (EWS) for flood risk management. Through automated tools and equipment, the EWS was designed to provide information in real time in order to effectively “alert and communicate to the population about the possible occurrence of phenomenon possibly causing natural disasters, principally flooding in the city of Managua.” The EWS is operated and monitored by local community organizations and is a strong example of the positive outcomes of community engagement in disaster management.

Operation of the EWS in the City of Matagalpa, Nicaragua (January 2016)



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 7 of 17 Departments
(Score: 0.512) Vulnerability in Matagalpa is primarily driven by Population Pressures and Economic Constraints. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

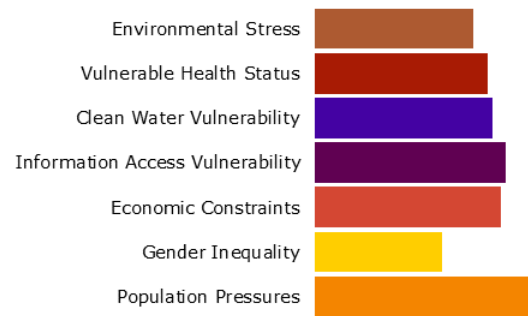









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	30.1% Province at Drought Risk	40.6% Erosion Risk	86.3 Livestock per km ²			
	Vulnerable Health Status	16.1 Infant Mortality Rate	24.6 Maternal Mortality Rate	67.9 yrs Average Life Expectancy	1.2% Acute Malnutrition (Children <5)	1.3% Population Disabled	
	Clean Water Vulnerability	64% Households with Access to Improved Water	24.4% Households with Access to Flush Toilets				
	Information Access Vulnerability	32.3% Illiteracy	4.95 yrs Average Years of Schooling	84.5% Primary School Enrollment	94.6% Households without Internet	36.8% Households without TV	45.8% Households without Radio
	Economic Constraints	63.6 Economic Dependency Ratio	74.4% Population in Poverty				
	Gender Inequality	46.2% Female Seats in Government	1.19 Female to Male Secondary Education Enrollment	0.49 Female to Male Labor Ratio			
	Population Pressures	2.56% Average Annual Population Change	3.38% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 15 of 17 Departments (Score: 0.369) Matagalpa exhibits weaker Coping Capacity in the areas of Infrastructure and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

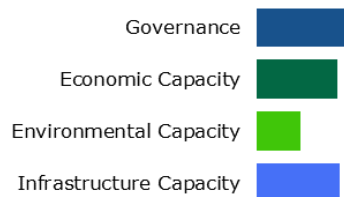









Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	5.2% Households that Receive Remittances	87.9% Employment Rate (Male)	44.7% Employment Rate (Female)	15.3% Population in Highest Welfare Quintile	\$637.7 Annual Nominal Global Revenue per Capita
	Governance	88.4% Crime Complaints Cleared	1469.7 Crime Rate per 100k Persons	71.2% Households without Garbage Collection	57% Voter Participation (2016 Election)	
	Environmental Capacity	13.1% Protected or Reforested Land				
	Infrastructure Capacity					
	Health Care Capacity		5.8 Hospital Beds per 10,000 Persons	7.8 Nurses per 10,000 Persons	5.8 Physicians per 10,000 Persons	18.8 km Average Distance to Nearest Hospital
	Communications Capacity		10.6% Households with Access to Fixed Phone Line	68.5% Households with Access to Mobile Phone		
	Transportation Capacity		76.7 km Average Distance to Nearest Port or Airport	0.43 km Total Length of Road per km ² (area)		

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 5 of 17 Departments (Score: 0.572)

Matagalpa's score and ranking are due to medium Vulnerability combined with very low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Population Pressures



Economic Capacity



Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 6 of 17 Departments (Score: 0.495)

Matagalpa's score and ranking are due to medium Multi-Hazard Exposure combined with very low Vulnerability and medium Coping Capacity scores.

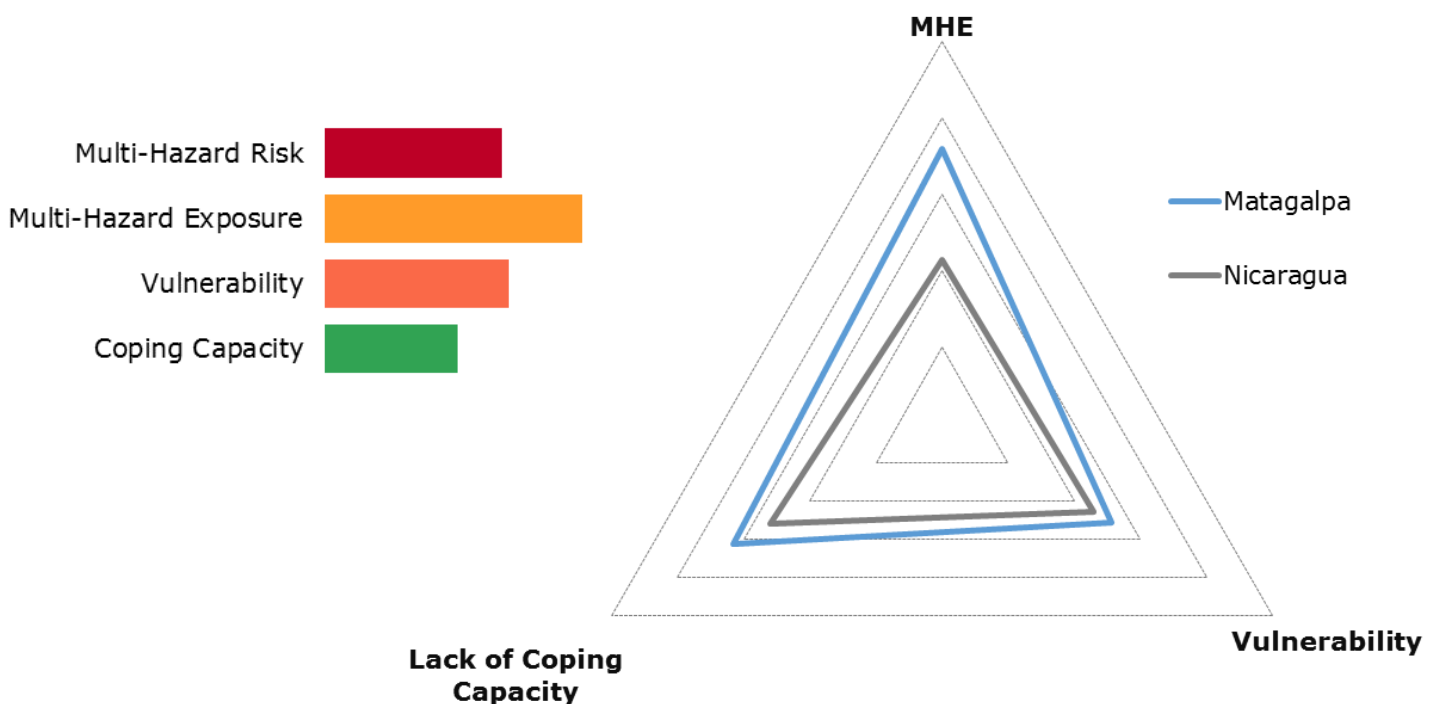


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Relatively low gender inequality

Driven by relative gender parity in government representation and secondary education enrollment. Low gender inequality indicates that vulnerable populations are more likely to have their needs met under 'normal' conditions and may be less susceptible during times of disaster

Recommendations

01

Plan for a growing population

As recommended for departments with similar vulnerability profiles, ensure that local economies, resources, and infrastructure can adequately support the growing population. Anticipate areas where additional growth is likely and estimate the resources necessary for sustainable growth.

02

Increase economic capacity

Foster small-business development and invest in business education and human capital to raise economic stability.

03

Invest in infrastructure

Limited infrastructure inhibits the capacity to communicate and exchange information, in addition to limiting the physical distribution of goods and services in Matagalpa. Increased access to health care and preventative medicine will improve health status and quality of life. Health-care, transportation, and communication infrastructures require upgrading and investment to increase connectivity and welfare in the department. Focused investments in these areas will increase coping capacity and resilience.



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Neuva Segovia

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

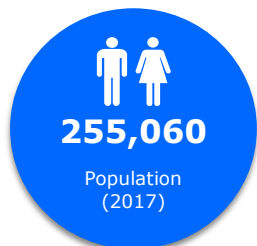
Department: Nueva Segovia



Department Capital: Ocotal

Area: 3,491 km²

Nueva Segovia is located in northern Nicaragua on the border with Honduras. It is known for its hot springs, coffee plantations, and a thriving handicraft industry.



Municipality	Population
Jalapa	68,099
Murra	18,130
El Júcaro	29,014
San Fernando	11,431
Mozonte	8,424
Dipilto	6,451
Macuelizo	6,812
Santa María	4,901
Ocotal	45,478
Ciudad Antigua	6,389
Quilalí	32,139
Wiwilí de Nueva Segovia	17,792



**Multi-Hazard Risk Rank:
Very Low (15 of 17)**

**Lack of Resilience Rank:
Medium (7 of 17)**

RVA Component Scores

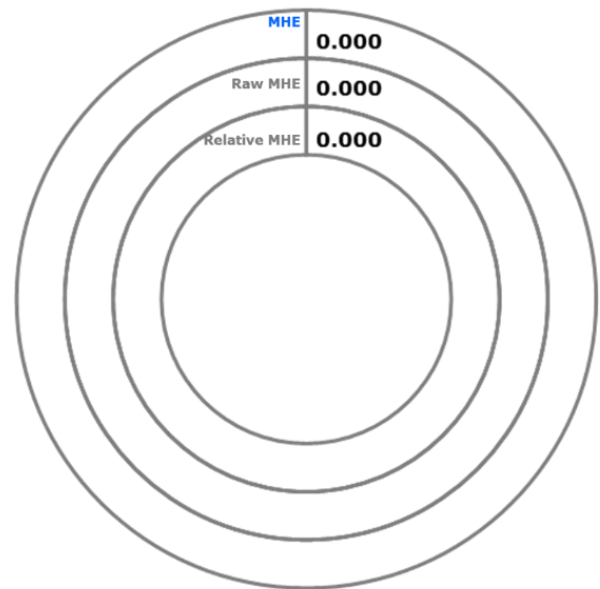
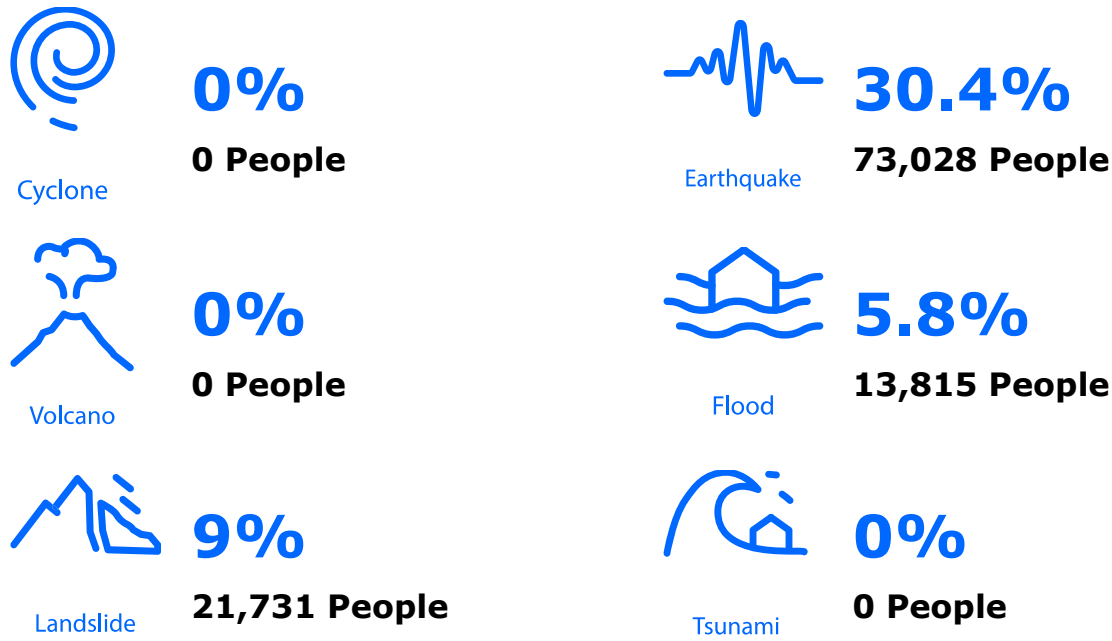
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Medium		Very Low		High		Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.373	15	0.560	7	0	17	0.513	6	0.393	13

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 17 of 17 Departments (Score: 0.000)

Table 2. Estimated ambient population² exposed to each hazard



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 6 of 17 Departments (Score: 0.513) Vulnerability in Nueva Segovia is primarily driven by high Information Access Vulnerability, Economic Constraints, and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

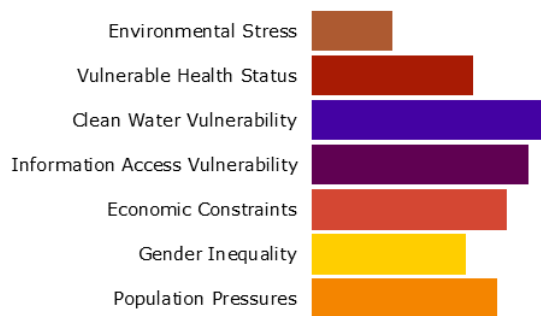









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	20.2% Province at Drought Risk	36.1% Erosion Risk	59.1 Livestock per km ²			
	Vulnerable Health Status	12.6 Infant Mortality Rate	18.6 Maternal Mortality Rate	71.2 Average Life Expectancy	2.0% Acute Malnutrition (Children < 5)	2.69% Population Disabled	
	Clean Water Vulnerability	50.0% Households with Access to Improved Water	14.0% Households with Access to Flush Toilets				
	Information Access Vulnerability	29.5% Illiteracy	4.8 yrs Average Years of Schooling	82.7% Primary School Enrollment	97.4% Households without Internet	39.6% Households without TV	45.3% Households without Radio
	Economic Constraints	65.6 Economic Dependency Ratio	73.4% Population in Poverty				
	Gender Inequality	41.7% Female Seats in Government	1.05 Female to Male Secondary Education Enrollment	0.47 Female to Male Labor Ratio			
	Population Pressures	2.16% Average Annual Population Change	3.4% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 13 of 17 Departments (Score: 0.393)

Nueva Segovia exhibits weaker Coping Capacity in the areas of Infrastructure, Economic Capacity, and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

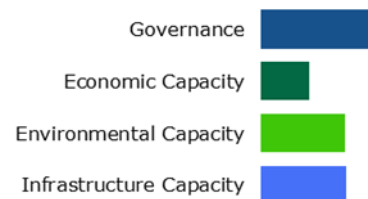


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	4.5% Households that Receive Remittances	83.6% Employment Rate (Male)	44.7% Employment Rate (Female)	6.3% Population in Highest Welfare Quintile	\$394.9 Annual Nominal Global Revenue per Capita	
	Governance	90.0% Crime Complaints Cleared	601.2 Crime Rate per 100k Persons	84.0% Households without Garbage Collection	44.7% Voter Participation (2016 Election)		
	Environmental Capacity	21.9% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		7.7 Hospital Beds per 10,000 Persons	14.1 Nurses per 10,000 Persons	7.5 Physicians per 10,000 Persons	13.9 km Average Distance to Nearest Hospital	93.1% Children Completed Immunization Schedule
	Communications Capacity		6.9% Households with Access to Fixed Phone Line	65.4% Households with Access to Mobile Phone			
	Transportation Capacity		135.3 km Average Distance to Nearest Port or Airport	0.56 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 7 of 17 Departments (Score: 0.560)

Nueva Segovia's score and ranking are due to high Vulnerability combined with low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Economic Capacity



Infrastructure Capacity



Clean Water Vulnerability

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 15 of 17 Departments (Score: 0.373)

Nueva Segovia's score and ranking are due to very low Multi-Hazard Exposure combined with high Vulnerability and low Coping Capacity scores.

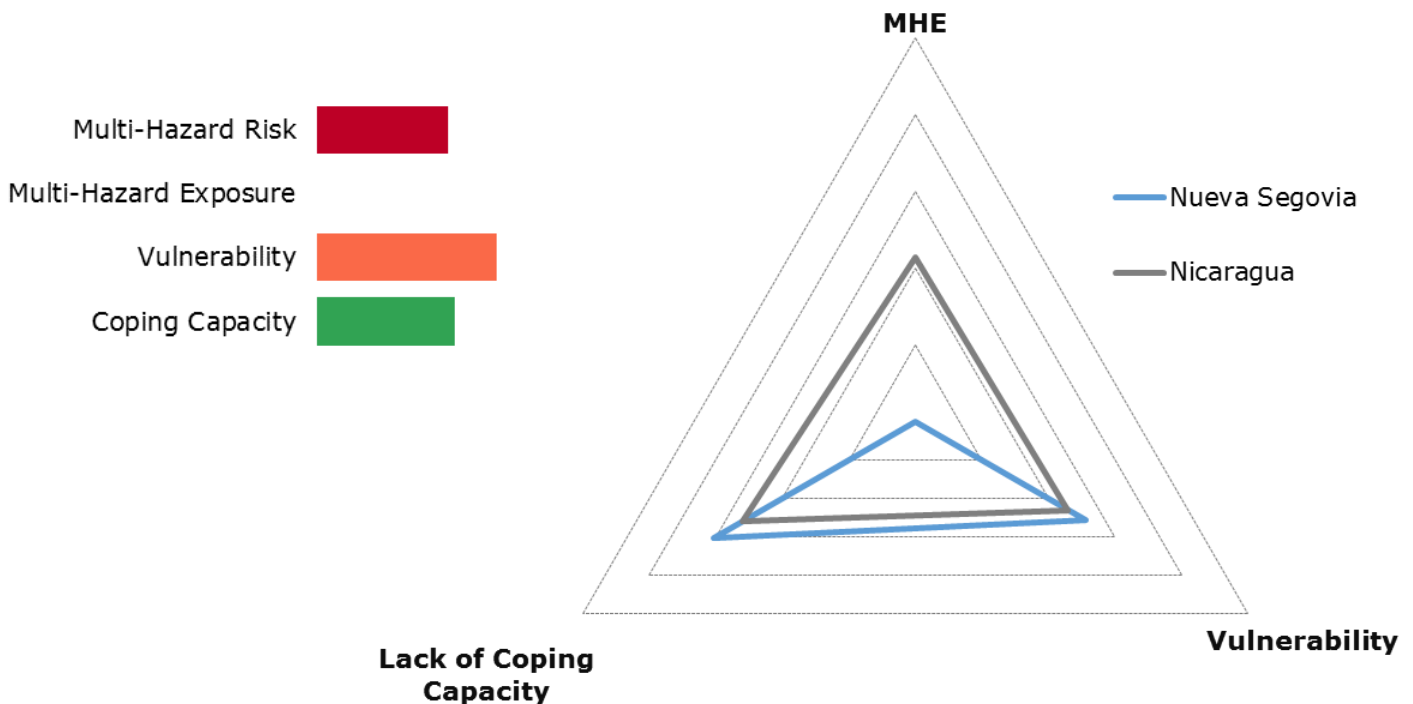


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Low environmental stress

Ranked 14 of 17 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Increase economic capacity

Foster small-business development and invest in business education and human capital to raise economic stability.

02

Invest in infrastructure

Similar to Madriz, limited infrastructure inhibits the capacity to communicate and exchange information, reduces access to health care, and limits the physical distribution of goods and services in Nueva Segovia. Health-care, transportation and communication infrastructures require upgrading and investment to increase connectivity and welfare in the department. Focused investments in these areas will increase coping capacity and resilience.

03

Reduce clean water vulnerability

Invest in public water and sewer infrastructure to ensure equitable access to safe, clean drinking water, and sanitation.



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A landscape photograph showing a large, conical volcano in the background, partially covered in green vegetation. The foreground features a dark, sandy beach curving along a body of water. The sky is bright blue with scattered white clouds.

Región Autónoma de la Costa Caribe Norte (RAAN)

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

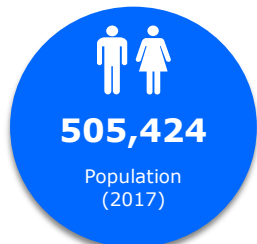
Department: Región Autónoma de la Costa Caribe Norte (RAAN)



Department Capital: Bilwi

Area: 32,820 km²

Región Autónoma de la Costa Caribe Norte is the largest territory in Nicaragua, located in the northeastern part of the country. It is primarily known for its nature reserves, indigenous communities, and its extensive array of seafood.



Municipality	Population
Waspán	59,565
Puerto Cabezas	103,805
Rosita	34,221
Bonanza	27,683
Waslala	69,309
Mulukukú	49,494
Siuna	110,980
Prinzapolka	50,367



**Multi-Hazard Risk Rank:
Very High (1 of 17)**

**Lack of Resilience Rank:
Very High (1 of 17)**

RVA Component Scores

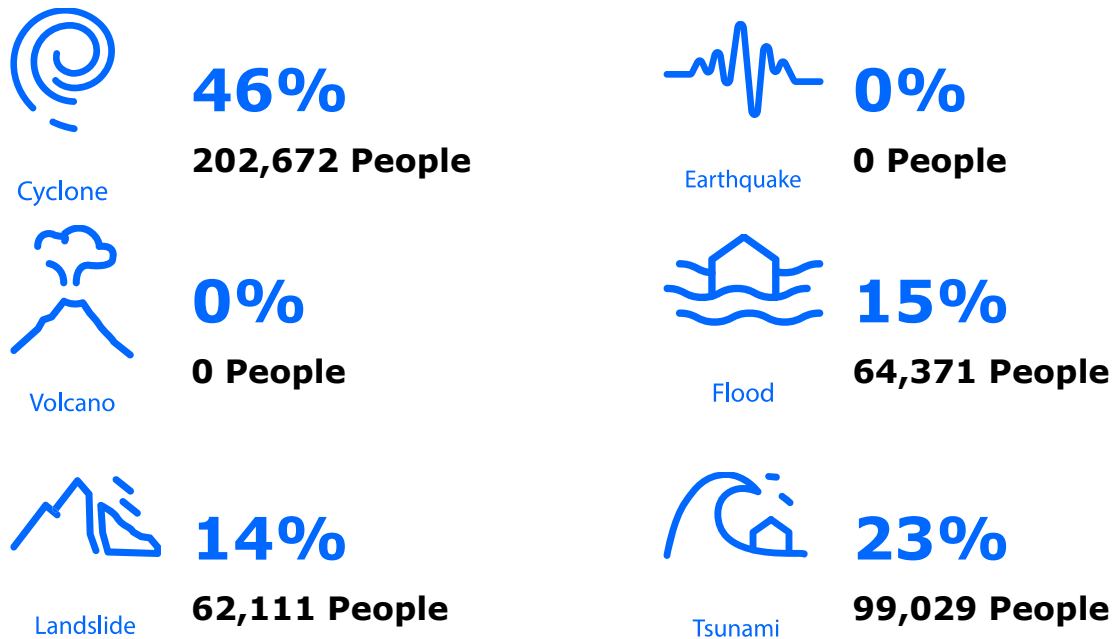
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Very High		Low		Very High		Very Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.586	1	0.744	1	0.271	12	0.741	1	0.253	17

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 12 of 17 Departments (Score: 0.271)

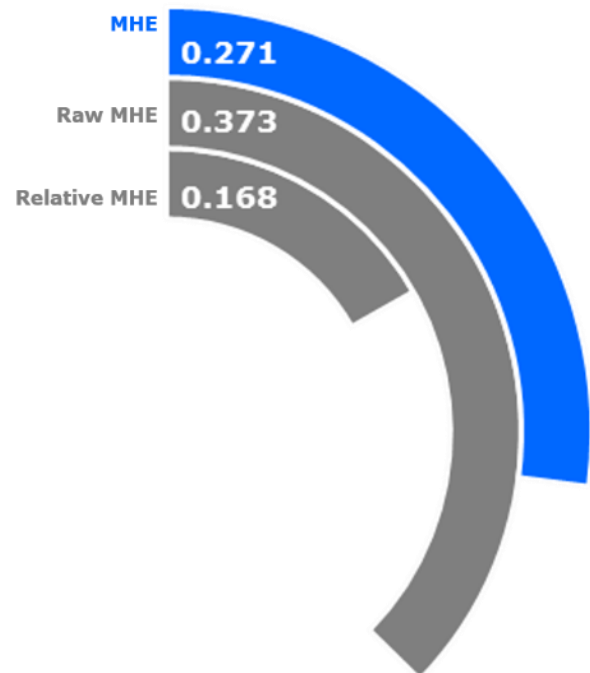
Table 2. Estimated ambient population² exposed to each hazard



Knowledge Recovery in RAAN

In disaster-prone areas of RAAN, “an important effort is being made [...] to create understanding and awareness of how indigenous people cope with natural hazards by tapping into their ancestral store of knowledge and keeping it alive.” Implemented by the Directorate of Adolescents and Youths (DAJ) of the Municipal Mayor’s Office of Puerto Cabezas through support from UNICEF, the research has resulted in “the compilation of local practices that define the communities’ capacities for self-governing of risk management” as well as the acknowledgement of “the importance of ancestral community organization as a key element for preparedness, mitigation, warning and response actions.”

From: *Knowledge Recovery in Nicaragua, UNISDR, 2015*



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 1 of 17 Departments

(Score: 0.741) Vulnerability in RAAN is primarily driven by very high Information Access

Vulnerability, Economic Constraints, Population Pressures, Clean Water Vulnerability, and Gender Inequality. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

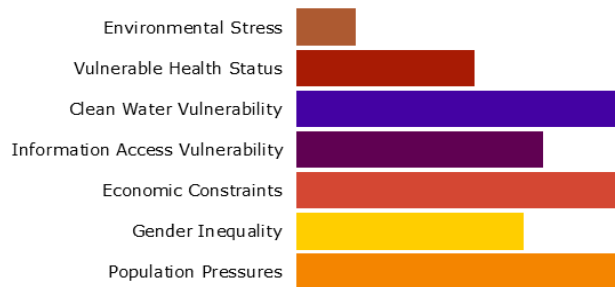









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	0% Province at Drought Risk	13.5% Erosion Risk	83.0 Livestock per km ²			
	Vulnerable Health Status	15.3 Infant Mortality Rate	94.4 Maternal Mortality Rate	67.4 Average Life Expectancy	1.5% Acute Malnutrition (Children < 5)	0.3% Population Disabled	
	Clean Water Vulnerability	13.2% Households with Access to Improved Water	6.0% Households with Access to Flush Toilets				
	Information Access Vulnerability	37.8% Illiteracy	4.4 yrs Average Years of Schooling	78.9% Primary School Enrollment	97.1% Households without Internet	57.3% Households without TV	35.0% Households without Radio
	Economic Constraints	78.2 Economic Dependency Ratio	92.1% Population in Poverty				
	Gender Inequality	18.8% Female Seats in Government	1.43 Female to Male Secondary Education Enrollment	0.57 Female to Male Labor Ratio			
	Population Pressures	5.3% Average Annual Population Change	7.6% Average Annual Urban Population Change				

³ Vulnerability: The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 17 of 17 Departments (Score: 0.253) RAN exhibits weaker Coping Capacity in the areas of Infrastructure, Economic Capacity, and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

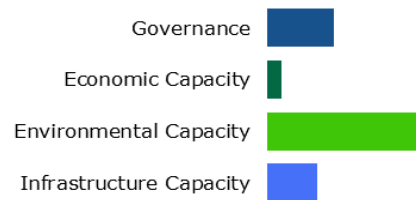


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	2.7% Households that Receive Remittances	80.1% Employment Rate (Male)	34.8% Employment Rate (Female)	2.3% Population in Highest Welfare Quintile	\$198.8 Annual Nominal Global Revenue per Capita
	Governance	88.3% Crime Complaints Cleared	1090.3 Crime Rate per 100k Persons	96.0% Households without Garbage Collection	22.7% Voter Participation (2016 Election)	
	Environmental Capacity	36.2% Protected or Reforested Land				
	Infrastructure Capacity					
	Health Care Capacity		6.9 Hospital Beds per 10,000 Persons	12.5 Nurses per 10,000 Persons	6.4 Physicians per 10,000 Persons	30.1 km Average Distance to Nearest Hospital
	Communications Capacity		2.2% Households with Access to Fixed Phone Line	52.8% Households with Access to Mobile Phone		
	Transportation Capacity		44.2 km Average Distance to Nearest Port or Airport	0.06 km Total Length of Road per km ² (area)		

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 1 of 17 Departments (Score: 0.744)

Región Autónoma de la Costa Caribe Norte's score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Economic Constraints



Clean Water Vulnerability



Population Pressures

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 1 of 17 Departments (Score: 0.586)

Región Autónoma de la Costa Caribe Norte's score and ranking are due to high Multi-Hazard Exposure combined with very low Vulnerability and high Coping Capacity scores.

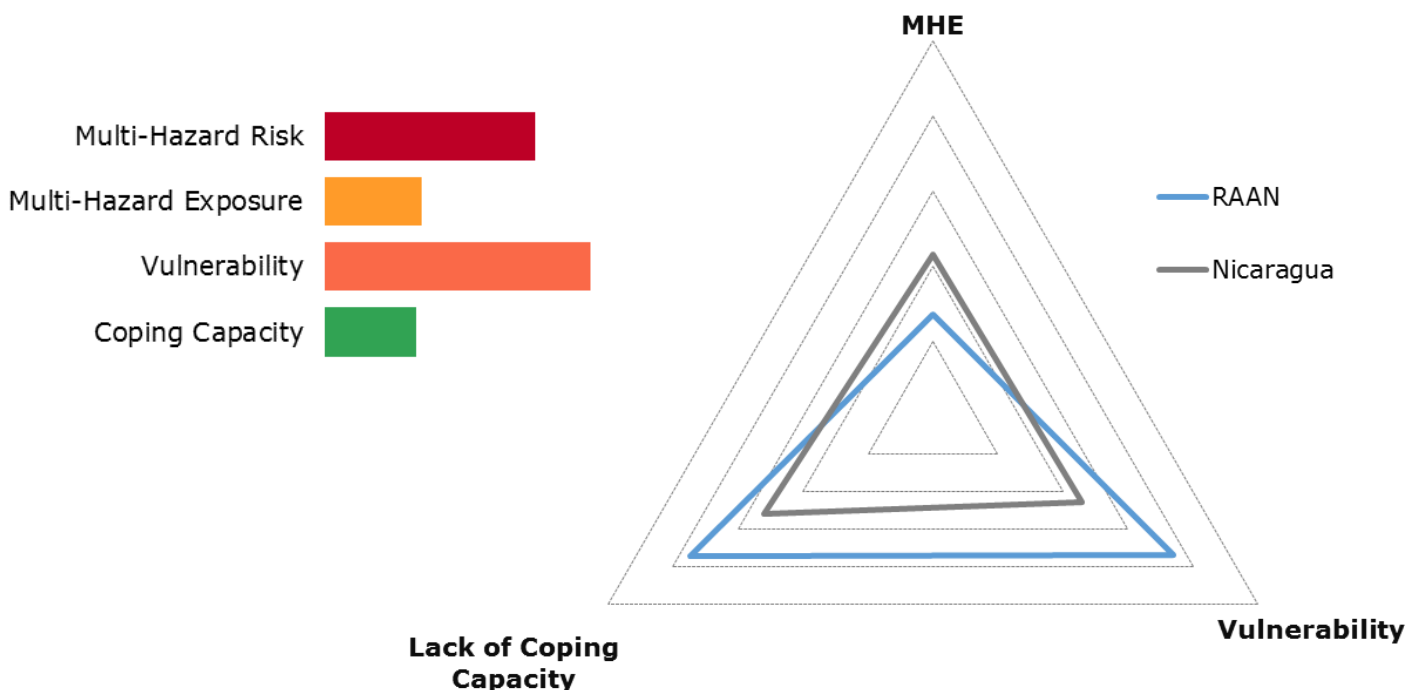


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Knowledge recovery

Incorporating local knowledge into disaster management practices to promote community engagement.



Very low environmental stress

Ranked 16 of 17 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster

Recommendations

01

Reduce clean water vulnerability

Invest in public water and sewer infrastructure to ensure equitable access to safe, clean drinking water and sanitation.

02

Alleviate economic constraints

Focus investments to reduce poverty and encourage business development and education programs to increase stable and viable economic opportunities in the region.

03

Plan for urban growth

Ensure local economies, resources, and infrastructure can adequately support the growing population by anticipating urban population pressures and necessary resources.



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A photograph of a large, conical volcano with a white plume of smoke or ash rising from its peak. The volcano is set against a bright blue sky with scattered white clouds. In the foreground, there is a dark, sandy beach that curves along the edge of a body of water. The water is calm, and the surrounding area is lush with green trees and vegetation.

Región Autónoma de la Costa Caribe Sur (RAAS)

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

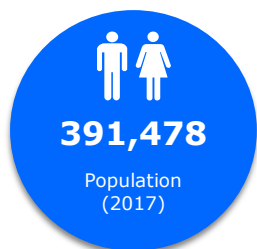
Department: Región Autónoma de la Costa Caribe Sur (RAAS)



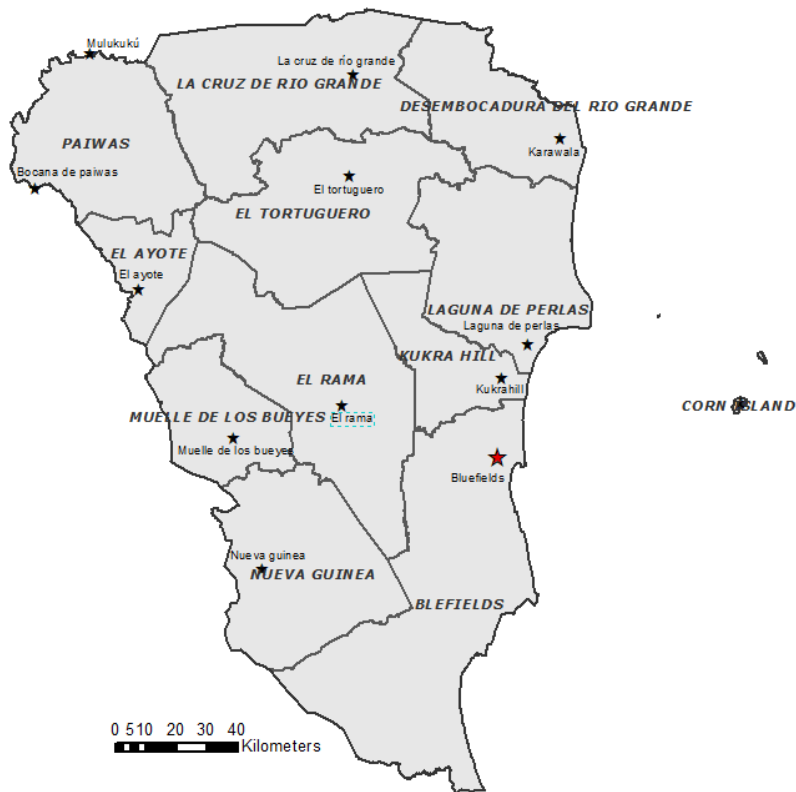
Department Capital: Bluefields

Area: 27,546 km²

Región Autónoma de la Costa Caribe Sur is the second largest territory in Nicaragua, located in the southeast of the country. It is primarily known for the Corn Islands, nature reserves, and its May Pole festivities.



Municipality	Population
Paiwas	36,085
La Cruz de Río Grande	38,639
Desembocadura de Río Grande	3,938
Laguna de Perlas	17,468
El Tortuguero	49,627
El Rama	58,331
El Ayote	17,535
Muelle de los Bueyes	24,251
Kukrahill	9,737
Corn Island	7,515
Bluefields	49,719
Nueva Guinea	78,633



**Multi-Hazard Risk Rank:
Very High (2 of 17)**

**Lack of Resilience Rank:
Very High (2 of 17)**

RVA Component Scores

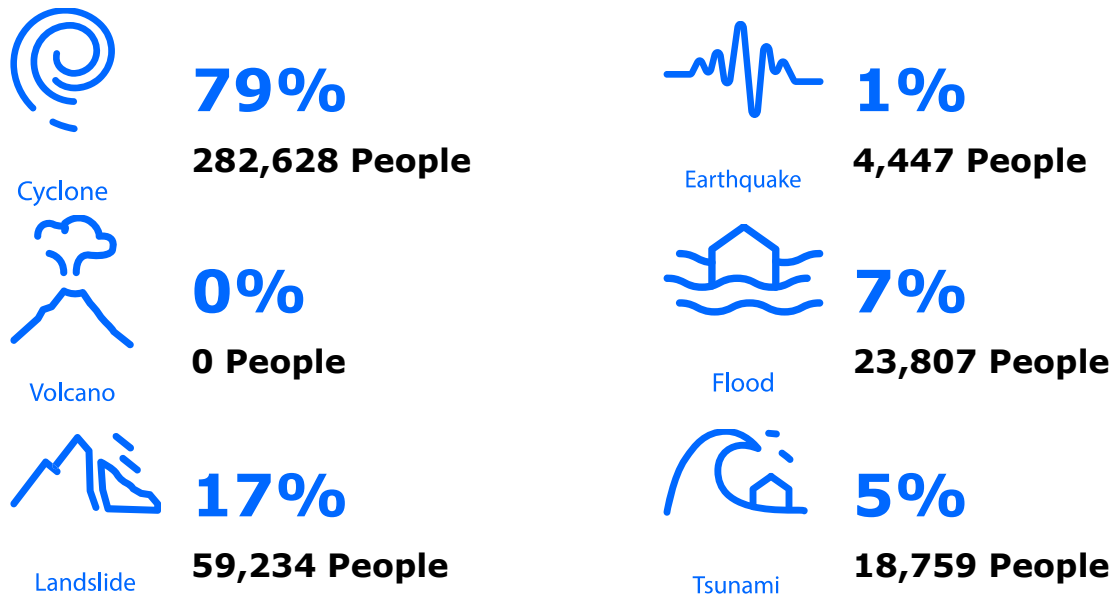
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Very High		Low		Very High		Very Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.575	2	0.724	2	0.275	11	0.705	3	0.256	16

Multi-Hazard Exposure (MHE)

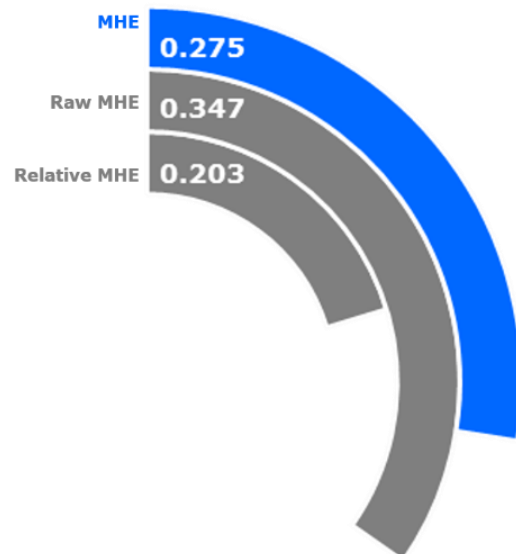
Multi-Hazard Exposure¹ Rank: 11 of 17 Departments (Score: 0.275)

Table 2. Estimated ambient population² exposed to each hazard



Response: Hurricane Otto

Hurricane Otto made landfall in southern Nicaragua on November 24, 2016, as a Category 2 major hurricane. RAAS's response to Hurricane Otto allowed for the identification of disaster-management strengths and challenges for the region. Twenty-four hours before landfall, the at-risk population was evacuated without incident. SINAPRED attributed the calm, orderly response from residents to the frequency of drills and exercises conducted at both the national and subnational levels, as well as the practice of including communities in their own disaster preparedness measures. No lives were lost to Hurricane Otto in Nicaragua. However, it was noted that a lack of resources was evident for managing the overall response in RAAS.



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 3 of 17 Departments

(Score: 0.705) Vulnerability in Región

Autónoma de la Costa Caribe Sur is primarily driven by very high Gender Inequality, Economic Constraints, Vulnerable Health Status, and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

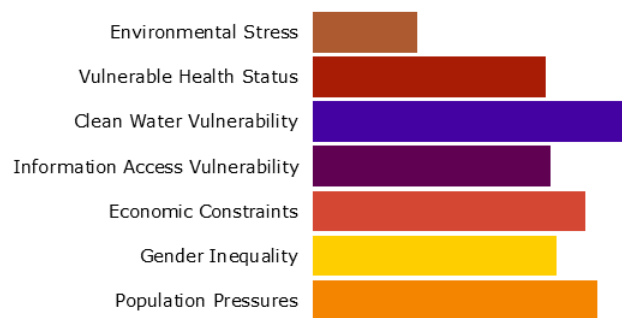









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	0% Province at Drought Risk	14.7% Erosion Risk	101.3 Livestock per km ²			
	Vulnerable Health Status	14.4 Infant Mortality Rate	125.1 Maternal Mortality Rate	67.4 Average Life Expectancy	2% Acute Malnutrition (Children < 5)	2.2% Population Disabled	
	Clean Water Vulnerability	14.3% Households with Access to Improved Water	13.7% Households with Access to Flush Toilets				
	Information Access Vulnerability	38.3% Illiteracy	4.3 yrs Average Years of Schooling	82.1% Primary School Enrollment	96.5% Households without Internet	49.5% Households without TV	35.7% Households without Radio
	Economic Constraints	68.1 Economic Dependency Ratio	89.5% Population in Poverty				
	Gender Inequality	25% Female Seats in Government	1.37 Female to Male Secondary Education Enrollment	0.62 Female to Male Labor Ratio			
	Population Pressures	2.56% Average Annual Population Change	4.53% Average Annual Urban Population Change				

³ Vulnerability: The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 16 of 17 Departments (Score: 0.256)

Región Autónoma de la Costa Caribe Sur exhibits weaker Coping Capacity in the areas of Infrastructure, Economic Capacity, and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department’s overall Coping Capacity score.

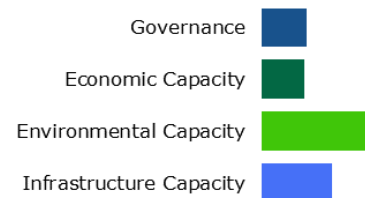


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	5.1% Households that Receive Remittances	85.4% Employment Rate (Male)	32.5% Employment Rate (Female)	7.2% Population in Highest Welfare Quintile	\$248.3 Annual Nominal Global Revenue per Capita	
	Governance	85.4% Crime Complaints Cleared	1305.6 Crime Rate per 100k Persons	84.7% Households without Garbage Collection	17.4% Voter Participation (2016 Election)		
	Environmental Capacity	28.9% Protected or Reforested Land					
	Infrastructure Capacity						
	Health Care Capacity		6.7 Hospital Beds per 10,000 Persons	13.8 Nurses per 10,000 Persons	8.7 Physicians per 10,000 Persons	41.2 km Average Distance to Nearest Hospital	75% Children Completed Immunization Schedule
	Communications Capacity		5.2% Households with Access to Fixed Phone Line	74.7% Households with Access to Mobile Phone			
	Transportation Capacity		60.8 km Average Distance to Nearest Port or Airport	0.05 km Total Length of Road per km ² (area)			

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 2 of 17 Departments (Score: 0.724)

Región Autónoma de la Costa Caribe Sur's score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



**Clean Water
Vulnerability**



Governance



**Population
Pressures**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 2 of 17 Departments (Score: 0.575)

Región Autónoma de la Costa Caribe Sur's score and ranking are due to low Multi-Hazard Exposure combined with very high Vulnerability and very low Coping Capacity scores.

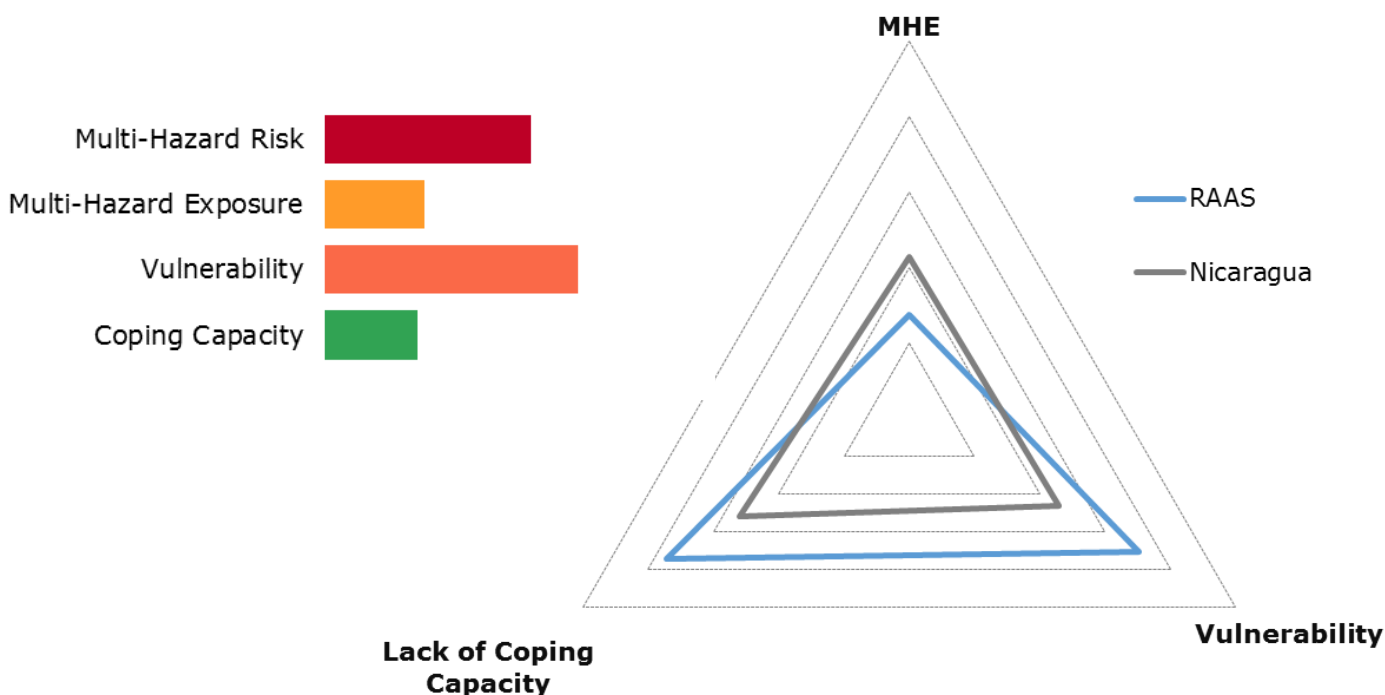


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Responsive population

Engage with drills and exercises, and willing to evacuate to promote a successful response.



Low environmental stress

Ranked 13 of 17 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Resource assessment

Conduct an assessment to document and track subnational disaster management resources, including facilities (e.g., EOCs and command posts, warehouses) and equipment critical to disaster management activities to enhance understanding of capabilities and needs, justify budget increases, and inform contingency planning for the territories.

02

Reduce clean water vulnerability

Similar to RAAN, invest in public water and sewer infrastructure to ensure equitable access to safe, clean drinking water and sanitation.

03

Improve governance

Provide additional support for local police, firefighters, and emergency medical resources to improve public safety and increase crime-clearance rates. In addition, promote civic engagement and voter participation in local and national elections to improve public voice and accountability. Finally, seek partnerships with the private sector to increase the provision of services, such as garbage collection.



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Río San Juan

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

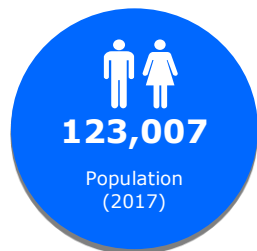
Department: Río San Juan



Department Capital: San Carlos

Area: 7,540 km²

Río San Juan is in the southeastern part of Nicaragua and is primarily known for its national wildlife refuges, the San Juan River, and its historic colonial sites.



Municipality	Population
Morrito	7,457
El Almendro	14,567
San Miguelito	18,472
San Carlos	46,241
El Castillo	33,734
San Juan de Nicaragua	2,536



Multi-Hazard Risk Rank: High (3 of 17)

Lack of Resilience Rank: High (4 of 17)

RVA Component Scores

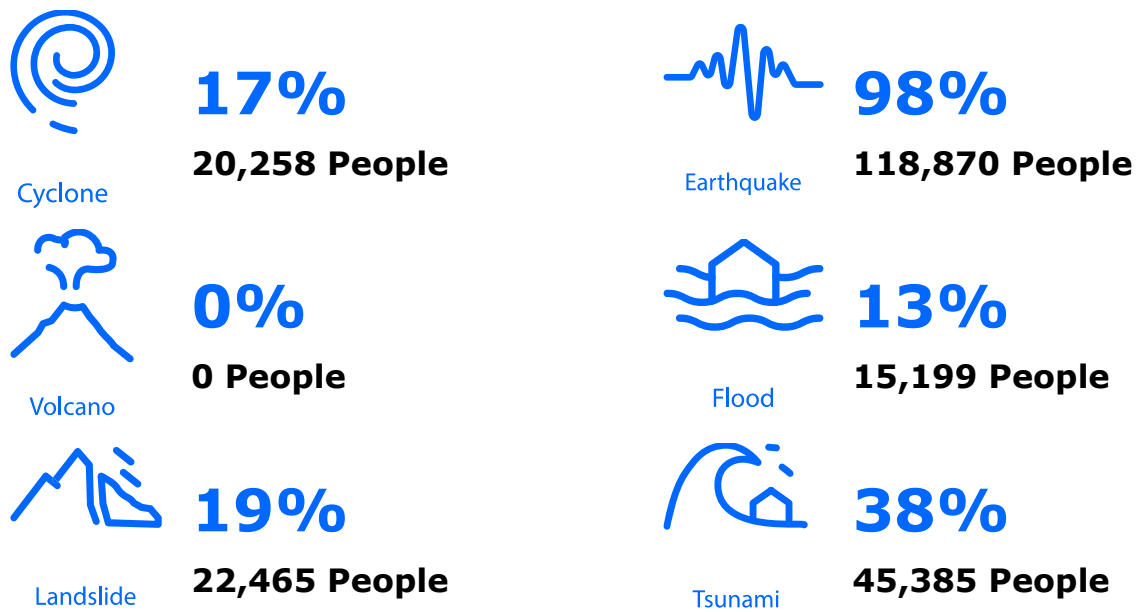
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		High		Low		High		Low	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.515	3	0.615	4	0.316	10	0.666	4	0.436	10

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure¹ Rank: 10 of 17 Departments (Score: 0.316)

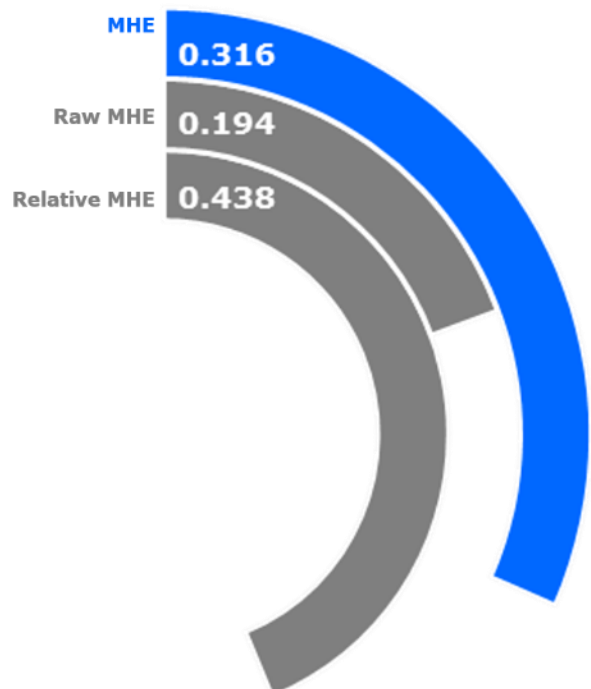
Table 2. Estimated ambient population² exposed to each hazard



Case Study:

In 2016 the Nordic Development Fund completed a project designed to increase resilience and watersheds to climate change impacts through natural resources management, design and construction of small-scale infrastructure, and development of climate change capacity. Since the project was completed farmers have increased their agricultural production by 18% and enhanced their resilience to drought during the dry season.

<https://www.ndf.fi/project/disaster-management-and-climate-change-project-ndf-c17>



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 4 of 17 Departments (Score: 0.666) Vulnerability in Río San Juan is primarily driven by high Vulnerable Health Status, Population Pressures, and Information Access Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

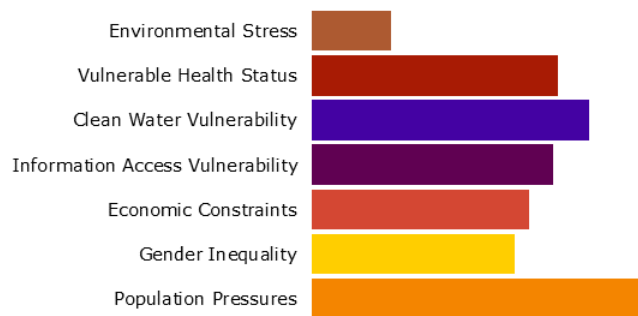









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	0% Province at Drought Risk	7.6% Erosion Risk	96.2 Livestock per km ²			
	Vulnerable Health Status	19.6 Infant Mortality Rate	35.1 Maternal Mortality Rate	71.8 yrs Average Life Expectancy	3.7% Acute Malnutrition (Children < 5)	2.8% Population Disabled	
	Clean Water Vulnerability	42.6% Households with Access to Improved Water	7% Households with Access to Flush Toilets				
	Information Access Vulnerability	37.6% Illiteracy	4.4 yrs Average Years of Schooling	84% Primary School Enrollment	98.5% Households without Internet	48.3% Households without TV	37.1% Households without Radio
	Economic Constraints	63.2 Economic Dependency Ratio	82.9% Population in Poverty				
	Gender Inequality	50% Female Seats in Government	1.22 Female to Male Secondary Education Enrollment	0.60 Female to Male Labor Ratio			
	Population Pressures	3.31% Average Annual Population Change	4.38% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 10 of 17 Departments (Score: 0.436) Río San Juan exhibits weaker Coping Capacity in the areas of Economic Capacity and Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

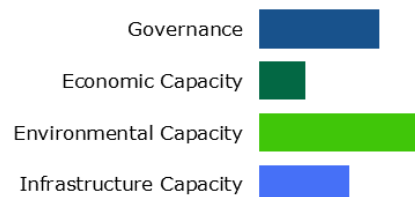


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	2.7% Households that Receive Remittances	94.9% Employment Rate (Male)	37.8% Employment Rate (Female)	5.7% Population in Highest Welfare Quintile	\$180.1 Annual Nominal Global Revenue per Capita
	Governance	91.2% Crime Complaints Cleared	956.6 Crime Rate per 100k Persons	89.1% Households without Garbage Collection	57.7% Voter Participation (2016 Election)	
	Environmental Capacity	39.1% Protected or Reforested Land				
	Infrastructure Capacity					
	Health Care Capacity		5.9 Hospital Beds per 10,000 Persons	20.6 Nurses per 10,000 Persons	9.6 Physicians per 10,000 Persons	39.7 km Average Distance to Nearest Hospital
	Communications Capacity		2.9% Households with Access to Fixed Phone Line	76.1% Households with Access to Mobile Phone		
	Transportation Capacity		47.6 km Average Distance to Nearest Port or Airport	0.09 km Total Length of Road per km ² (area)		

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 4 of 17 Departments (Score: 0.615)

Río San Juan's score and ranking are due to high Vulnerability combined with low Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Vulnerable Health Status



Population Pressures



Clean Water Vulnerability

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 3 of 17 Departments (Score: 0.515)

Río San Juan's score and ranking are due to low Multi-Hazard Exposure combined with high Vulnerability and low Coping Capacity scores.

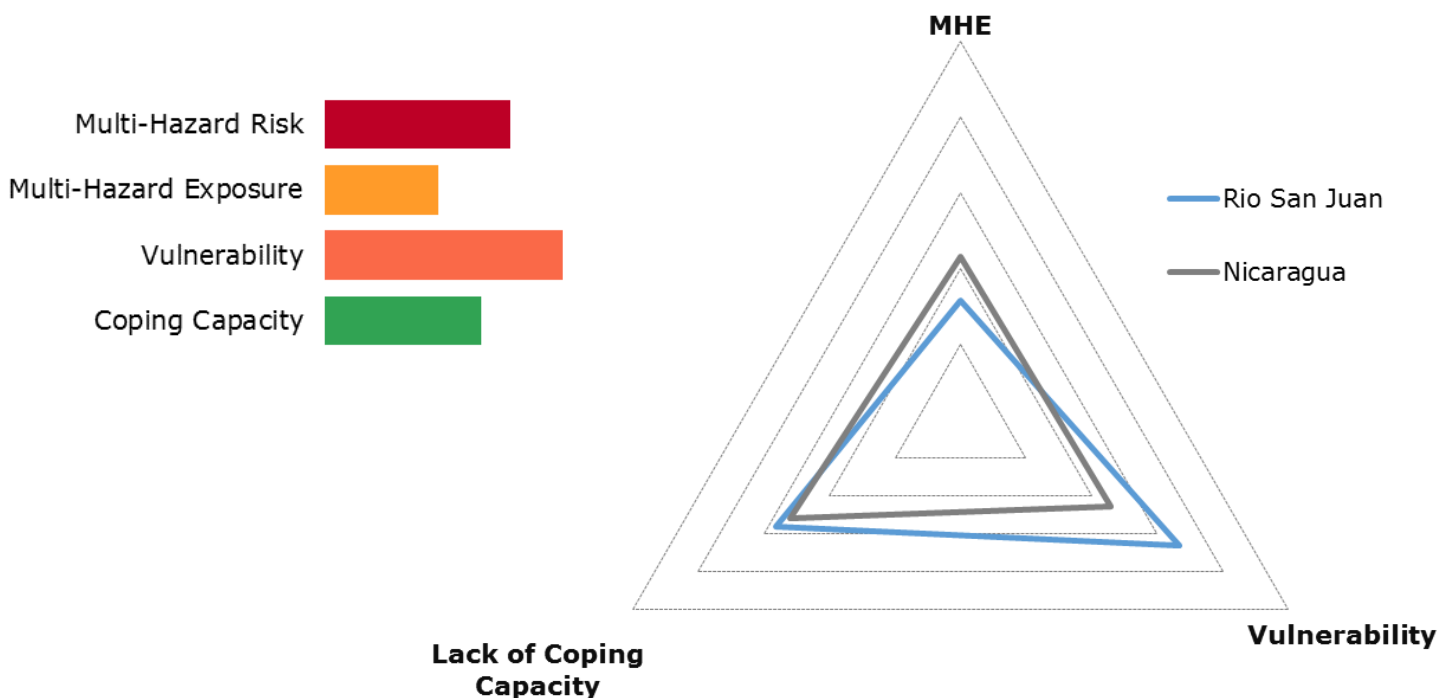


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Low environmental stress

Ranked 15 of 17 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Build health care capacity

Focus investments to increase access to health care and preventative medicine, as well as transportation to improve connectivity and ensure that health services can be reached by the entire population.

02

Plan for a growing population

Ensure local economies, resources, and infrastructure can adequately support the growing population. Anticipate areas where additional growth is likely and estimate the resources necessary for sustainable growth.

03

Reduce clean water vulnerability

Invest in public water and sewer infrastructure to ensure equitable access to safe, clean drinking water and sanitation.



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Rivas

**Nicaragua National Disaster Preparedness Baseline Assessment
Department Profile**

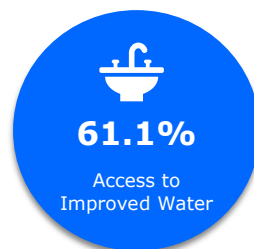
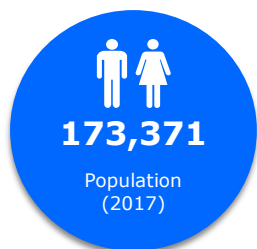
Department: Rivas



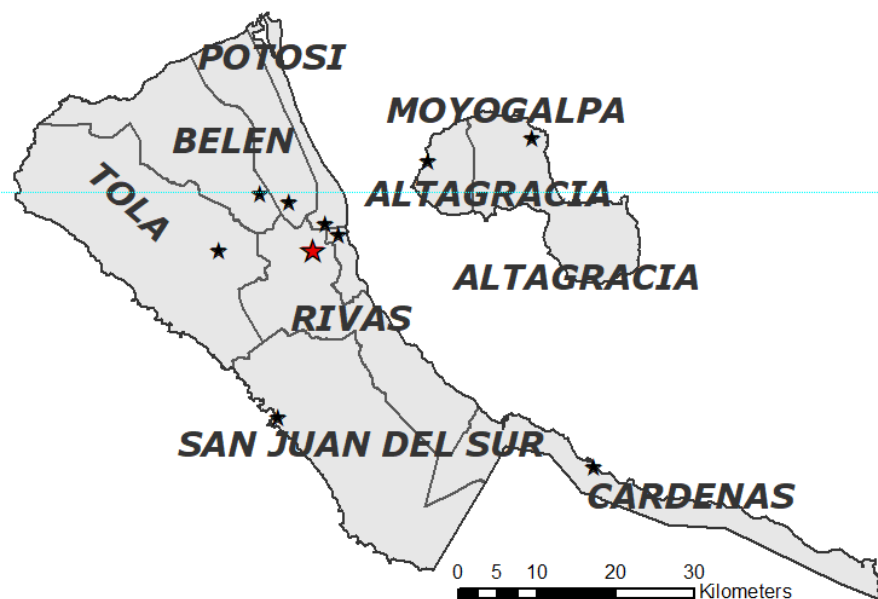
Department Capital: Rivas

Area: 2,162 km²

Rivas is located in the isthmus that separates Lake Nicaragua and the Pacific Ocean. It is well known for the beaches of San Juan del Sur and the volcanic island of Ometepe.



Municipality	Population
Tola	23,350
Belén	18,330
Potosí	13,163
Buenos Aires	5,703
Moyogalpa	10,330
Altagracia	22,455
San Jorge	8,792
Rivas	48,014
San Juan del Sur	15,733
Cárdenas	7,501



**Multi-Hazard Risk Rank:
Medium (11 of 17)**

**Lack of Resilience Rank:
Low (10 of 17)**

RVA Component Scores

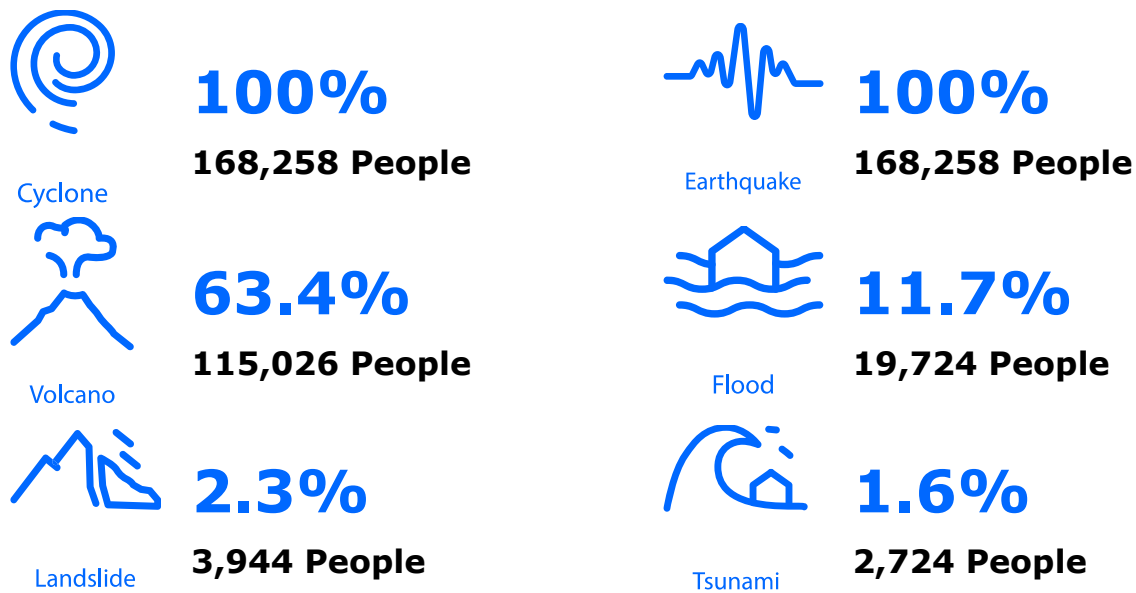
Table 1. Department scores and ranks (compared across departments) for each index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Low		Medium		Low		Medium	
Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)	Score	Rank (of 17)
0.469	11	0.413	10	0.580	7	0.354	10	0.527	8

Multi-Hazard Exposure (MHE)

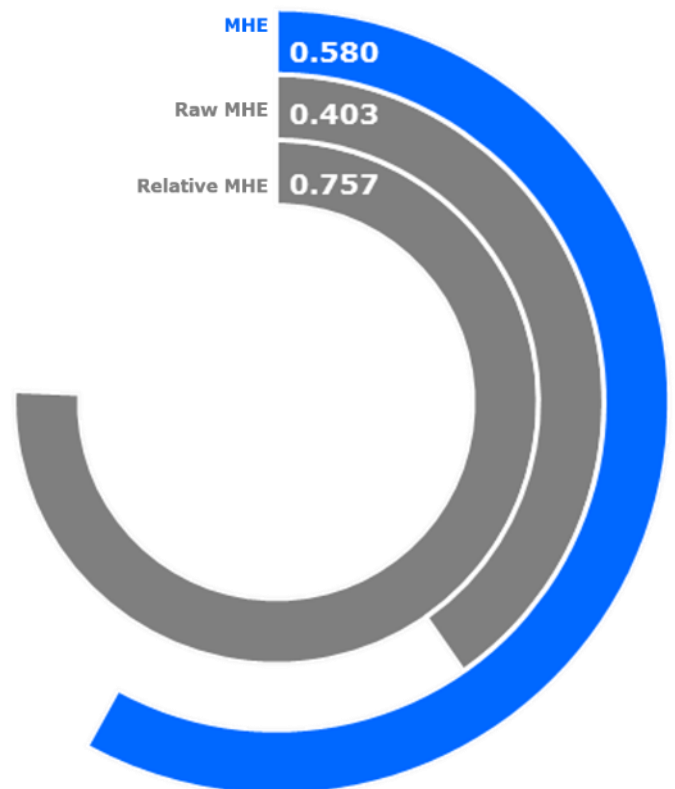
Multi-Hazard Exposure¹ Rank: 7 of 17 Departments (Score: 0.580)

Table 2. Estimated ambient population² exposed to each hazard



Case Study: Rivas CODEPRED

Riva's CODEPRED follows an open participation model that helps to make the population aware of all hazards. Development of a prevention and preparedness culture over the last 10 years has helped to overcome the challenged that a lack of infrastructure and coping capacity presents. Exercises are conducted every 2-3 months and community level family plans are in development to build capacity from the ground up.



¹ Multi-Hazard Exposure: Average exposure of the population to hazards.

² Ambient Population: 24-hour average estimate of the population in each department. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability³ Rank: 10 of 17 Departments (Score: 0.354) Vulnerability in Rivas is primarily driven by Environmental Stress and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

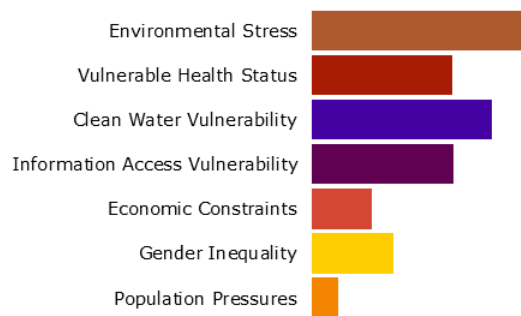









Table 3. Component scores for each vulnerability sub-component

	Environmental Stress	89.7% Province at Drought Risk	41.5% Erosion Risk	81.4 Livestock per km ²			
	Vulnerable Health Status	12.2 Infant Mortality Rate	27.0 Maternal Mortality Rate	73.7 yrs Average Life Expectancy	0.7% Acute Malnutrition (Children <5)	3.3% Population Disabled	
	Clean Water Vulnerability	61.1% Households with Access to Improved Water	25.7% Households with Access to Flush Toilets				
	Information Access Vulnerability	16.4% Illiteracy	6.1 yrs Average Years of Schooling	88.6% Primary School Enrollment	96.9% Households without Internet	14.8% Households without TV	67.3% Households without Radio
	Economic Constraints	51.5 Economic Dependency Ratio	60.5% Population in Poverty				
	Gender Inequality	45.0% Female Seats in Government	1.13 Female to Male Secondary Education Enrollment	0.39 Female to Male Labor Ratio			
	Population Pressures	1.37% Average Annual Population Change	1.79% Average Annual Urban Population Change				

³ **Vulnerability:** The socioeconomic conditions that are associated with the susceptibility to disruptions in a country's normal functions.

Coping Capacity (CC)

Coping Capacity⁴ Rank: 8 of 17 Departments (Score: 0.527) Rivas exhibits weaker Coping Capacity in the areas of Environmental Capacity and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

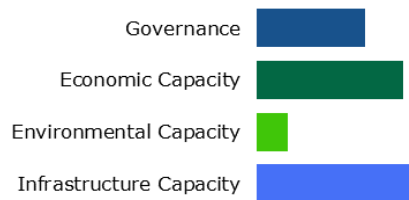


Table 4. Component scores for each coping capacity sub-component

	Economic Capacity	9.1% Households that Receive Remittances	87.1% Employment Rate (Male)	52.8% Employment Rate (Female)	16.1% Population in Highest Welfare Quintile	\$2357 Annual Nominal Global Revenue per Capita
	Governance	90.3% Crime Complaints Cleared	1592.3 Crime Rate per 100k Persons	79.1% Households without Garbage Collection	66.6% Voter Participation (2016 Election)	
	Environmental Capacity	10.5% Protected or Reforested Land				
	Infrastructure Capacity					
	Health Care Capacity		12.1 Hospital Beds per 10,000 Persons	21.6 Nurses per 10,000 Persons	10.0 Physicians per 10,000 Persons	14.9 km Average Distance to Nearest Hospital
	Communications Capacity		6.6% Households with Access to Fixed Phone Line	78.7% Households with Access to Mobile Phone		91.2% Children Completed Immunization Schedule
	Transportation Capacity		15.9 km Average Distance to Nearest Port or Airport	0.45 km Total Length of Road per km ² (area)		

⁴ Coping Capacity: The systems, means, and abilities of a country to absorb and respond to events that could potentially disrupt normal function.

Lack of Resilience (LR)

Lack of Resilience⁵ Rank: 10 of 17 Departments (Score: 0.413)

Rivas' score and ranking are due to low Vulnerability combined with medium Coping Capacity scores.

Table 5. The three thematic areas with the weakest relative scores



Environmental Stress



Governance



Environmental Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk⁶ Rank: 11 of 17 Departments (Score: 0.469)

Rivas' score and ranking are due to medium Multi-Hazard Exposure combined with low Vulnerability and medium Coping Capacity scores.

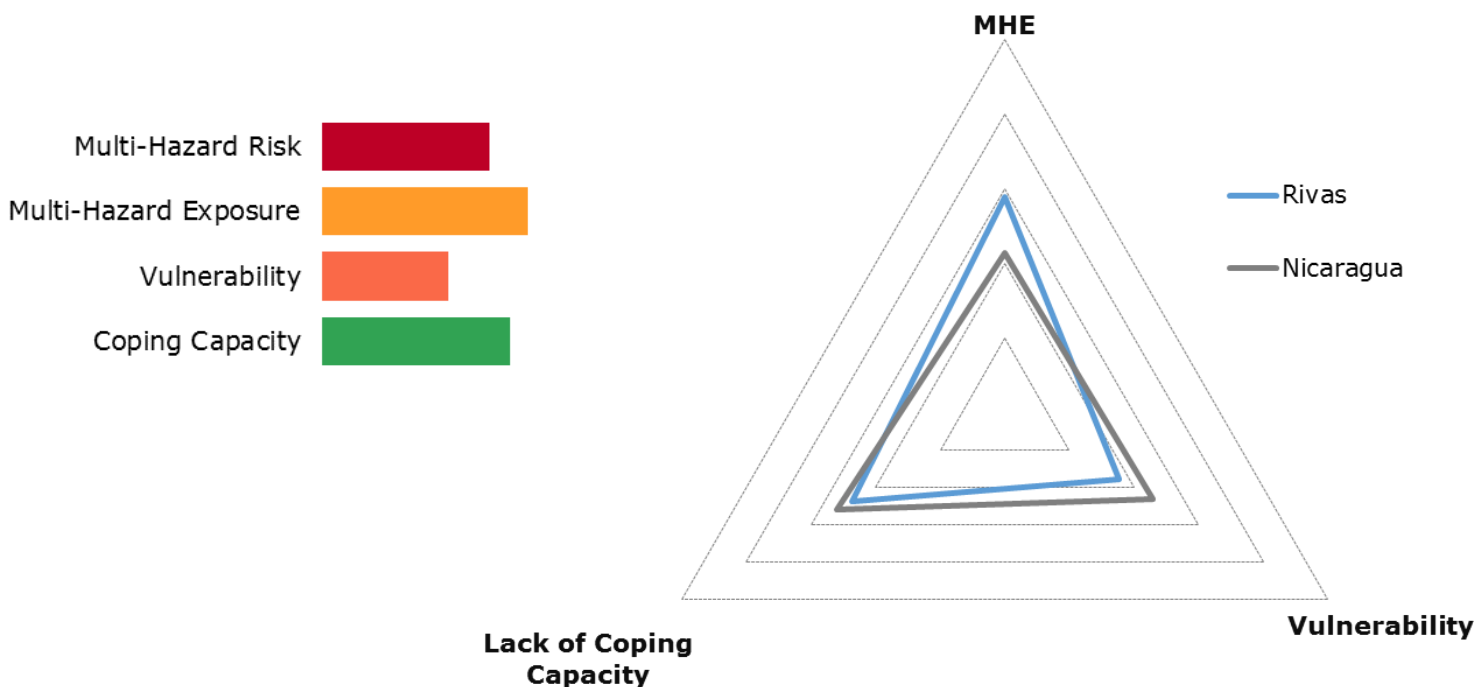


Figure 1. Department Multi-Hazard Risk component scores compared to overall average country scores

⁵ **Lack of Resilience:** The susceptibility to impact from the short-term inability to absorb, respond to, and recover from disruptions to a country's normal function. This index provides a hazard-independent look at current socioeconomic conditions.

⁶ **Multi-Hazard Risk:** The likelihood of losses or disruptions to a country's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability, and coping capacity.

Successes



Low economic constraints

Ranked 14 of 17 departments, low economic constraints indicate that Rivas may be able to invest in additional mitigation and preparedness measures at the local and community level.



Very low population pressures

Ranked 16 of 17 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.



High health care capacity

Ranked 3 of 17 departments, high health care capacity indicates that the population will have access to healthcare services before, during, and after a disaster.

Recommendations

01

Reduce environmental stress

Invest in drought- and erosion-mitigation projects to reduce environmental stress and degradation.

02

Improve governance

Provide additional support for local police, firefighters, and emergency medical resources to improve public safety and reduce crime rates. In addition, seek partnerships with the private sector to increase the provision of services, such as garbage collection.



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