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Dominican Republic Province Profiles

National Disaster Preparedness Baseline Assessment

Subnational Assessment Results

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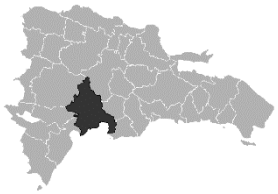
Azua

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Azua

Province Capital: Azua



Area: 3,001 km^2

Azua's economy is based on coffee, sugar and tobacco plantations. It is also supported by cereal, rice, vegetables, and corn crops. The city of Azua is rich in monuments and buildings with historical, social or religious value.

220,470 Population (2017)

65.1% Population in Poverty

24.3% Illiterate Population

14.8 Infant Mortality Rate

88.7% Access to Improved Water

Municipality	Population
Azua	93,969
Estebanía	5,804
Guayabal	5,415
Las Charcas	11,566
Las Yayas de Viajama	18,126
Padre las Casas	20,615
Peralta	15,695
Pueblo Viejo	11,559
Sabana Yegua	19,567
Tábara Arriba	18,154

Multi-Hazard Risk Rank: Low (25 of 32)

Lack of Resilience Rank: High (9 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		High		Low		Very High		Very High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.473	25	0.525	9	0.370	26	0.585	6	0.536	7

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 26 of 32 Provinces (Score: 0.370)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
253,656 People

Earthquake
1%
2,522 People

Landslide
69%
175,417 People

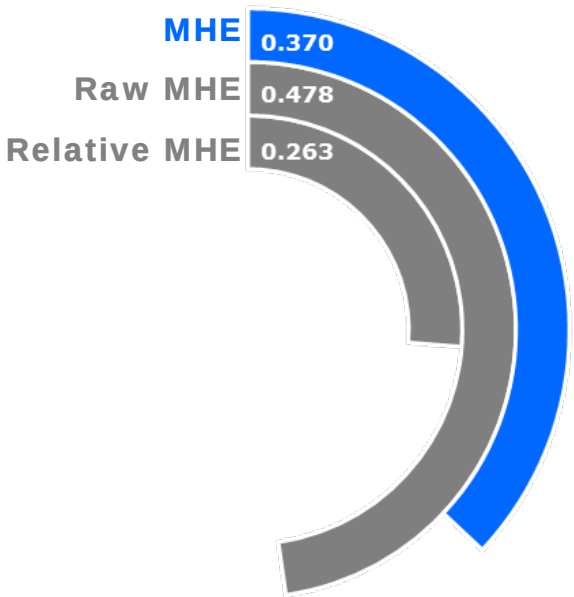
Flood
49%
123,640 People

Tsunami
2%
4,971 People

Case Study: Disaster Risk Reduction in Las Terreras, Azua

After Hurricane Sandy decimated a significant portion of the Dominican Republic in 2012, including coastal communities in Azua, NGOs and the European Commission's Humanitarian Aid and Civil Protection Department (ECHO) partnered to implement disaster risk reduction programs in impacted areas. With the aim of building resilience in communities affected by major weather events on a routine basis, ECHO and NGOs supported the construction of livestock shelters for the protection of farmers' livelihoods. Communities were also educated in the country's alert levels and how to ensure their safety at each level of alert.

"The Dominican Republic Prepares for Future Hurricanes and Floods" – European Commission, 14 October 2015



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 6 of 32 Provinces (Score: 0.585) Vulnerability in Azua is primarily influenced by **Gender Inequality, Environmental Stress** and **Information Access Vulnerability.** The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

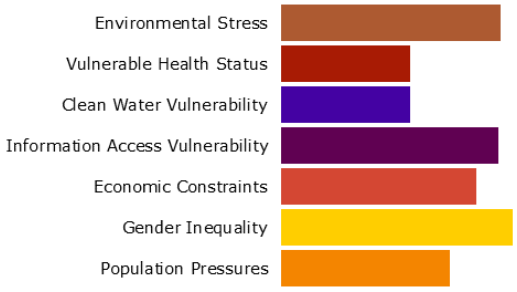


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**90%** Province Susceptible to Drought	**-1.4%** Average Annual Forest Change					
Vulnerable Health Status	**14.8** Infant Mortality Rate	**102.7** Maternal Mortality Rate	**13.5** Chronic Malnutrition	**7.1%** Population Disabled			
Clean Water Vulnerability	**11.3%** Households without Access to Improved Water	**15.9%** Households without Access to Flush Toilets					
Information Access Vulnerability	**24.3%** Illiteracy	**85.3%** Primary School Enrollment	**95.9%** Households without Internet	**37.3%** Households without TV	**63.7%** Households without Radio	**5.4** Average years of Schooling	
Economic Constraints	**62.4** Economic Dependency Ratio	**65.1%** Population in Poverty	**47.0%** CEP Beneficiaries				
Gender Inequality	**34.1%** Female Seats in Government	**1.2** Female to Male Years of Schooling	**0.54** Female to Male Labor Ratio				
Population Pressures	**0.37%** Average Annual Population Change	**5.6%** 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 Capacity[4] Rank: 7 of 32 Provinces (Score: 0.536)
The thematic areas with the weakest relative scores are **Economic Capacity** and **Infrastructure (Communications)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

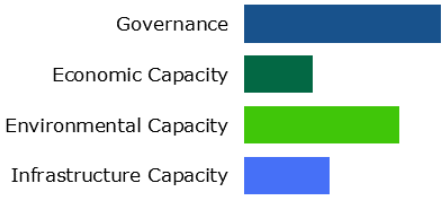


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.98** Debt to Service Ratio	**91.7%** Employment Rate (Male)	**RD$ 15,330** Average Annual Income per Capita			
Governance	**82.1%** Registered Voter Participation (2016 Election)	**11.4** Homicide Rate per 100k persons	**80.5%** Households with Garbage Collection			
Environmental Capacity	**47.2%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**14.1** Hospital Beds per 10,000 Persons	**15.2** Nurses per 10,000 Persons	**14.4** Physicians per 10,000 Persons	**4.5 km** Average Distance to Nearest Hospital	**0.78** Vaccination Index[5]	
Communications Capacity	**9.7%** Households with Access to Fixed Phone Line	**62.1%** Households with Access to Mobile Phone				
Transportation Capacity	**21.9 km** Average Distance to Nearest Port or Airport	**0.35 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 9 of 32 Provinces (Score: 0.525)

Azua's score and ranking are due to very high Vulnerability combined with high Coping Capacity scores. Azua has the 6th highest Vulnerability and the 7th highest Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Gender Inequality

Environmental Stress

Communications Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 25 of 32 Provinces (Score: 0.473)

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

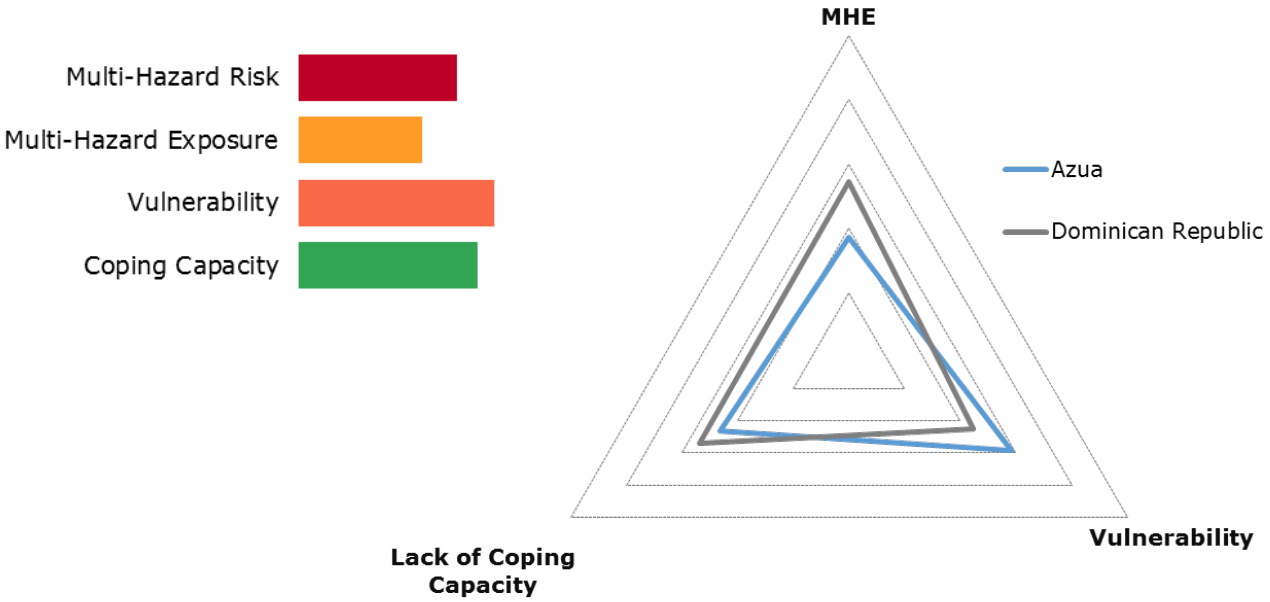


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 coping capacity

Ranked 7 of 32 provinces, high coping capacity indicates the province's ability, using existing skills and resources, to face and manage adverse conditions, emergencies, or disasters.

Highest overall governance

Ranked 1 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

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

Reduce environmental stress

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

03

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.

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Baoruco

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Baoruco

Province Capital: Neiba

Area: 1,435 km^2

Baoruco province is located in the *Hoya de Enriquillo* valley, a dry valley with some parts below sea level. Baoruco is an important area for the extraction and commercialization of the larimar gemstone.

99,964 Population (2017)

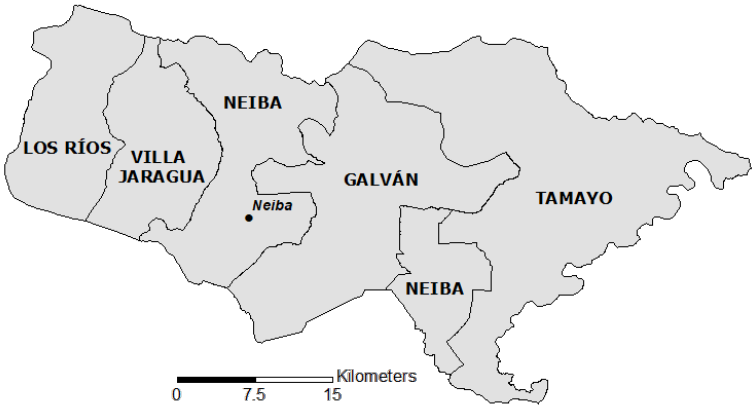
74.5% Population in Poverty

24.9% Illiterate Population

15.6 Infant Mortality Rate

86.0% Access to Improved Water

Municipality	Population
Neiba	37,508
Galván	16,129
Tamayo	27,501
Villa Jaragua	10,907
Los Ríos	7,919



Multi-Hazard Risk Rank: Very High (4 of 32)

Lack of Resilience Rank: Very High (2 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) 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 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.563	4	0.653	2	0.382	24	0.655	1	0.349	30

Multi-Hazard Exposure (MHE)

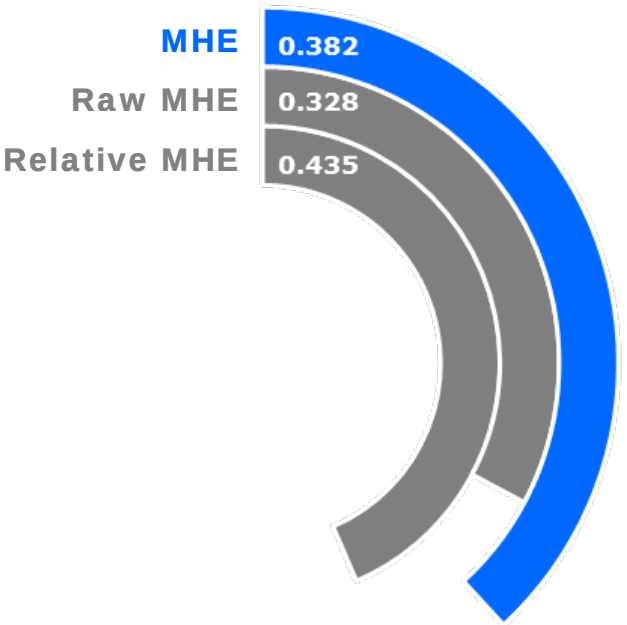
Multi-Hazard Exposure[1] Rank: 24 of 32 Provinces (Score: 0.382)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone	100%	111,075 People
Earthquake	52%	57,701 People
Landslide	66%	73,421 People
Flood	33%	37,039 People
Tsunami	0%	0 People

Case Study: Disaster Impacts and Vulnerable Populations

After the passage of Tropical Storm Noel in October 2007, UNFPA and UN-INSTRAW partnered to conduct an evaluation on the impacts of disasters on vulnerable persons in the Dominican Republic. The province of Baoruco was included in the evaluation, as it was one of the regions most affected by the storm in terms of affected homes and number of displaced persons. Baoruco's high rate of extreme poverty significantly impacted its capacity to prepare for and respond to Tropical Storm Noel, exposing its vulnerable persons to increased instances of violence and traumatic stress. The UN agencies proposed a series of recommendations to improve security and enhance the safety of vulnerable persons in the province.



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 1 of 32 Provinces (Score: 0.655) Vulnerability in Baoruco is primarily influenced by **Vulnerable Health Status, Economic Constraints,** and **Information Access Vulnerability.** The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

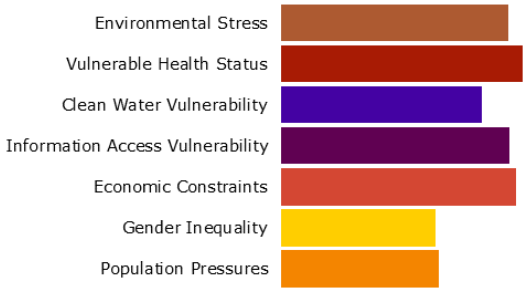


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**100%** Province Susceptible to Drought	**-0.6%** Average Annual Forest Change					
Vulnerable Health Status	**15.6** Infant Mortality Rate	**294.7** Maternal Mortality Rate	**18.3** Chronic Malnutrition	**8.4%** Population Disabled			
Clean Water Vulnerability	**14.0%** Households without Access to Improved Water	**25.3%** Households without Access to Flush Toilets					
Information Access Vulnerability	**24.9%** Illiteracy	**86.5%** Primary School Enrollment	**97.1%** Households without Internet	**38.5%** Households without TV	**66.1%** Households without Radio	**5.0** Average years of Schooling	
Economic Constraints	**72.6** Economic Dependency Ratio	**74.5%** Population in Poverty	**40.5%** CEP Beneficiaries				
Gender Inequality	**41.4%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.52** Female to Male Labor Ratio				
Population Pressures	**0.33%** Average Annual Population Change	**5.0%** 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 Capacity[4] Rank: 30 of 32 Provinces (Score: 0.349) The thematic areas with the weakest relative scores are **Economic Capacity** and **Infrastructure (Communications)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

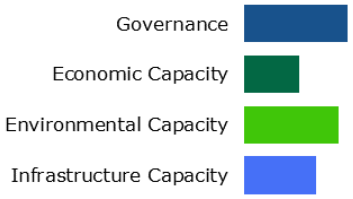


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.88** Debt to Service Ratio	**89.6%** Employment Rate (Male)	**RD$ 15,762** Average Annual Income per Capita			
Governance	**79.6%** Registered Voter Participation (2016 Election)	**23.2** Homicide Rate per 100k persons	**59.7%** Households with Garbage Collection			
Environmental Capacity	**28.9%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**12.9** Hospital Beds per 10,000 Persons	**25.3** Nurses per 10,000 Persons	**10.8** Physicians per 10,000 Persons	**4.4 km** Average Distance to Nearest Hospital	**0.95** Vaccination Index[5]	
Communications Capacity	**6.8%** Households with Access to Fixed Phone Line	**56.4%** Households with Access to Mobile Phone				
Transportation Capacity	**36.6 km** Average Distance to Nearest Port or Airport	**0.39 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 2 of 32 Provinces (Score: 0.653)

Baoruco's score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores. Baoruco ranks 1st in Vulnerability and 30th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Vulnerable Health Status	**Economic Constraints**	**Economic Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 4 of 32 Provinces (Score: 0.563)

Baoruco's score and ranking are driven primarily by very high Vulnerability and very low Coping Capacity scores.

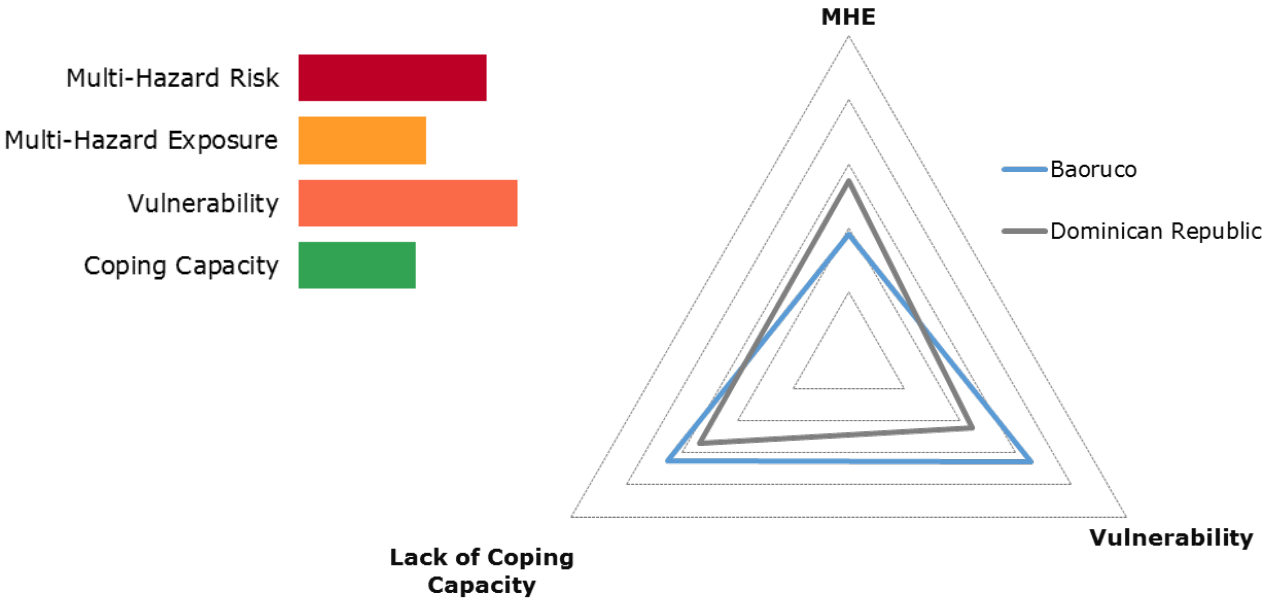


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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, education and in the workforce. 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

Reduce vulnerable health status

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

02

Increase economic capacity

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

03

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.

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Barahona

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Barahona

Province Capital: Barahona

Area: 1,847 km^2

Barahona, located in the southwest of the country, is known for its beaches and turquoise waters. The main economic activity of the province is agriculture, producing coffee in the mountains and plantain and sugar cane in the valley of the river.

188,929
Population (2017)

65.1%
Population in Poverty

18.7%
Illiterate Population

18.3
Infant Mortality Rate

87.3%
Access to Improved Water

Municipality	Population
Barahona	84,442
Cabral	14,967
Enriquillo	13,290
Paraíso	15,538
Vicente Noble	21,815
El Peñón	4,008
La Cienega	9,199
Fundación	8,122
Las Salinas	4,748
Polo	8,269
Jaquimeyes	4,531

Multi-Hazard Risk Rank: Low (26 of 32)

Lack of Resilience Rank: High (12 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		High		Low		Medium		Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.472	26	0.511	12	0.393	23	0.458	15	0.435	21

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 23 of 32 Provinces (Score: 0.393)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
215,159 People

Earthquake
0%
0 People

Landslide
72%
155,643 People

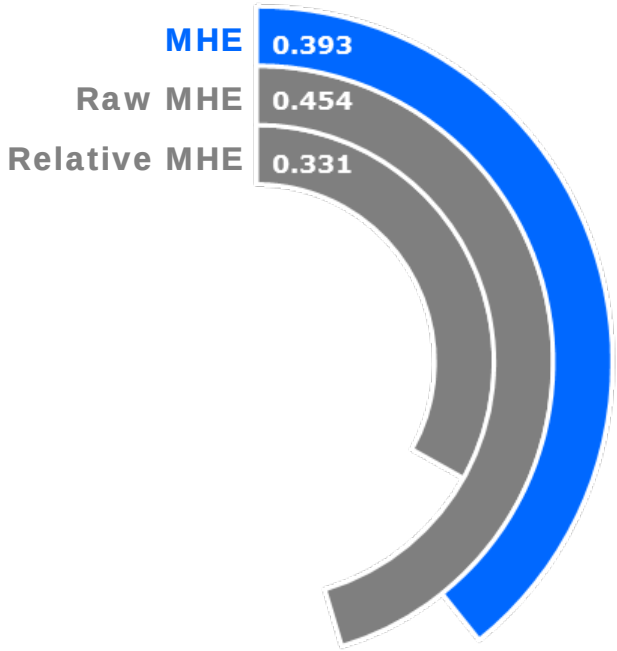
Flood
51%
109,409 People

Tsunami
10%
21,028 People

Case Study: Building Resilience in Santa Cruz de Barahona

In July 2012, Santa Cruz de Barahona signed up for UNISDR's "Making Cities Resilient" Campaign. Concern regarding earthquakes and tsunamis prompted the city's support of the Campaign which aims "to reduce the loss of life due to disasters caused by natural hazards and to build the resilience of cities so that they can be better prepared and can better cope with the potential problems caused by disasters." Santa Cruz de Barahona further committed to the development of a Municipal Risk Management Unit with support from external partners, as well as training first responders in post-earthquake search and rescue, in order to "position itself internationally as a safe and resilient city."

"Cities Campaign Expands in Dominican Republic" – UNISDR, 23 July 2012



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 15 of 32 Provinces (Score: 0.458) Vulnerability in Barahona is influenced by **Economic Constraints,** and **Information Access Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

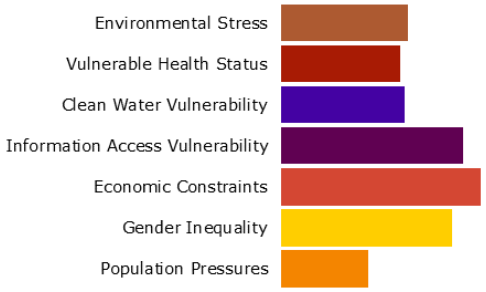


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**41%** Province Susceptible to Drought	**-0.0%** Average Annual Forest Change					
Vulnerable Health Status	**18.3** Infant Mortality Rate	**45.3** Maternal Mortality Rate	**13.6** Chronic Malnutrition	**6.3%** Population Disabled			
Clean Water Vulnerability	**12.7%** Households without Access to Improved Water	**14.3%** Households without Access to Flush Toilets					
Information Access Vulnerability	**18.7%** Illiteracy	**88.8%** Primary School Enrollment	**94.4%** Households without Internet	**34.4%** Households without TV	**62.0%** Households without Radio	**5.9** Average years of Schooling	
Economic Constraints	**66.5** Economic Dependency Ratio	**65.1%** Population in Poverty	**42.8%** CEP Beneficiaries				
Gender Inequality	**37.9%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.50** Female to Male Labor Ratio				
Population Pressures	**0.09%** Average Annual Population Change	**2.0%** 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 Capacity[4] Rank: 21 of 32 Provinces (Score: 0.435) The thematic areas with the weakest relative scores are **Infrastructure (Communications and Transportation),** and **Economic Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

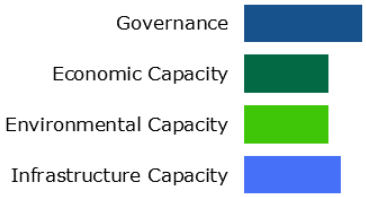


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.89** Debt to Service Ratio	**91.5%** Employment Rate (Male)	**RD$ 16,867** Average Annual Income per Capita			
Governance	**78.2%** Registered Voter Participation (2016 Election)	**22.3** Homicide Rate per 100k persons	**70.5%** Households with Garbage Collection			
Environmental Capacity	**25.7%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**16.4** Hospital Beds per 10,000 Persons	**32.7** Nurses per 10,000 Persons	**15.1** Physicians per 10,000 Persons	**5.0 km** Average Distance to Nearest Hospital	**0.71** Vaccination Index[5]	
Communications Capacity	**11.9%** Households with Access to Fixed Phone Line	**63.0%** Households with Access to Mobile Phone				
Transportation Capacity	**20.0 km** Average Distance to Nearest Port or Airport	**0.34 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 12 of 32 Provinces (Score: 0.511)

Barahona's score and ranking are due to moderate Vulnerability combined with low Coping Capacity scores. Barahona ranks 15th in Vulnerability and 21st in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Communications Capacity

Economic Constraints

Economic Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 26 of 32 Provinces (Score: 0.472)

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

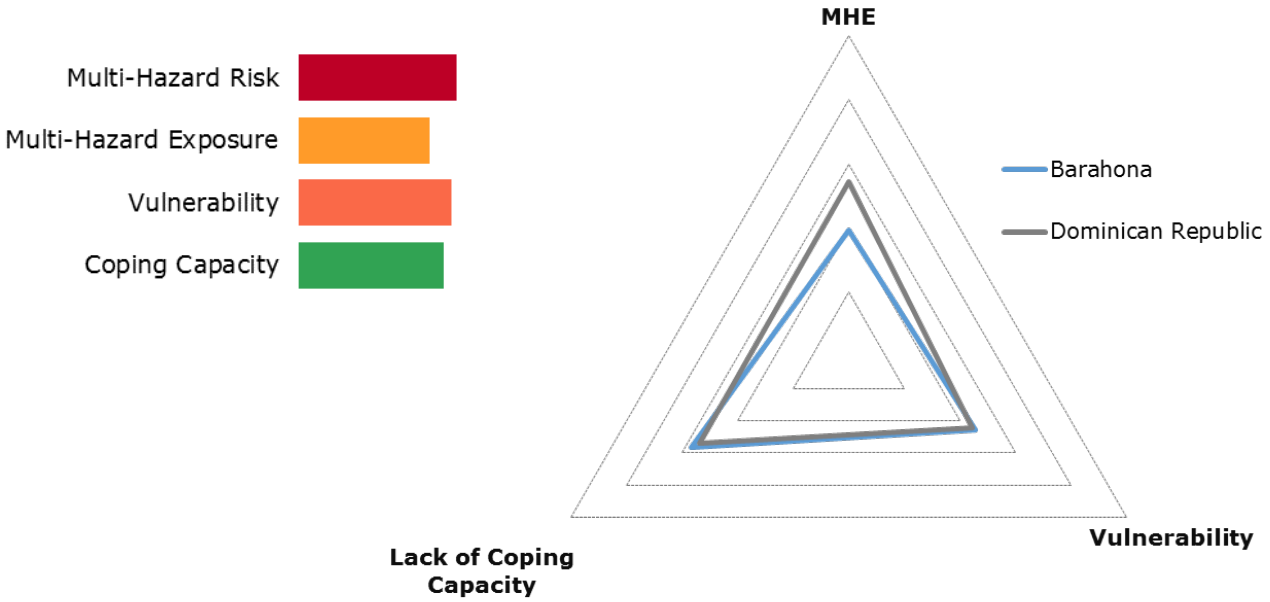


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 9 of 32 provinces, high health care capacity indicates that the population will have access to healthcare services before, during, and after a disaster.

High environmental capacity

Ranked 10 of 32 provinces, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

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.

02

Increase information access and communications capacity

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.

03

Increase economic capacity

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

Better solutions.
Fewer disasters.
Safer world.

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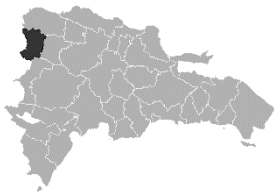
Dajabón

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Dajabón

Province Capital: Dajabón



Area: 1,153 km^2

Dajabón is located in the northwest of the country and serves as a trade center for the hides, timber, bananas, coffee and honey produced in the region.

65,760
Population (2017)

53.7%
Population in Poverty

16.8%
Illiterate Population

20.6
Infant Mortality Rate

93.6%
Access to Improved Water

Municipality	Population
Dajabón	28,865
Loma De Cabrera	16,067
Partido	7,146
Restauración	7,478
El Pino	6,204

Multi-Hazard Risk Rank: Very Low (27 of 32)

Lack of Resilience Rank: High (13 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		High		Very Low		Medium		Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.457	27	0.508	13	0.355	29	0.44	17	0.424	22

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 29 of 32 Provinces (Score: 0.355)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone

100%

101,793 People

Earthquake

100%

101,793 People

Landslide

46%

46,796 People

Flood

0%

46 People

Tsunami

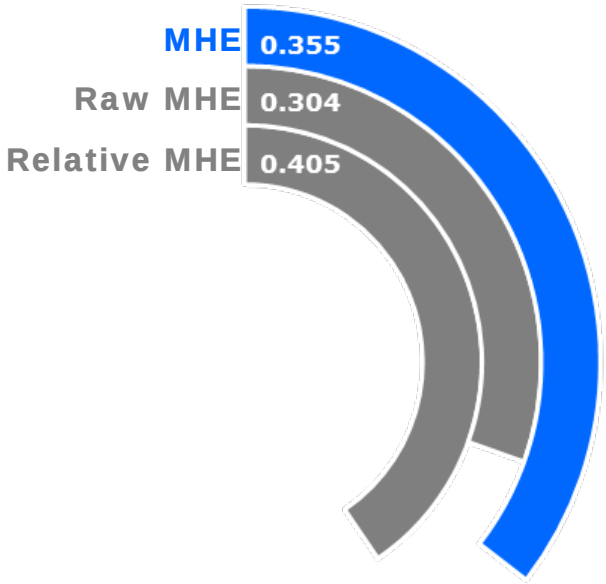
0%

0 People

Case Study: Early Warning Systems in Dajabón

During the 2017 hurricane season, the Dominican Republic was impacted by Hurricanes Irma and Maria in rapid succession. The country's Provincial and Municipal *Prevention, Mitigation and Response Committees (CPMRs)* were required to activate their Early Warning Systems and emergency plans in order to prevent loss of life among the population. Dajabón's Provincial Committee exhibited exemplary planning and coordination, with its CPMR performing "efficiently and effectively" in the activation of its emergency plans and Early Warning Systems.

"Effectiveness of Disaster Risk Reduction (DRR) Programs Funded by ECHO in the Caribbean - Evidence Collected After Hurricanes Irma and Maria" - DIPECHO



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 17 of 32 Provinces (Score: 0.440) Vulnerability in Dajabón is influenced primarily by **Vulnerable Health Status, Economic Constraints,** and **Population Pressures**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

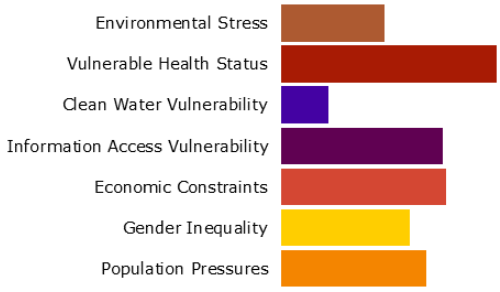


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**24.7%** Province Susceptible to Drought	**-0.2%** Average Annual Forest Change					
Vulnerable Health Status	**20.6** Infant Mortality Rate	**258.0** Maternal Mortality Rate	**16.2** Chronic Malnutrition	**6.6%** Population Disabled			
Clean Water Vulnerability	**6.4%** Households without Access to Improved Water	**6.3%** Households without Access to Flush Toilets					
Information Access Vulnerability	**16.8%** Illiteracy	**88.6%** Primary School Enrollment	**94.7%** Households without Internet	**33.3%** Households without TV	**52.7%** Households without Radio	**5.9** Average years of Schooling	
Economic Constraints	**63.7** Economic Dependency Ratio	**53.7%** Population in Poverty	**41.9%** CEP Beneficiaries				
Gender Inequality	**46.0%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.50** Female to Male Labor Ratio				
Population Pressures	**0.35%** Average Annual Population Change	**3.9%** 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 Capacity[4] Rank: 22 of 32 Provinces (Score: 0.424) The thematic areas with the weakest relative scores are **Environmental Capacity** and **Economic Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

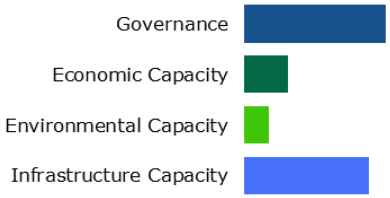


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.1** Debt to Service Ratio	**90.9%** Employment Rate (Male)	**RD$ 18,753** Average Annual Income per Capita			
Governance	**81.4%** Registered Voter Participation (2016 Election)	**16.9** Homicide Rate per 100k persons	**61.5%** Households with Garbage Collection			
Environmental Capacity	**7.7%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**21.7** Hospital Beds per 10,000 Persons	**31.8** Nurses per 10,000 Persons	**20.6** Physicians per 10,000 Persons	**3.1 km** Average Distance to Nearest Hospital	**0.86** Vaccination Index[5]	
Communications Capacity	**10.7%** Households with Access to Fixed Phone Line	**76.4%** Households with Access to Mobile Phone				
Transportation Capacity	**32.9 km** Average Distance to Nearest Port or Airport	**0.49 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 13 of 32 Provinces (Score: 0.508)

Dajabón's score and ranking are due to moderate Vulnerability (17th) combined with low Coping Capacity (22nd) scores.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity	**Economic Capacity**	**Vulnerable Health Status**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 27 of 32 Provinces (Score: 0.457)

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

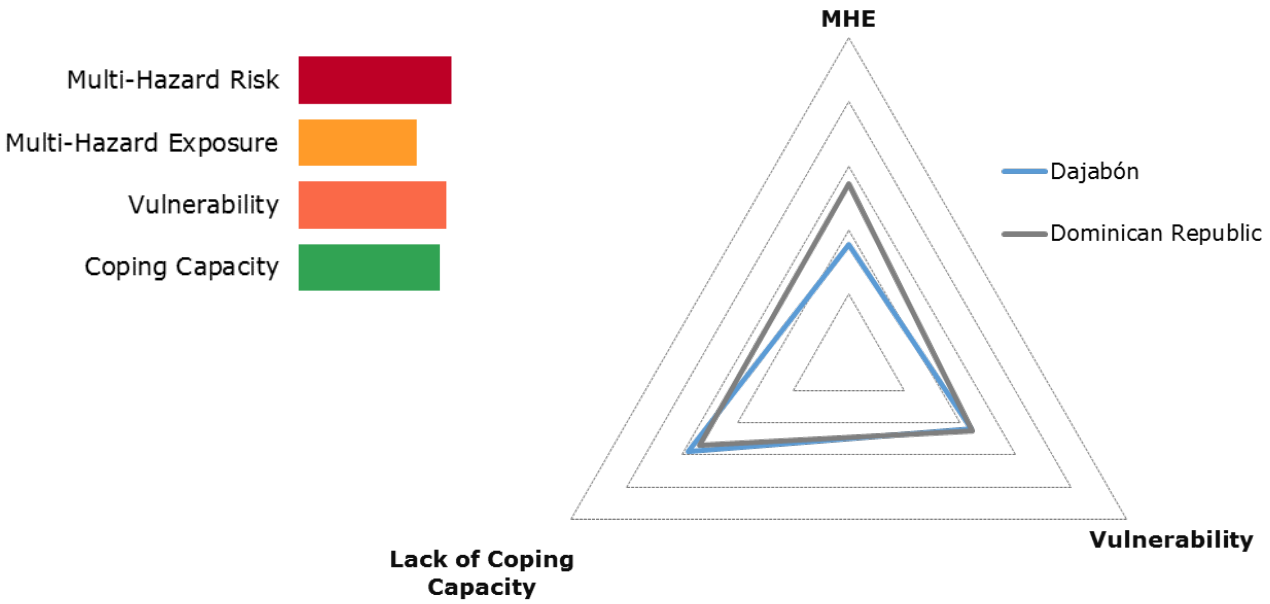


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 clean water vulnerability

Ranking 28 of 32 provinces, low clean water vulnerability indicates that a population has access to high water quality and good containment systems, reducing susceptibility to disaster.

Low gender inequality

Ranked 28 of 32 provinces, 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

Reduce vulnerable health status

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

02

Increase economic capacity

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

03

Improve environmental capacity

Invest in protected areas to reduce environmental stress and degradation.

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Distrito Nacional

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Distrito Nacional

Area: 102 km^2

The Distrito Nacional is a subdivision of the Dominican Republic and includes the National capital city of Santo Domingo.

1,022,236
Population (2017)

28.3%
Population in Poverty

7.4%
Illiterate Population

22.4
Infant Mortality Rate

97.7%
Access to Improved Water

Multi-Hazard Risk Rank: Very Low (30 of 32)

Lack of Resilience Rank: Very Low (32 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Very Low		Very High		Very Low		Very High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.426	30	0.257	32	0.764	6	0.153	32	0.639	1

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 6 of 32 Provinces (Score: 0.764)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
1,109,778 People

Earthquake
98%
1,088,411 People

Landslide
85%
942,975 People

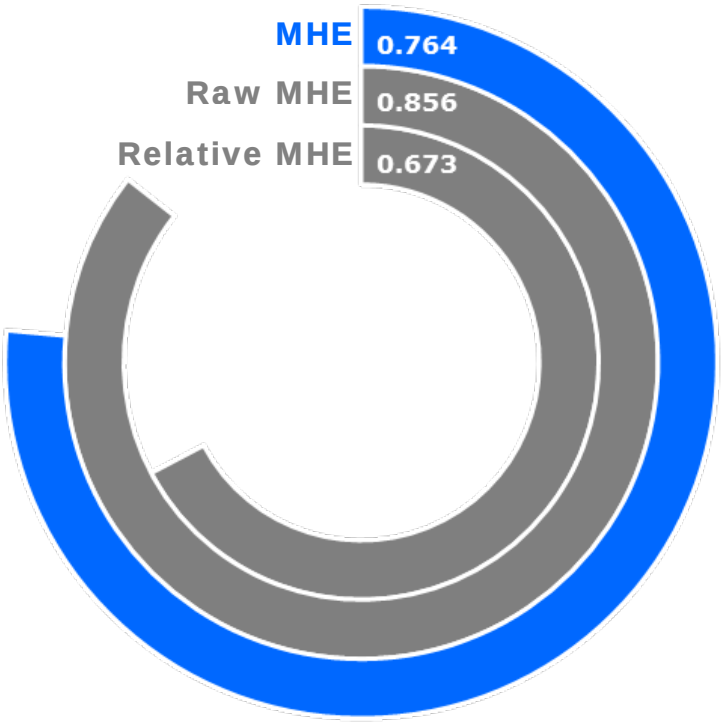
Flood
1%
6,612 People

Tsunami
10%
109,062 People

Case Study: Reducing Childhood Vulnerability in Distrito Nacional

The Palmera Development Program operates within Distrito Nacional with the goal of improving the well-being of the area's most vulnerable children. With a long-term, holistic focus, the program "seeks to enable… families, local communities and partners to address the underlying causes of poverty." The program has conducted small business trainings, developed health committees, and has worked with local partners to continue to strengthen the development and growth of children in the area.

"Palmera Development Program" – NGO Aid Map



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 32 of 32 Provinces (Score: 0.153) Distrito Nacional is influenced by moderate subcomponent scores in the thematic areas of **Vulnerable Health Status** and **Population Pressures**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

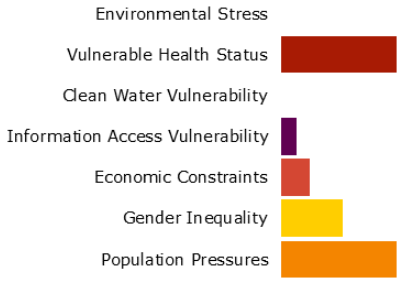


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**5.9%** Average Annual Forest Change					
Vulnerable Health Status	**22.4** Infant Mortality Rate	**67.3** Maternal Mortality Rate	**7.1** Chronic Malnutrition	**7.8%** Population Disabled			
Clean Water Vulnerability	**2.3%** Households without Access to Improved Water	**1.2%** Households without Access to Flush Toilets					
Information Access Vulnerability	**7.4%** Illiteracy	**89.6%** Primary School Enrollment	**66.7%** Households without Internet	**11.7%** Households without TV	**38.4%** Households without Radio	**8.9** Average years of Schooling	
Economic Constraints	**49.7** Economic Dependency Ratio	**28.3%** Population in Poverty	**29.3%** CEP Beneficiaries				
Gender Inequality	**38.9%** Female Seats in Government	**1.0** Female to Male Years of Schooling	**0.29** Female to Male Labor Ratio				
Population Pressures	**0.79%** Average Annual Population Change	**0.71%** 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 Capacity[4] Rank: 1 of 32 Provinces (Score: 0.639)
The thematic areas with the weakest relative scores are **Environmental Capacity** and **Governance** The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

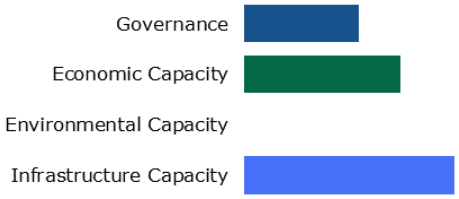


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.04** Debt to Service Ratio	**94.2%** Employment Rate (Male)	**RD$ 59,392** Average Annual Income per Capita			
Governance	**64.1%** Registered Voter Participation (2016 Election)	**18.2** Homicide Rate per 100k persons	**92.1%** Households with Garbage Collection			
Environmental Capacity	**0%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**15.8** Hospital Beds per 10,000 Persons	**29.2** Nurses per 10,000 Persons	**51.8** Physicians per 10,000 Persons	**0.5 km** Average Distance to Nearest Hospital	**0.77** Vaccination Index[5]	
Communications Capacity	**50.1%** Households with Access to Fixed Phone Line	**85.1%** Households with Access to Mobile Phone				
Transportation Capacity	**3.5 km** Average Distance to Nearest Port or Airport	**14.1 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 32 of 32 Provinces (Score: 0.257)

Distrito Nacional's score and ranking are due to very low Vulnerability combined with very high Coping Capacity scores. Distrito Nacional has the lowest Vulnerability and the highest Coping Capacity, indicating high overall resilience.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity

Governance

Vulnerable Health Status

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 30 of 32 Provinces (Score: 0.426)

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

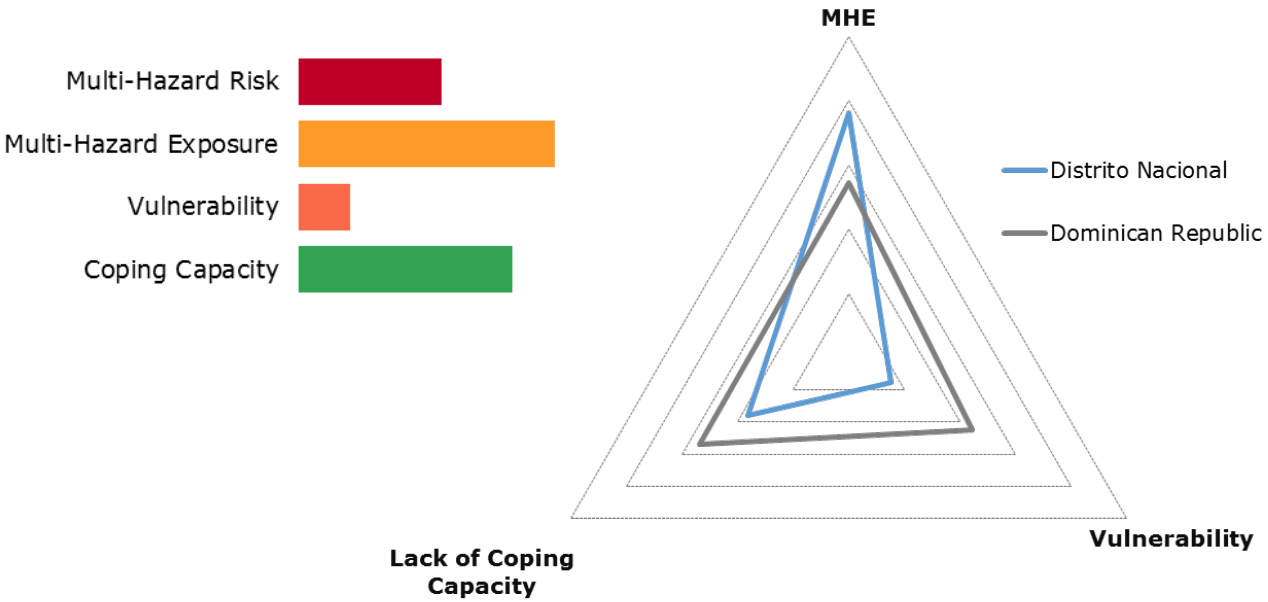


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 environmental stress

Ranked 32 of 32 provinces, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

High information access

High information access indicates that the population has an increased ability to access and comprehend disaster-related information before, during, and after events.

Highest overall coping capacity

Ranking 1 of 32 provinces, high coping capacity indicates the province's ability, using existing skills and resources, to face and manage adverse conditions, emergencies, or disasters.

Recommendations

01

Improve environmental capacity

Invest in protected areas to reduce environmental stress and degradation.

02

Reduce vulnerable health status

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

03

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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Duarte

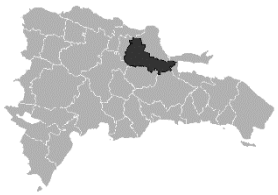
Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Duarte

Province Capital: San Francisco de Macorís



Area: 1,861 km^2

Duarte is located in the central north of the country and is an important agricultural producer of cacao and rice.

296,558 Population (2017)

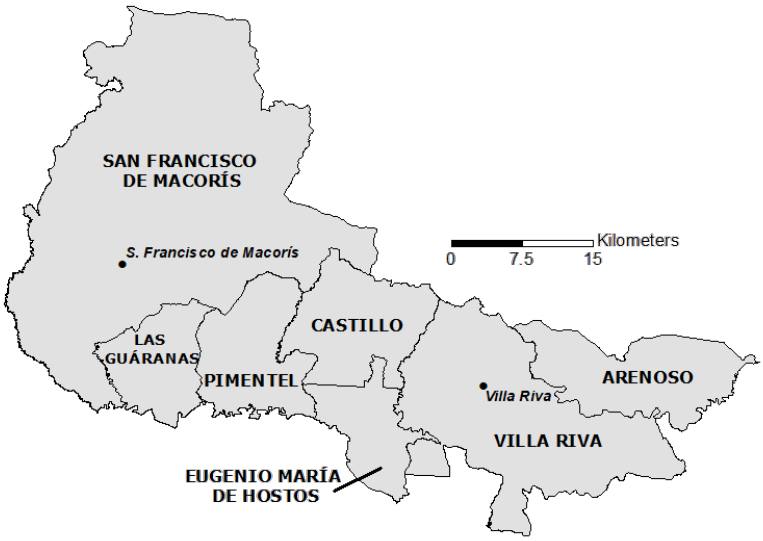
41.7% Population in Poverty

13.9% Illiterate Population

14.2 Infant Mortality Rate

74.5% Access to Improved Water

Municipality	Population
San Francisco De Macorís	192,669
Arenoso	14,396
Castillo	16,086
Pimentel	18,293
Villa Riva	34,469
Las Guaranás	15,015
Eugenio Maria De Hostos	5,630



Multi-Hazard Risk Rank: Very High (1 of 32)

Lack of Resilience Rank: Medium (19 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Medium		Very High		Low		Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.588	1	0.487	19	0.792	4	0.395	22	0.422	24

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 4 of 32 Provinces (Score: 0.792)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
341,759 People

Earthquake
100%
341,759 People

Landslide
64%
218,764 People

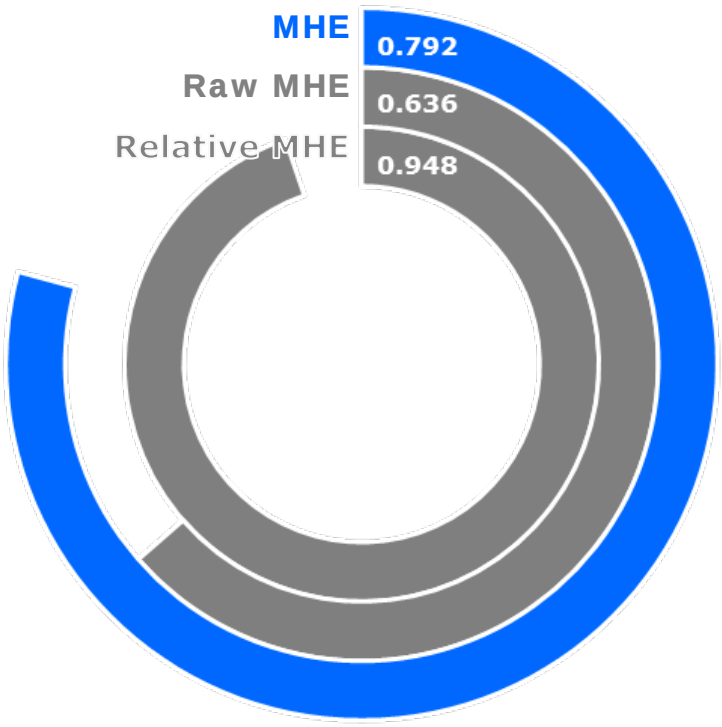
Flood
78%
267,178 People

Tsunami
0%
0 People

Case Study: Cacao Enterprises in Duarte

Rich in cacao, the Duarte province has been hard hit by extreme weather events in the past two years. Major flooding, landslides, and storm impacts have significantly lowered cacao production and quality with delayed and shortened harvest seasons. Cacao producers in the province are working to increase their resilience to hazards through environmentally conscientious growing practices, trainings, microfinance loans, and local partnerships.

"*Origin Report: Öko Caribe, Dominican Republic" – Uncommon Cacao, 23 May 2018*



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 22 of 32 Provinces (Score: 0.395) Though Vulnerability in Duarte is relatively low, the province ranks highest in the country in **Gender Inequality**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

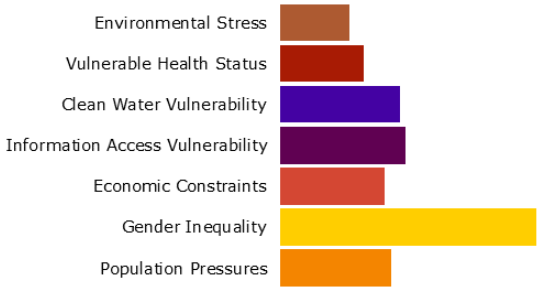


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-0.6%** Average Annual Forest Change				
Vulnerable Health Status	**14.2** Infant Mortality Rate	**59.1** Maternal Mortality Rate	**8.9** Chronic Malnutrition	**7.3%** Population Disabled		
Clean Water Vulnerability	**25.5%** Households without Access to Improved Water	**6.6%** Households without Access to Flush Toilets				
Information Access Vulnerability	**13.9%** Illiteracy	**84.8%** Primary School Enrollment	**91.2%** Households without Internet	**21.0%** Households without TV	**49.1%** Households without Radio	**6.6** Average years of Schooling
Economic Constraints	**53.8** Economic Dependency Ratio	**41.7%** Population in Poverty	**41.9%** CEP Beneficiaries			
Gender Inequality	**34.5%** Female Seats in Government	**1.2** Female to Male Years of Schooling	**0.52** Female to Male Labor Ratio			
Population Pressures	**0.29%** Average Annual Population Change	**2.0%** 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 Capacity[4] Rank: 24 of 32 Provinces (Score: 0.422) The thematic areas with the weakest relative scores are **Environmental Capacity** and **Governance**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

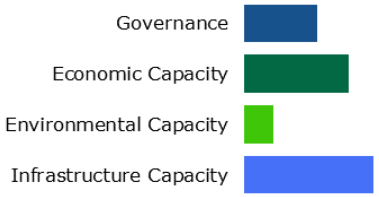


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.99** Debt to Service Ratio	**92.8%** Employment Rate (Male)	**RD$ 21,874** Average Annual Income per Capita			
Governance	**71.5%** Registered Voter Participation (2016 Election)	**23.8** Homicide Rate per 100k persons	**62.2%** Households with Garbage Collection			
Environmental Capacity	**9.0%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**13.5** Hospital Beds per 10,000 Persons	**29.6** Nurses per 10,000 Persons	**21.9** Physicians per 10,000 Persons	**2.8 km** Average Distance to Nearest Hospital	**0.5** Vaccination Index[5]	
Communications Capacity	**19.1%** Households with Access to Fixed Phone Line	**77.0%** Households with Access to Mobile Phone				
Transportation Capacity	**33.2 km** Average Distance to Nearest Port or Airport	**0.61 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 19 of 32 Provinces (Score: 0.487)

Duarte's score and ranking are due to low Vulnerability combined with low Coping Capacity scores. Duarte ranks 22nd in Vulnerability and 24th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Gender Inequality

Governance

Environmental Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 1 of 32 Provinces (Score: 0.588)

Duarte's score and ranking are driven by a combination of very high Multi-Hazard Exposure, low Vulnerability, and low Coping Capacity scores.

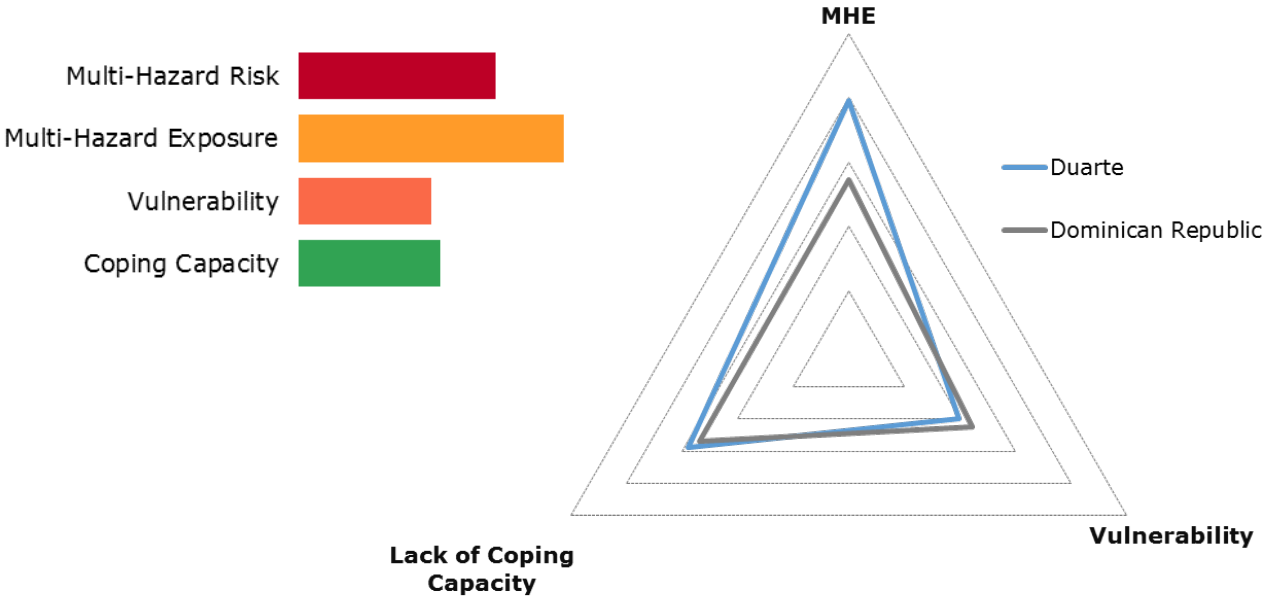


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 vulnerable health status
Ranked 27 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Low environmental stress
Ranked 28 of 32 provinces, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

High health care capacity
Ranked 6 of 32 provinces, high health care capacity indicates that the population will have access to healthcare services before, during, and after a disaster.

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

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.

03

Improve environmental capacity
Invest in protected areas to reduce environmental stress and degradation.

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El Seibo

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: El Seibo

Province Capital: Santa Cruz de El Seibo

Area: 2,008 km^2

El Seibo is located in the east of the country. The region yields cacao, coffee, sugarcane and corn crops in addition to beeswax and livestock.

91,826
Population (2017)

69.1%
Population in Poverty

20.4%
Illiterate Population

6.1
Infant Mortality Rate

75.7%
Access to Improved Water

Municipality	Population
El Seibo	70,026
Miches	21,800

Multi-Hazard Risk Rank: Very High (2 of 32)

Lack of Resilience Rank: Very High (3 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) 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 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.584	2	0.648	3	0.458	22	0.601	5	0.305	31

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 22 of 32 Provinces (Score: 0.458)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
108,184 People

Earthquake
100%
108,184 People

Landslide
57%
61,165 People

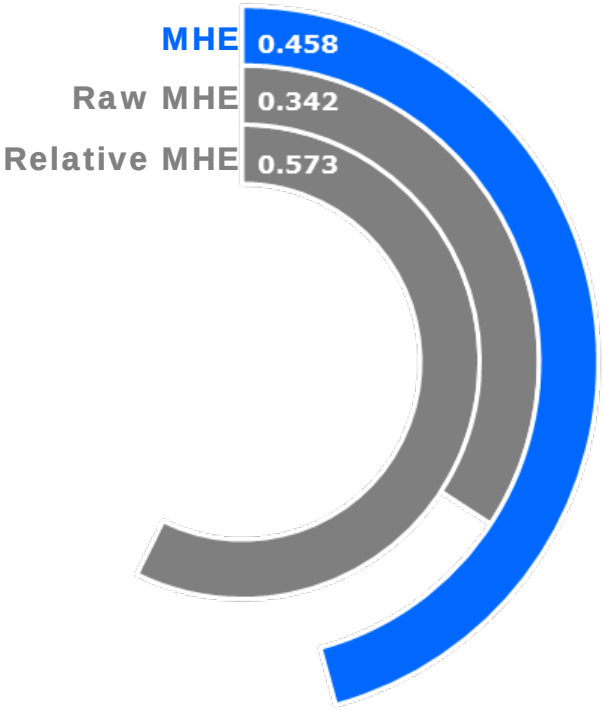
Flood
13%
13,603 People

Tsunami
7%
7,251 People

Case Study: Community Preparedness in El Seibo

In 2008, El Seibo collaborated with World Vision to implement a Disaster Risk Reduction and Disaster Preparedness project in the province. This led to the development of Community Disaster Preparedness and Response Committees which enhanced the province's capacity to respond to disasters at both the local level and across borders. In 2010, these Committees actively coordinated to bring aid to neighboring Haiti after the devastating earthquake. Communication and coordination mechanisms were strengthened across the province as a result of these Committees.

"Dominican Republic: World Vision Disaster Preparedness Committees Help Haiti" – World Vision International, 3 February 2010



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 5 of 32 Provinces (Score: 0.601) Vulnerability in El Seibo is strongly influenced by **Gender Inequality, Information Access Vulnerability,** and **Clean Water Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

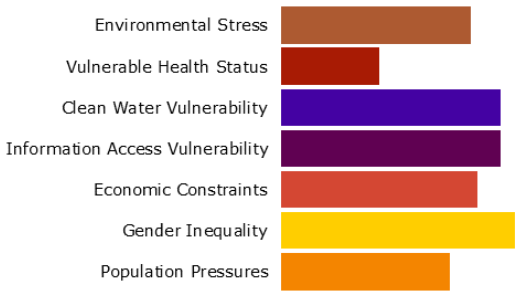


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**20.1%** Province Susceptible to Drought	**-15.8%** Average Annual Forest Change					
Vulnerable Health Status	**6.1** Infant Mortality Rate	**101.9** Maternal Mortality Rate	**11.1** Chronic Malnutrition	**9.1%** Population Disabled			
Clean Water Vulnerability	**24.3%** Households without Access to Improved Water	**22.4%** Households without Access to Flush Toilets					
Information Access Vulnerability	**20.4%** Illiteracy	**83.7%** Primary School Enrollment	**96.5%** Households without Internet	**44.1%** Households without TV	**59.6%** Households without Radio	**5.1** Average years of Schooling	
Economic Constraints	**66.7** Economic Dependency Ratio	**69.1%** Population in Poverty	**38.9%** CEP Beneficiaries				
Gender Inequality	**36.7%** Female Seats in Government	**1.2** Female to Male Years of Schooling	**0.58** Female to Male Labor Ratio				
Population Pressures	**0.62%** Average Annual Population Change	**4.2%** 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 Capacity[4] Rank: 31 of 32 Provinces (Score: 0.305) El Seibo ranks very low across many thematic areas in with its weakest relative scores in **Environmental Capacity, Governance** and **Infrastructure**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

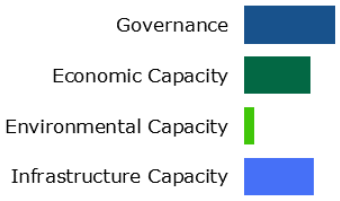


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.02** Debt to Service Ratio	**90.9%** Employment Rate (Male)	**RD$ 19,967** Average Annual Income per Capita			
Governance	**77.4%** Registered Voter Participation (2016 Election)	**21.1** Homicide Rate per 100k persons	**50.1%** Households with Garbage Collection			
Environmental Capacity	**3.3%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**10.6** Hospital Beds per 10,000 Persons	**15.5** Nurses per 10,000 Persons	**16.1** Physicians per 10,000 Persons	**4.1 km** Average Distance to Nearest Hospital	**0.31** Vaccination Index[5]	
Communications Capacity	**8.3%** Households with Access to Fixed Phone Line	**59.8%** Households with Access to Mobile Phone				
Transportation Capacity	**37.7 km** Average Distance to Nearest Port or Airport	**0.47 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 3 of 32 Provinces (Score: 0.648)

El Seibo's score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores. El Seibo ranks 5th in Vulnerability and 31st in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity

Gender Inequality

Governance

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 2 of 32 Provinces (Score: 0.584)

El Seibo's score and ranking are a product of low Multi-Hazard Exposure combined with very high Vulnerability and very low Coping Capacity.

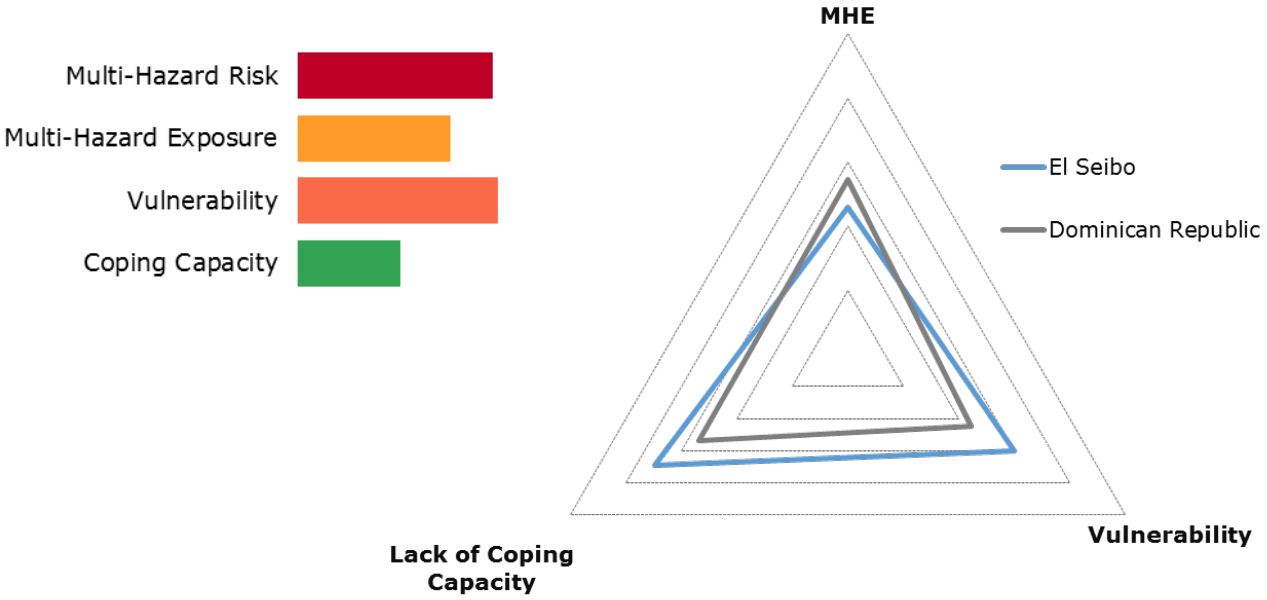


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 vulnerable health status

Ranked 26 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Recommendations

01

Improve environmental capacity

Invest in protected areas to reduce environmental stress and degradation.

02

Promote gender equality

Reduce inequality, ensuring that vulnerable populations have their needs met under ‘normal’ conditions and are less susceptible to disaster impacts.

03

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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Elías Piña

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Elías Piña

Province Capital: Comendador

Area: 1,567 km^2

Elías Piña, also called Comendador, is located in western Dominican Republic near the border with Haiti. The economy is mainly based on livestock and agriculture including sugarcane, cotton, coffee and fruit.

63,438
Population (2017)

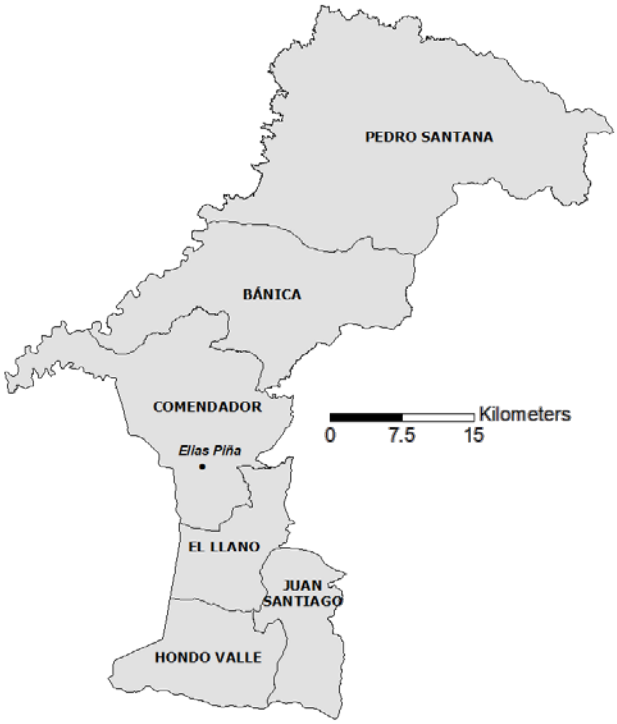
83.8%
Population in Poverty

35.8%
Illiterate Population

13.9
Infant Mortality Rate

73.6%
Access to Improved Water

Municipality	Population
Comendador	26,077
Bánica	6,574
El Llano	8,399
Hondo Valle	10,659
Pedro Santana	7,336
Juan Santiago	4,393



Multi-Hazard Risk Rank: Low (24 of 32)

Lack of Resilience Rank: Very High (1 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Very High		Very Low		Very High		Very Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.490	24	0.682	1	0.105	32	0.606	4	0.242	32

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 32 of 32 Provinces (Score: 0.105)

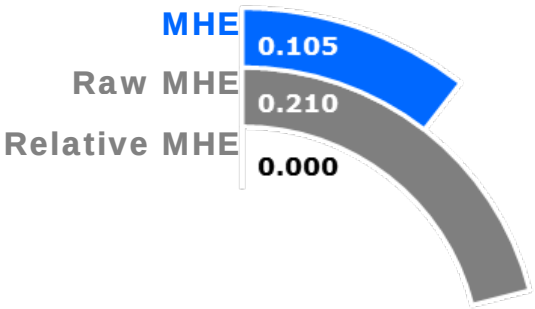
Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone	**100%**	**92,668 People**
Earthquake	**9%**	**7,987 People**
Landslide	**61%**	**56,419 People**
Flood	**5%**	**4,386 People**
Tsunami	**0%**	**0 People**

Case Study: Improving Health and Relations at the Border

The province of Elías Piña sits within a few miles of the river which separates the Dominican Republic from neighboring Haiti. Despite being the poorest province in the country, Elías Piña still works to aid its neighbor. Through organization like Socios En Salud and the Dominican Ministry of Health, Haitians are able to access health care, community outreach, and testing for HIV in the Dominican border town. The province of Elías Piña understands how inextricably linked the Dominican Republic is with its western neighbor, and actively serves as a strong example of how to increase community resilience across borders.

"Crossing Rivers—and Cultural Bounds—in the Dominican Republic" – Partners in Health, 23 May 2013



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 4 of 32 Provinces (Score: 0.606) Vulnerability in Elías Piña is very strongly influenced by **Economic Constraints, Information Access Vulnerability,** and **Clean Water Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

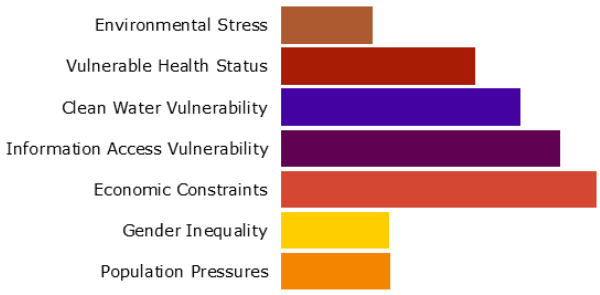


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**4.6%** Province Susceptible to Drought	**-2.1%** Average Annual Forest Change					
Vulnerable Health Status	**13.9** Infant Mortality Rate	**NO DATA** Maternal Mortality Rate	**22.7** Chronic Malnutrition	**7.4%** Population Disabled			
Clean Water Vulnerability	**26.4%** Households without Access to Improved Water	**24.3%** Households without Access to Flush Toilets					
Information Access Vulnerability	**35.8%** Illiteracy	**88.5%** Primary School Enrollment	**98.3%** Households without Internet	**58.3%** Households without TV	**68.5%** Households without Radio	**4.1** Average years of Schooling	
Economic Constraints	**88.2** Economic Dependency Ratio	**83.8%** Population in Poverty	**57.6%** CEP Beneficiaries				
Gender Inequality	**39.8%** Female Seats in Government	**1.04** Female to Male Years of Schooling	**0.50** Female to Male Labor Ratio				
Population Pressures	**0.05%** Average Annual Population Change	**3.9%** 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 Capacity[4] Rank: 32 of 32 Provinces (Score: 0.242) Elías Piña's weakest relative scores are in **Economic Capacity** and **Infrastructure (Transportation and Communications)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

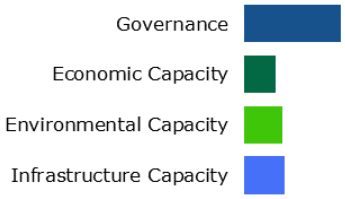


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.93** Debt to Service Ratio	**86.4%** Employment Rate (Male)	**RD$ 11,070** Average Annual Income per Capita			
Governance	**78.3%** Registered Voter Participation (2016 Election)	**17.3** Homicide Rate per 100k persons	**40.2%** Households with Garbage Collection			
Environmental Capacity	**11.9%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**18.9** Hospital Beds per 10,000 Persons	**25.7** Nurses per 10,000 Persons	**15.6** Physicians per 10,000 Persons	**4.9 km** Average Distance to Nearest Hospital	**0.65** Vaccination Index[5]
Communications Capacity	**3.4%** Households with Access to Fixed Phone Line	**54.2%** Households with Access to Mobile Phone			
Transportation Capacity	**69.6 km** Average Distance to Nearest Port or Airport	**0.23 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 1 of 32 Provinces (Score: 0.682)

Elías Piña's score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores. Elías Piña has the 4th highest Vulnerability and the lowest Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Economic Constraints

Communications Infrastructure Capacity

Transportation Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 24 of 32 Provinces (Score: 0.490)

Elías Piña's score and ranking are driven primarily by the combination of very high Vulnerability with very low Coping Capacity.

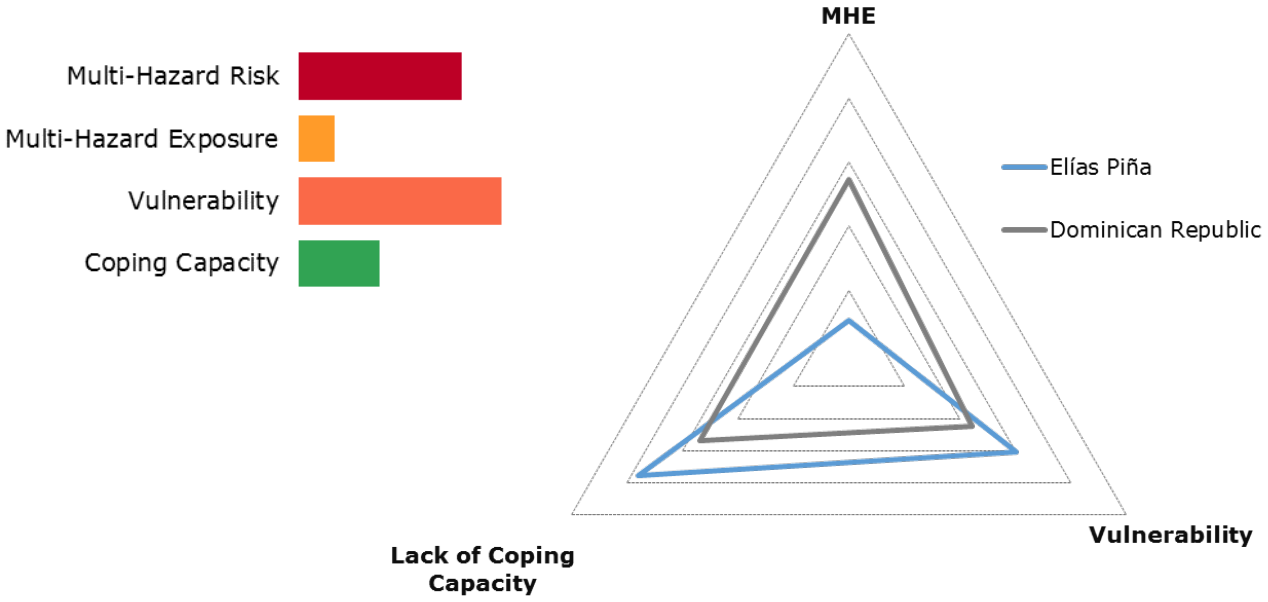


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 gender inequality

Ranked 31 of 32 provinces, 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

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.

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. Health care, transportation, and communication infrastructures require upgrading and investment to increase connectivity and welfare in the province. Focused investments in these areas will increase coping capacity and resilience.

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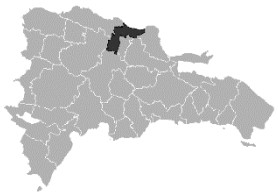
Espailalat

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Espaillat

Province Capital: Moca



Area: 953 km^2

Espaillat is a coastal province is located in the North-Central region of the country known for ecotourism and agricultural outputs including yuca, root crops, poultry and swine.

237,855
Population (2017)

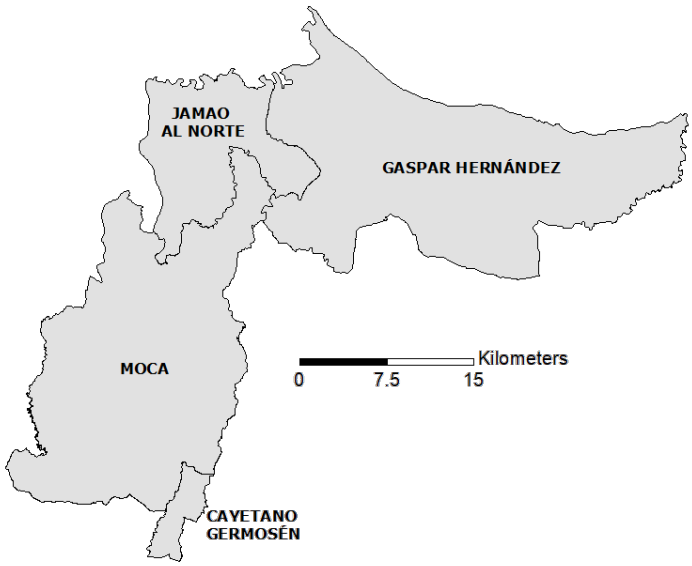
33.0%
Population in Poverty

13.2%
Illiterate Population

17.3
Infant Mortality Rate

76.1%
Access to Improved Water

Municipality	Population
Moca	184,027
Cayetano Germosén	7,073
Gaspar Hernandez	38,249
Jamao Al Norte	8,506



Multi-Hazard Risk Rank: Very High (5 of 32)

Lack of Resilience Rank: Low (21 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Low		Very High		Low		Medium	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.561	5	0.453	21	0.779	5	0.356	24	0.451	20

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 5 of 32 Provinces (Score: 0.779)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
270,809 People

Earthquake
100%
270,809 People

Landslide
66%
178,840 People

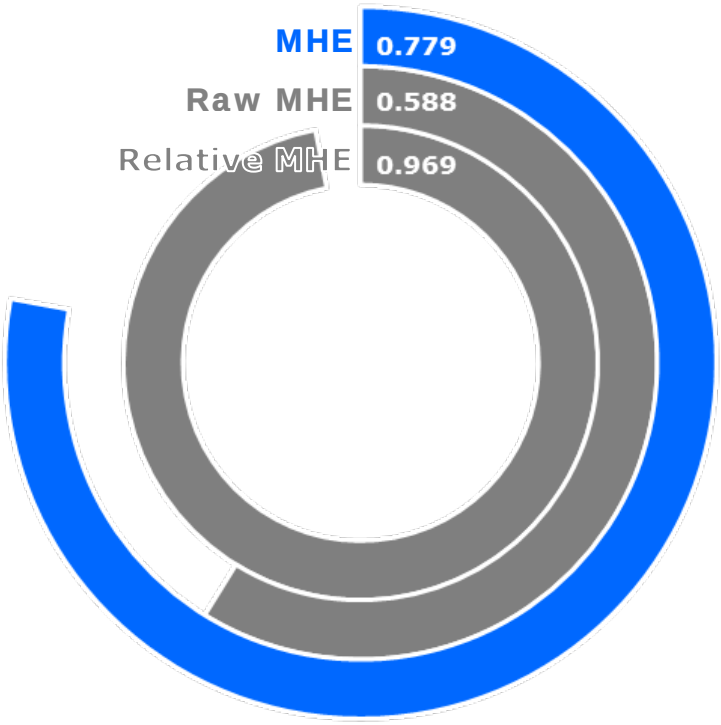
Flood
75%
203,992 People

Tsunami
5%
12,582 People

Case Study: A National Flooding Emergency in Espaillat

In November 2016, the Dominican Republic received several weeks of heavy rain, resulting in mass displacement due to extensive flooding and landslides in several provinces. Espaillat was one of the most affected provinces, with the city of Gaspar Hernandez recording 223.5 mm of rainfall in 24 hours. A national emergency was declared for the province by the country's President on November 13th. The province remained on red alert for the duration of November.

"Dominican Republic – 18,000 Remain Displaced by Floods, National Emergency Declared" – Floodlist, 16 November 2016



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 24 of 32 Provinces (Score: 0.356) Though Vulnerability in Espaillat is relatively low, the index is influenced by moderate scores in **Gender Inequality, Population Pressures,** and **Clean Water Vulnerability.** The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

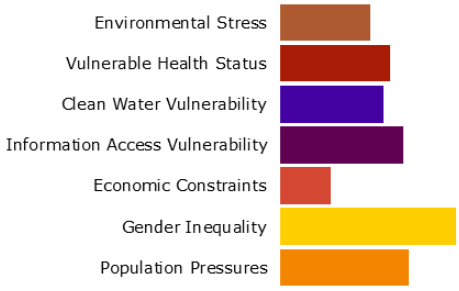


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-2.6%** Average Annual Forest Change					
Vulnerable Health Status	**17.3** Infant Mortality Rate	**77.3** Maternal Mortality Rate	**10.9** Chronic Malnutrition	**6.8%** Population Disabled			
Clean Water Vulnerability	**23.9%** Households without Access to Improved Water	**5.0%** Households without Access to Flush Toilets					
Information Access Vulnerability	**13.2%** Illiteracy	**80.7%** Primary School Enrollment	**91.1%** Households without Internet	**17.4%** Households without TV	**45.4%** Households without Radio	**6.6** Average years of Schooling	
Economic Constraints	**51.5** Economic Dependency Ratio	**33.0%** Population in Poverty	**31.7%** CEP Beneficiaries				
Gender Inequality	**37.0%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.50** Female to Male Labor Ratio				
Population Pressures	**0.31%** Average Annual Population Change	**3.0%** 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 Capacity[4] Rank: 20 of 32 Provinces (Score: 0.451) The thematic areas with the weakest relative scores are **Environmental Capacity, Health Care Capacity,** and **Governance**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

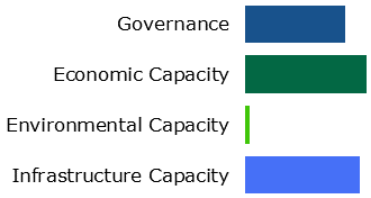


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.92** Debt to Service Ratio	**94.9%** Employment Rate (Male)	**RD$ 19,394** Average Annual Income per Capita			
Governance	**75.2%** Registered Voter Participation (2016 Election)	**22.1** Homicide Rate per 100k persons	**65.8%** Households with Garbage Collection			
Environmental Capacity	**1.4%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**8.8** Hospital Beds per 10,000 Persons	**16.5** Nurses per 10,000 Persons	**11.7** Physicians per 10,000 Persons	**3.3 km** Average Distance to Nearest Hospital	**0.30** Vaccination Index[5]
Communications Capacity	**16.3%** Households with Access to Fixed Phone Line	**79.9%** Households with Access to Mobile Phone			
Transportation Capacity	**24.2 km** Average Distance to Nearest Port or Airport	**073 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 21 of 32 Provinces (Score: 0.453)

Espaillat's score and ranking are due to low Vulnerability combined with low Coping Capacity scores. Espaillat 24th in Vulnerability and 20th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity	**Health Care Infrastructure Capacity**	**Governance**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 5 of 32 Provinces (Score: 0.561)

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

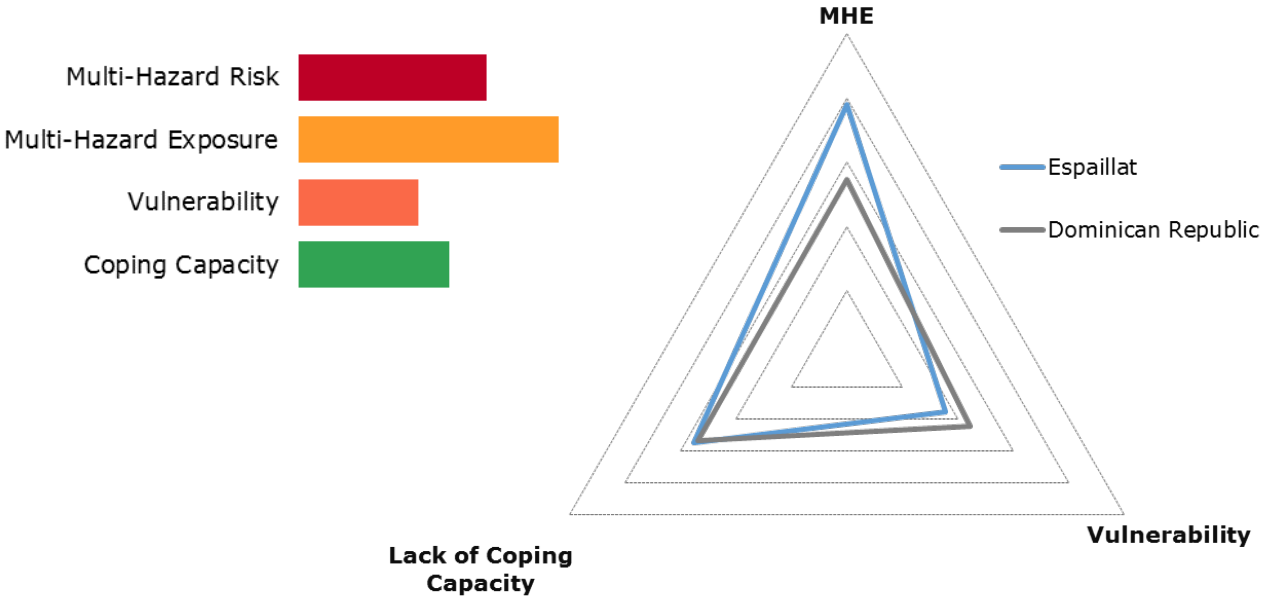


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 economic capacity

Ranked 10 of 32 provinces, high economic capacity indicates that Espaillat may be able to invest in additional mitigation and preparedness measures at the local and community level.

Low economic constraints

Ranked 27 of 32 provinces, low economic constraints indicate that Espaillat may be able to invest in additional mitigation and preparedness measures at the local and community level.

Recommendations

01

Improve environmental capacity

Invest in protected areas to reduce environmental stress and degradation.

02

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.

03

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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Hato Mayor

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Hato Mayor

Province Capital: Hato Mayor del Rey

Area: 1,482 km^2

Located in the east of the country, Hato Mayor is known for its great historic and geological value including the protected area of Refugio de la Vida Silvestre Manglar de la Jina.

85,653 Population (2017)

61.5% Population in Poverty

16.0% Illiterate Population

13.5 Infant Mortality Rate

55.3% Access to Improved Water

Municipality	Population
Hato Mayor	61,981
Sabana De La Mar	16,388
El Valle	7,284

Multi-Hazard Risk Rank: Medium (16 of 32)

Lack of Resilience Rank: High (10 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		High		Medium		High		Medium	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.525	16	0.518	10	0.539	19	0.496	11	0.461	19

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 19 of 32 Provinces (Score: 0.539)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone

100%

106,114 People

Earthquake

100%

106,114 People

Landslide

56%

59,161 People

Flood

34%

35,632 People

Tsunami

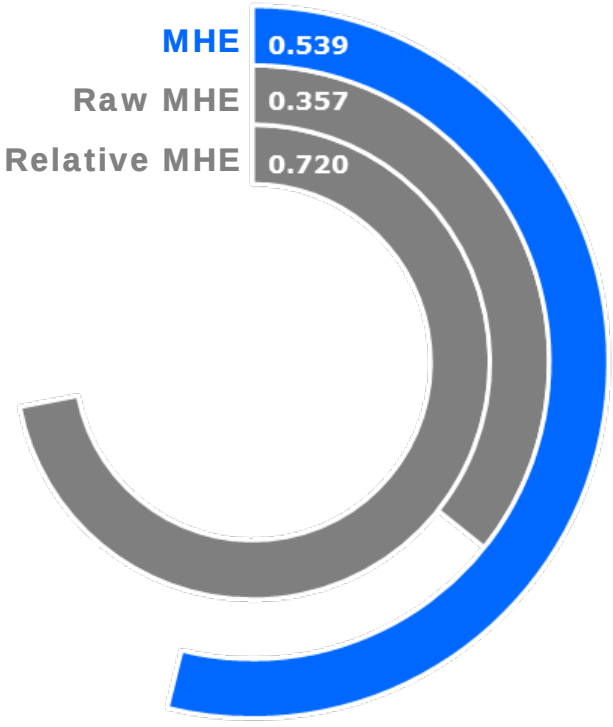
12%

13,230 People

Case Study: Hurricane Maria Rescues in Hato Mayor

When Hurricane Maria hit the east coast of the Dominican Republic on September 21st, 2017, many people living within the province of Hato Mayor found themselves stranded by the rising floodwaters. Master guides from two Adventist churches in the province helped to rescue "dozens of people, including children and the elderly." Through coordination and rapid action, the master guides were able to pull people to safety at a neighboring church. With the military and fire department unable to access the town in time, local-level emergency response efforts became integral to the survival of many in the province.

"In the Dominican Republic, Master Guides Rescue Dozens from Flood Waters During Hurricane Maria" – Adventist News Network, 26 September 2017



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 11 of 32 Provinces (Score: 0.496) Vulnerability in Hato Mayor is influenced by **Clean Water Vulnerability, Gender Inequality,** and **Vulnerable Health Status.** The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

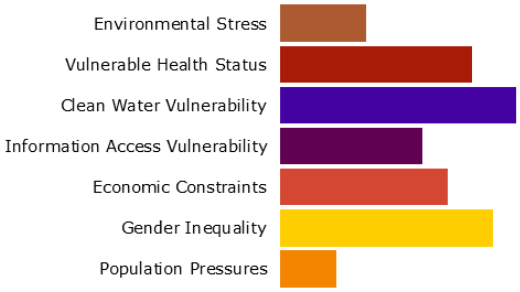


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**1.7%** Province Susceptible to Drought	**-2.0%** Average Annual Forest Change				
Vulnerable Health Status	**13.5** Infant Mortality Rate	**246.2** Maternal Mortality Rate	**9.8** Chronic Malnutrition	**11.4%** Population Disabled		
Clean Water Vulnerability	**44.7%** Households without Access to Improved Water	**13.5%** Households without Access to Flush Toilets				
Information Access Vulnerability	**16.0%** Illiteracy	**96.1%** Primary School Enrollment	**94.5%** Households without Internet	**28.0%** Households without TV	**57.3%** Households without Radio	**6.1** Average years of Schooling
Economic Constraints	**58.8** Economic Dependency Ratio	**61.5%** Population in Poverty	**44.4%** CEP Beneficiaries			
Gender Inequality	**37.3%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.52** Female to Male Labor Ratio			
Population Pressures	**0.06%** Average Annual Population Change	**0.9%** 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 Capacity[4] Rank: 19 of 32 Provinces (Score: 0.461) The thematic areas with the weakest relative scores are **Infrastructure (Transportation and Communications)** and **Economic Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

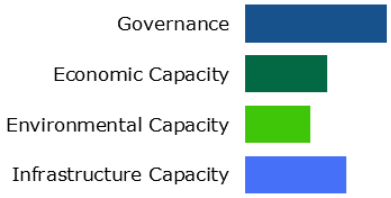


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.00** Debt to Service Ratio	**92.1%** Employment Rate (Male)	**RD$ 18,446** Average Annual Income per Capita			
Governance	**76.7%** Registered Voter Participation (2016 Election)	**14.0** Homicide Rate per 100k persons	**65.0%** Households with Garbage Collection			
Environmental Capacity	**19.9%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**11.9** Hospital Beds per 10,000 Persons	**15.2** Nurses per 10,000 Persons	**24.9** Physicians per 10,000 Persons	**5.0 km** Average Distance to Nearest Hospital	**0.76** Vaccination Index[5]	
Communications Capacity	**9.9%** Households with Access to Fixed Phone Line	**71.4%** Households with Access to Mobile Phone				
Transportation Capacity	**27.0 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 10 of 32 Provinces (Score: 0.518)

Hato Mayor's score and ranking are due to high Vulnerability combined with moderate Coping Capacity scores. Hato Mayor ranks 11th in Vulnerability and 19th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Clean Water Vulnerability

Vulnerable Health Status

Transportation Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 16 of 32 Provinces (Score: 0.525)

Hato Mayor's score and ranking are due to moderate Multi-Hazard Exposure combined with high Vulnerability and moderate Coping Capacity.

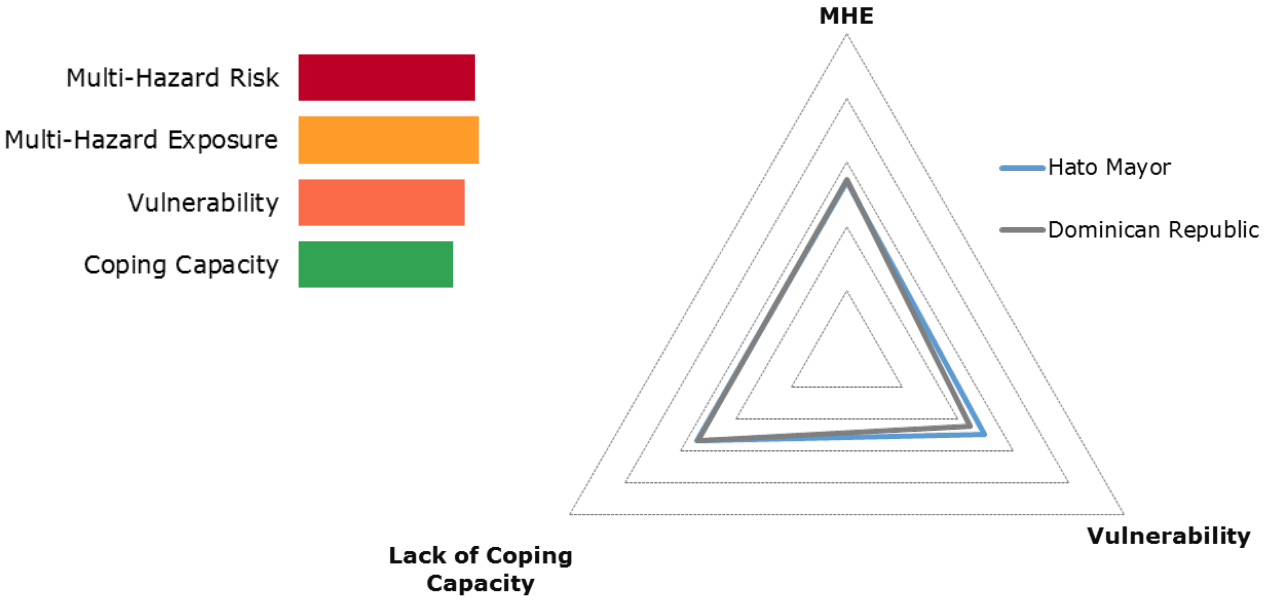


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 overall governance
Ranked 6 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

Low population pressures
Ranked 31 of 32 provinces, 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

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

03

Increase transportation capacity
Invest in transportation networks to facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

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Hermanas Mirabal

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Hermanas Mirabal

Province Capital: Salcedo

Area:483 km^2

Hermanas Mirabal province is located in the central north of the country and includes humid sub-tropical forests. Its economy is mainly agriculturally based including banana, cassava, cocoa and coffee.

92,311
Population (2017)

36.4%
Population in Poverty

14.4%
Illiterate Population

14.4
Infant Mortality Rate

54.8%
Access to Improved Water

Municipality	Population
Salcedo	39,613
Tenares	27,798
Villa Tapia	24,900

Multi-Hazard Risk Rank: High (9 of 32)

Lack of Resilience Rank: Low (9 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Low		High		Low		High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.538	9	0.453	22	0.707	8	0.392	23	0.486	11

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 8 of 32 Provinces (Score: 0.707)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
118,680 People

Earthquake
100%
118,680 People

Landslide
69%
82,395 People

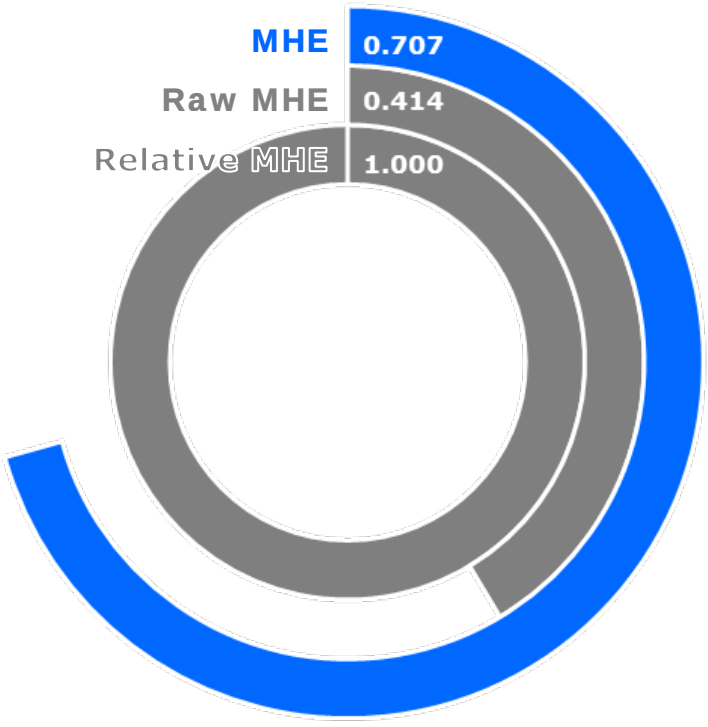
Flood
82%
97,340 People

Tsunami
0%
0 People

Case Study: Climate Shock Vulnerability in Hermanas Mirabal

A 2018 joint study completed by the United Nations World Food Program (WFP) and the Dominican Republic's Ministry of Economy, Planning and Development (MEPyD) found that seventy-seven municipalities in the country are "vulnerable to climate-related shocks," including Hermanas Mirabal. Information from the study will be used to plan and implement programs aimed at increasing the resilience of the population. Increasing social protection and risk reduction initiatives will be additional outcomes of the study.

"Study: 77 Municipalities Vulnerable to Climate Shocks" – Dominican Today, 3 August 2018



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 23 of 32 Provinces (Score: 0.392) Vulnerability in Hermanas Mirabal is influenced by **Clean Water Vulnerability, Gender Inequality,** and **Vulnerable Health Status.** The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

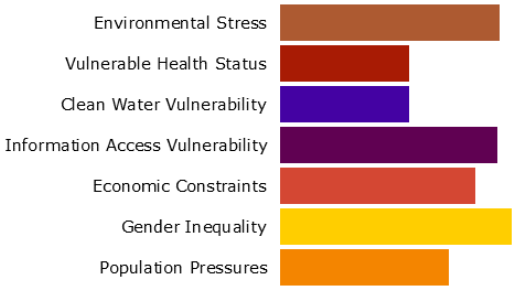


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-0.9%** Average Annual Forest Change					
Vulnerable Health Status	**14.4** Infant Mortality Rate	**299.9** Maternal Mortality Rate	**10.5** Chronic Malnutrition	**5.8%** Population Disabled			
Clean Water Vulnerability	**45.2%** Households without Access to Improved Water	**3.4%** Households without Access to Flush Toilets					
Information Access Vulnerability	**14.4%** Illiteracy	**85.1%** Primary School Enrollment	**93.2%** Households without Internet	**18.1%** Households without TV	**45.2%** Households without Radio	**6.8** Average years of Schooling	
Economic Constraints	**55.8** Economic Dependency Ratio	**36.4%** Population in Poverty	**37.4%** CEP Beneficiaries				
Gender Inequality	**41.0%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.50** Female to Male Labor Ratio				
Population Pressures	**0.03%** Average Annual Population Change	**1.9%** 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 Capacity[4] Rank: 11 of 32 Provinces (Score: 0.486) Hermanas Mirabal exhibits notable weaknesses in the thematic areas of **Environmental Capacity** and **Governance**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

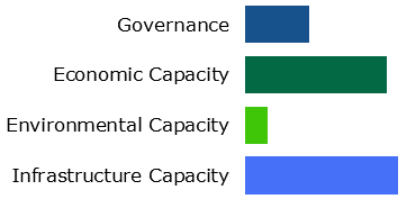


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.72** Debt to Service Ratio	**93.1%** Employment Rate (Male)	**RD$ 20,319** Average Annual Income per Capita			
Governance	**72.1%** Registered Voter Participation (2016 Election)	**20.6** Homicide Rate per 100k persons	**43.5%** Households with Garbage Collection			
Environmental Capacity	**6.9%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**28.4** Hospital Beds per 10,000 Persons	**53.9** Nurses per 10,000 Persons	**25.6** Physicians per 10,000 Persons	**2.5 km** Average Distance to Nearest Hospital	**0.50** Vaccination Index[5]	
Communications Capacity	**19.0%** Households with Access to Fixed Phone Line	**75.5%** Households with Access to Mobile Phone				
Transportation Capacity	**26.5 km** Average Distance to Nearest Port or Airport	**0.86 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 22 of 32 Provinces (Score: 0.453)

Hermanas Mirabel's score and ranking are due to low Vulnerability combined with high Coping Capacity scores. Hermanas Mirabal ranks 23rd in Vulnerability and 11th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity | **Governance** | **Gender Inequality**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 9 of 32 Provinces (Score: 0.538)

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

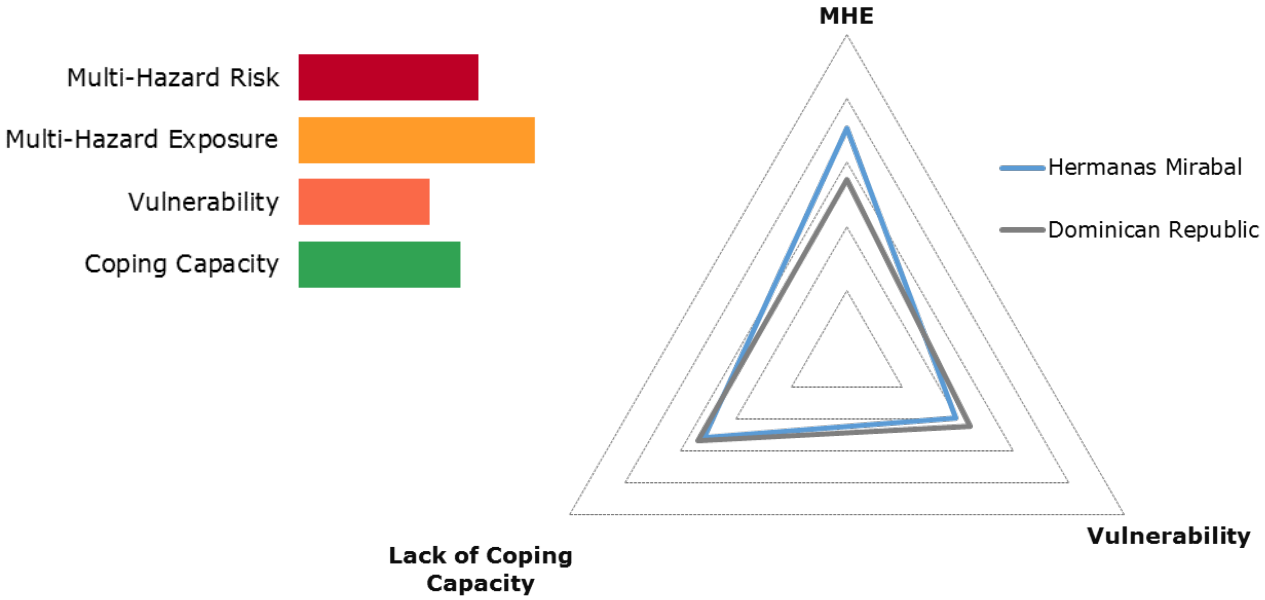


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 22 of 32 provinces, low economic constraints indicate an increased ability to invest in mitigation and preparedness measures at the individual, household, and provincial level.

High overall infrastructure capacity
Ranked 4 of 32 provinces, well developed infrastructure – communication, health care, transportation - facilitates the exchange of information, and physical distribution of goods and services to the population.

Low population pressures
Ranked 29 of 32 provinces, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Recommendations

01

Improve environmental capacity
Invest in protected areas to reduce environmental stress and degradation.

02

Promote gender equality
Reduce inequality, ensuring that vulnerable populations have their needs met under ‘normal’ conditions and are less susceptible to disaster impacts.

03

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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Independencia

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Independencia

Province Capital: Jimaní

Area: 1,975 km^2

Independencia is located in western Dominican Republic near the border with Haiti and is known for its mountains, import/export with Haiti, and agriculture.

56,763 Population (2017)

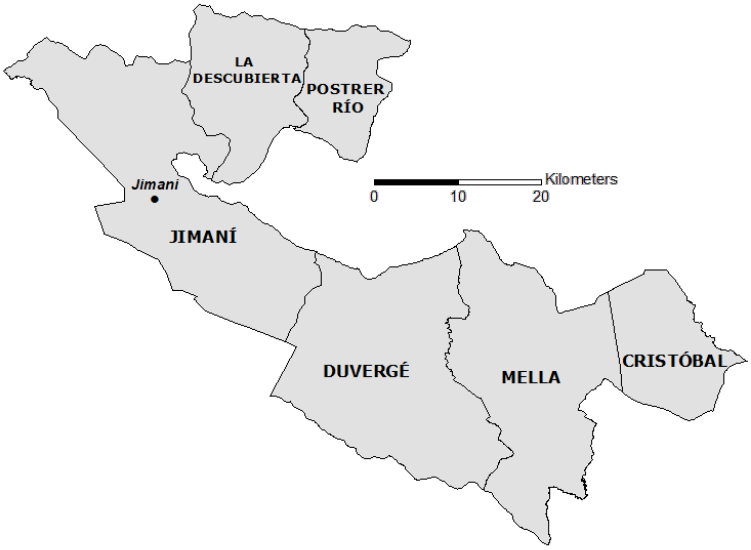
73.3% Population in Poverty

25.9% Illiterate Population

10.2 Infant Mortality Rate

90.9% Access to Improved Water

Municipality	Population
Jimaní	17,829
Duvergé	12,984
La Descubierta	8,965
Postrer Rio	6,116
Cristóbal	6,942
Mella	3,927



Multi-Hazard Risk Rank: High (12 of 32)

Lack of Resilience Rank: Very High (4 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Very High		Very Low		Very High		Very Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.531	12	0.618	4	0.356	27	0.635	2	0.399	27

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 27 of 32 Provinces (Score: 0.356)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
66,594 People

Earthquake
66%
44,027 People

Landslide
57%
38,236 People

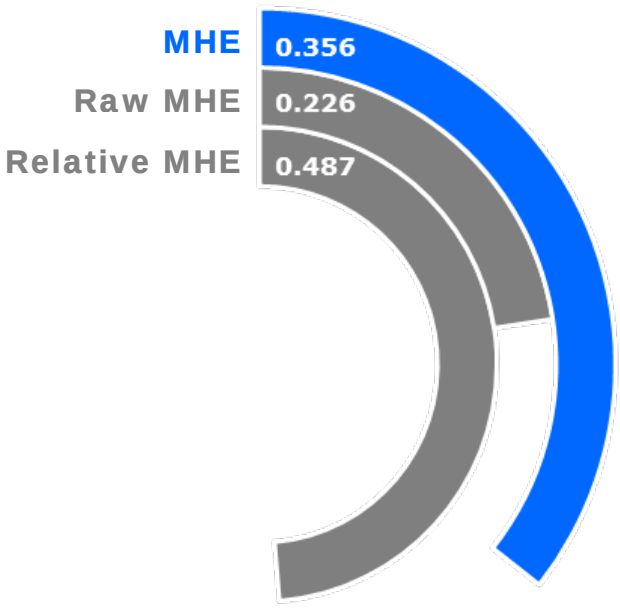
Flood
37%
24,613 People

Tsunami
0%
0 People

Case Study: Flooding in Independencia

The province of Independencia experienced a significant flooding event in May of 2004 which resulted in devastating losses. Independencia's town of Jimaní, located on the border with Haiti, suffered the deaths of nearly four hundred people after the disaster event. "Many of the affected persons in the border region… were Haitian immigrants, most undocumented." Impacts were equally devastating on the Haitian side of the border. Relief efforts were "well-orchestrated and swift," and required effective coordination to manage response operations in both Haiti and the Dominican Republic.

"*Dominican Republic & Haiti: Floods" – IFRC, 28 February 2005*



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 2 of 32 Provinces (Score: 0.635) Vulnerability in Independencia is strongly influenced by **Information Access Vulnerability, Economic Constraints,** and **Environmental Stress**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

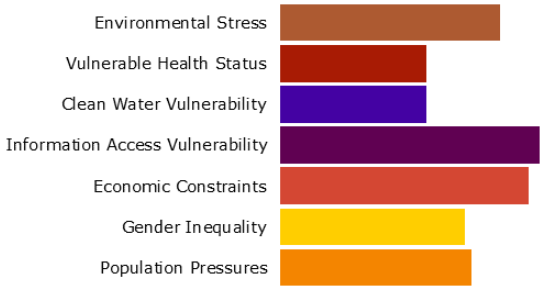


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**88.2%** Province Susceptible to Drought	**-1.8%** Average Annual Forest Change				
Vulnerable Health Status	**10.2** Infant Mortality Rate	**272.5** Maternal Mortality Rate	**11.3** Chronic Malnutrition	**7.1%** Population Disabled		
Clean Water Vulnerability	**9.1%** Households without Access to Improved Water	**19.9%** Households without Access to Flush Toilets				
Information Access Vulnerability	**25.9%** Illiteracy	**74.5%** Primary School Enrollment	**97.9%** Households without Internet	**39.3%** Households without TV	**65.5%** Households without Radio	**5.2** Average years of Schooling
Economic Constraints	**76.5** Economic Dependency Ratio	**73.3%** Population in Poverty	**41.2%** CEP Beneficiaries			
Gender Inequality	**35.6%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.46** Female to Male Labor Ratio			
Population Pressures	**1.1 %** Average Annual Population Change	**4.1%** 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 Capacity[4] Rank: 27 of 32 Provinces (Score: 0.399) The thematic areas with the weakest relative scores are **Economic Capacity** and **Infrastructure (Transportation and Communications)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

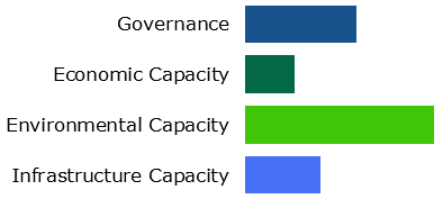


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.99** Debt to Service Ratio	**91.0%** Employment Rate (Male)	**RD$ 13,047** Average Annual Income per Capita			
Governance	**84.0%** Registered Voter Participation (2016 Election)	**34.5** Homicide Rate per 100k persons	**65.4%** Households with Garbage Collection			
Environmental Capacity	**57.6%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**21.6** Hospital Beds per 10,000 Persons	**39.4** Nurses per 10,000 Persons	**16.5** Physicians per 10,000 Persons	**4.4 km** Average Distance to Nearest Hospital	**0.95** Vaccination Index[5]	
Communications Capacity	**5.5%** Households with Access to Fixed Phone Line	**55.2%** Households with Access to Mobile Phone				
Transportation Capacity	**44.8 km** Average Distance to Nearest Port or Airport	**0.28 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 4 of 32 Provinces (Score: 0.618)

Independencia's score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores. Independencia ranks 2nd in Vulnerability and 27th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Communications Infrastructure Capacity	**Information Access Vulnerability**	**Economic Constraints**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 12 of 32 Provinces (Score: 0.531)

Independencia's score and ranking are driven primarily by a combination of very high Vulnerability with very low Coping Capacity.

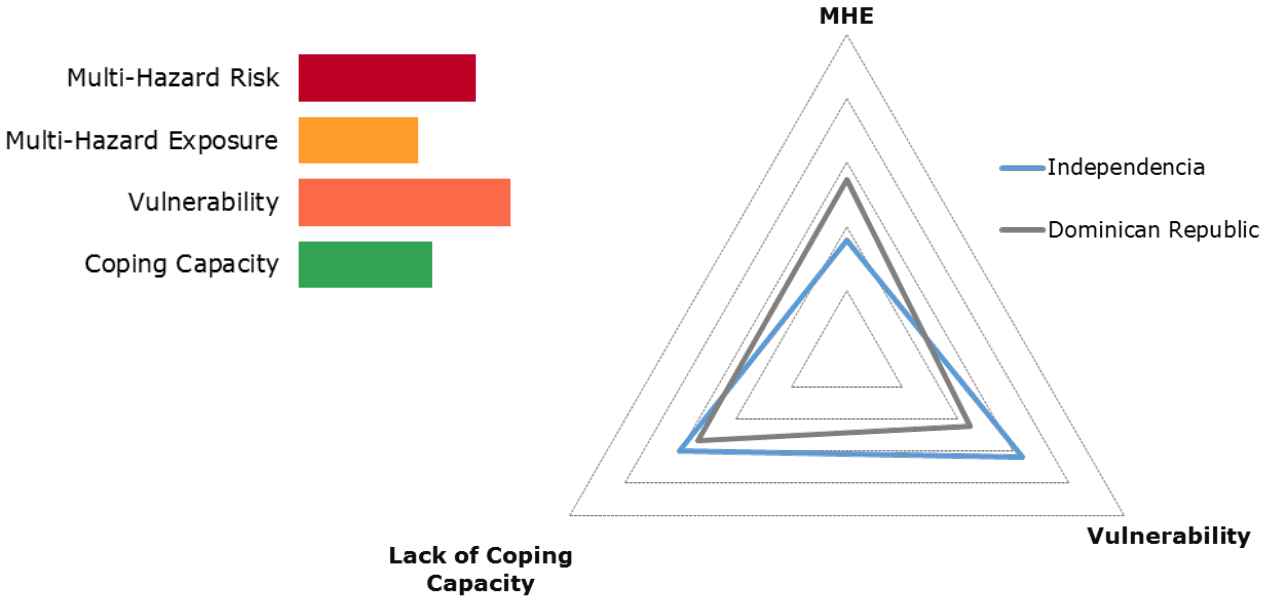


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 environmental capacity

Ranked 2 of 32 provinces, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Invest in communication infrastructure

Invest in communication infrastructure to allow for easier access to information and education material, increasing literacy and situational awareness of the population.

02

Increase economic capacity

Encourage business development and education programs to increase economic opportunities in the region.

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La Altagracia

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: La Altagracia

Province Capital: Salvaleón de Higüey

Area: 3,355 km^2

La Altagracia, the most eastern province in Dominican Republic and its second largest, includes the economically important ecotourism area of Punta Cana.

330,367 Population (2017)

50.5% Population in Poverty

13.6% Illiterate Population

8.1 Infant Mortality Rate

27.4% Access to Improved Water

Municipality	Population
Higüey	303,820
San Rafael Del Yuma	26,547

Multi-Hazard Risk Rank: High (11 of 32)

Lack of Resilience Rank: High (11 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		High		Medium		High		High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.532	11	0.514	11	0.568	17	0.542	8	0.515	9

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 17 of 32 Provinces (Score: 0.568)

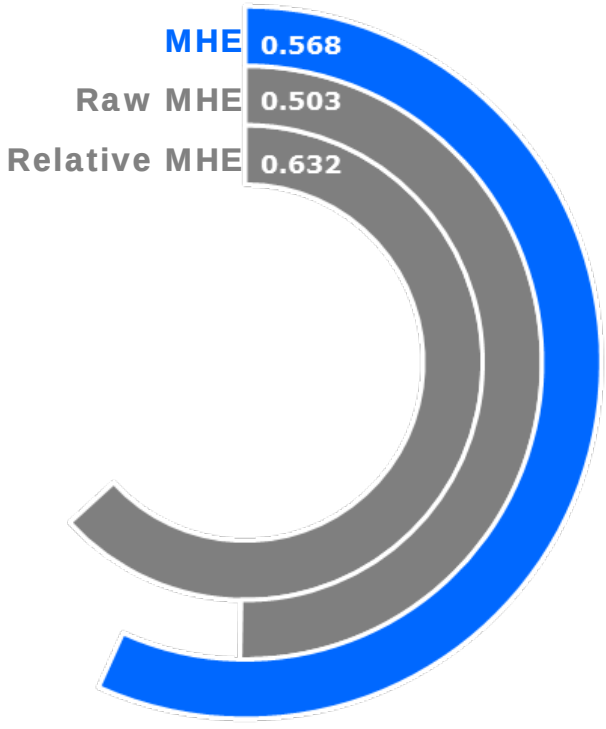
Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone	**100%**	**220,007 People**
Earthquake	**100%**	**220,007 People**
Landslide	**55%**	**121,568 People**
Flood	**24%**	**51,734 People**
Tsunami	**8%**	**16,542 People**

Case Study: Hurricane Irma Impacts and the DRC

The province of La Altagracia was one of the most affected areas of the country after the passage of Hurricane Irma in early September 2017. Following the hurricane, the Dominican Red Cross (DRC) deployed teams to the province to conduct rapid damage assessment and needs analysis (DANA). These DRC teams also supported the UN Country Team and the Dominican Government in conducting a multi-sectorial damage assessment and needs analysis. Through these assessments, the DRC was able to effectively distribute relief supplies to transition the province from response to recovery operations.

"Dominican Republic: Hurricane Irma (MDRDO010) DREF Operation Update" – IFRC, 14 December 2017



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 8 of 32 Provinces (Score: 0.542) Vulnerability in La Altagracia is strongly influenced by, **Population Pressures, Environmental Stress,** and **Clean Water Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

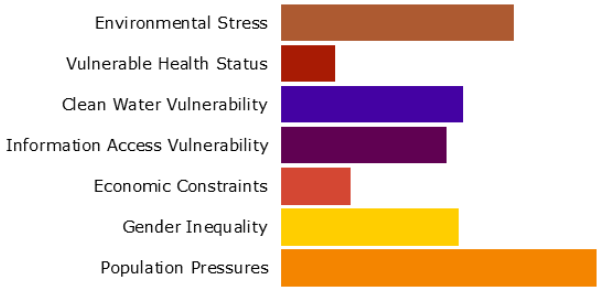


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**47.8%** Province Susceptible to Drought	**-8.9%** Average Annual Forest Change					
Vulnerable Health Status	**8.1** Infant Mortality Rate	**54.1** Maternal Mortality Rate	**8.3** Chronic Malnutrition	**7.5%** Population Disabled			
Clean Water Vulnerability	**72.6%** Households without Access to Improved Water	**5.0%** Households without Access to Flush Toilets					
Information Access Vulnerability	**13.6%** Illiteracy	**81.2%** Primary School Enrollment	**90.0%** Households without Internet	**31.9%** Households without TV	**61.0%** Households without Radio	**6.4** Average years of Schooling	
Economic Constraints	**53.4** Economic Dependency Ratio	**50.5%** Population in Poverty	**24.5%** CEP Beneficiaries				
Gender Inequality	**27.8%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.42** Female to Male Labor Ratio				
Population Pressures	**2.9%** Average Annual Population Change	**9.7%** 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 Capacity[4] Rank: 9 of 32 Provinces (Score: 0.515) The thematic areas with the weakest relative scores are **Governance, Environmental Capacity** and **Infrastructure (Health Care Capacity).** The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

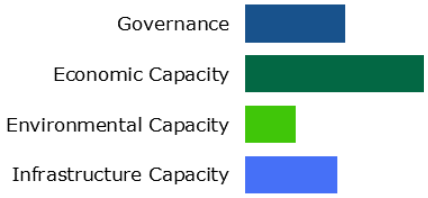


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.60** Debt to Service Ratio	**92.0%** Employment Rate (Male)	**RD$ 31,687** Average Annual Income per Capita			
Governance	**70.8%** Registered Voter Participation (2016 Election)	**21.8** Homicide Rate per 100k persons	**75.8%** Households with Garbage Collection			
Environmental Capacity	**15.3%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**4.1** Hospital Beds per 10,000 Persons	**4.5** Nurses per 10,000 Persons	**7.4** Physicians per 10,000 Persons	**5.1 km** Average Distance to Nearest Hospital	**0.88** Vaccination Index[5]
Communications Capacity	**11.0%** Households with Access to Fixed Phone Line	**80.2%** Households with Access to Mobile Phone			
Transportation Capacity	**24.3 km** Average Distance to Nearest Port or Airport	**0.41 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 11 of 32 Provinces (Score: 0.514)

La Altagracia's score and ranking are due to high Vulnerability combined with low Coping Capacity scores. La Altagracia ranks 8th in Vulnerability and 9th in highest Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Population Pressures

Health Care Infrastructure Capacity

Environmental Stress

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 11 of 32 Provinces (Score: 0.532)

La Altagracia's score and ranking are due to moderate Multi-Hazard Exposure combined with high Vulnerability and high Coping Capacity.

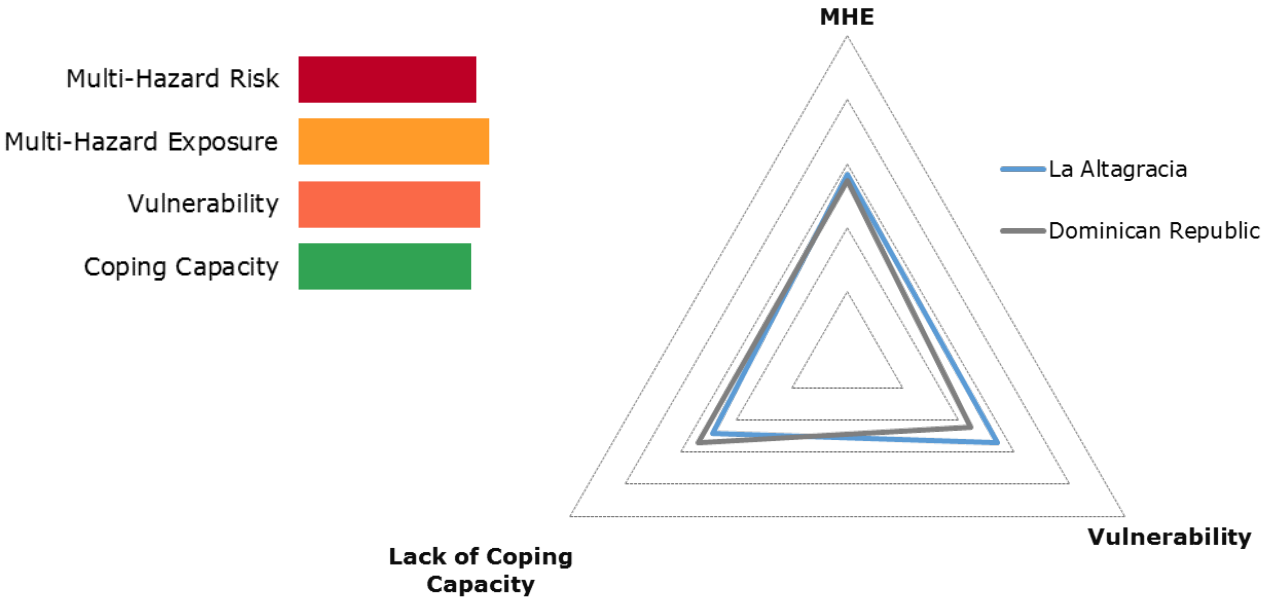


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 vulnerable health status
Ranked 32 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Low economic constraints
Ranked 24 of 32 provinces, low economic constraints indicate that La Altagracia may be able to invest in additional mitigation and preparedness measures at the local and community level.

Highest economic capacity
Ranked 1 of 32 provinces, high economic capacity indicates that La Altagracia may be able to invest in additional mitigation and preparedness measures at the local and community level.

Recommendations

01

Reduce Environmental Stress
Invest in drought and erosion mitigation projects to reduce environmental stress and degradation.

02

Increase health care availability
Increase clinics and medical personnel through incentivized programs and investments to increase the health resilience of the population.

03

Reduce population pressure
Rapid population changes are difficult to plan for, and can destabilize social, economic, and environmental systems. Analyze trends in the province to determine potential population changes and increase the update frequency of plans and SOPS to accommodate the changes.

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La Romana

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: La Romana

Province Capital: La Romana

Area: 728 km^2

Located in the southeast of the country, La Romana produces coffee, tobacco, beeswax, cattle and hides. A coastal province, La Romana's port supports the transportation of agriculture outputs and fish.

265,084
Population (2017)

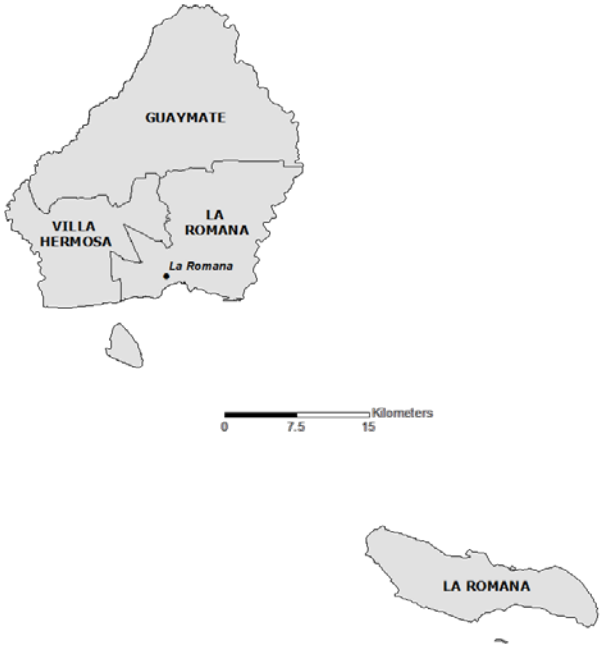
45.0%
Population in Poverty

10.7%
Illiterate Population

10.4
Infant Mortality Rate

88.4%
Access to Improved Water

Municipality	Population
La Romana	150,862
Guaymate	17,880
Villa Hermosa	96,342



Multi-Hazard Risk Rank: Low (22 of 32)

Lack of Resilience Rank: Low (23 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Low		High		Medium		High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.497	22	0.442	23	0.608	13	0.412	18	0.528	8

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 13 of 32 Provinces (Score: 0.608)

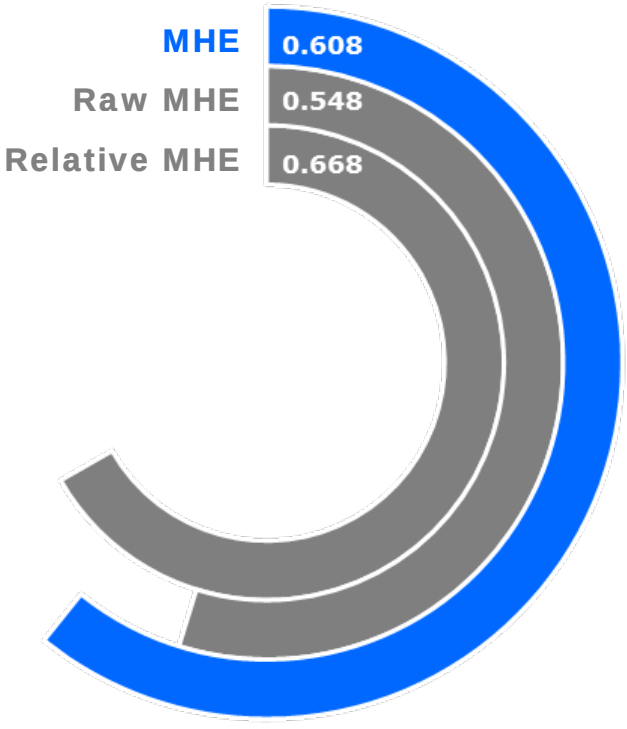
Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone	100%	265,549 People
Earthquake	100%	265,549 People
Landslide	64%	171,122 People
Flood	6%	15,690 People
Tsunami	22%	59,710 People

Case Study: Red Alert in the Port of La Romana

Prior to impacts from Hurricane Maria, La Romana's port suspended operations as a result of a "red alert" for extreme weather conditions. La Romana was just one of several ports the Dominican Republic closed in advance of the deadly storm, which followed closely behind Hurricane Irma. With reports of extensive damage on neighboring Caribbean islands, the Dominican Republic proactively worked to prepare provinces like La Romana to ensure a minimal loss of life and property from Hurricane Maria.

"Ports Shut Down as Dominican Republic Braces for Deadly Hurricane Maria" – Pam Wright, The Weather Channel, 20 September 2017



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 18 of 32 Provinces (Score: 0.412) Vulnerability in La Romana is strongly influenced by **Environmental Stress**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

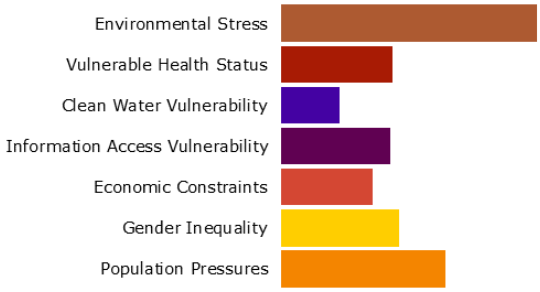


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**100%** Province Susceptible to Drought	**-3.4%** Average Annual Forest Change					
Vulnerable Health Status	**10.4** Infant Mortality Rate	**175.5** Maternal Mortality Rate	**8.1** Chronic Malnutrition	**8.5%** Population Disabled			
Clean Water Vulnerability	**11.6%** Households without Access to Improved Water	**4.9%** Households without Access to Flush Toilets					
Information Access Vulnerability	**10.7%** Illiteracy	**88.7%** Primary School Enrollment	**88.6%** Households without Internet	**22.9%** Households without TV	**54.0%** Households without Radio	**6.8** Average years of Schooling	
Economic Constraints	**56.7** Economic Dependency Ratio	**45.0%** Population in Poverty	**31.1%** CEP Beneficiaries				
Gender Inequality	**37.3%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.38** Female to Male Labor Ratio				
Population Pressures	**1.08%** Average Annual Population Change	**2.2%** 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 Capacity[4] Rank: 8 of 32 Provinces (Score: 0.528)
The thematic areas with the weakest relative scores are **Health Care Capacity** and **Economic Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

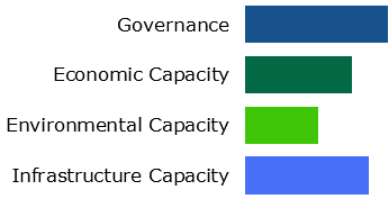


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.07** Debt to Service Ratio	**92.4%** Employment Rate (Male)	**RD$ 27,470** Average Annual Income per Capita			
Governance	**73.9%** Registered Voter Participation (2016 Election)	**16.7** Homicide Rate per 100k persons	**81.0%** Households with Garbage Collection			
Environmental Capacity	**22.4%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**4.7** Hospital Beds per 10,000 Persons	**4.7** Nurses per 10,000 Persons	**9.3** Physicians per 10,000 Persons	**3.8 km** Average Distance to Nearest Hospital	**0.88** Vaccination Index[5]	
Communications Capacity	**18.5%** Households with Access to Fixed Phone Line	**80.9%** Households with Access to Mobile Phone				
Transportation Capacity	**12.5 km** Average Distance to Nearest Port or Airport	**0.76 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 23 of 32 Provinces (Score: 0.442)

La Romana's score and ranking are due to moderate Vulnerability combined with high Coping Capacity scores. La Romana ranks 18th in Vulnerability and 8th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Stress

Health Care Capacity

Environmental Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 22 of 32 Provinces (Score: 0.497)

La Romana's score and ranking are due to moderate Multi-Hazard Exposure combined with moderate Vulnerability and high Coping Capacity

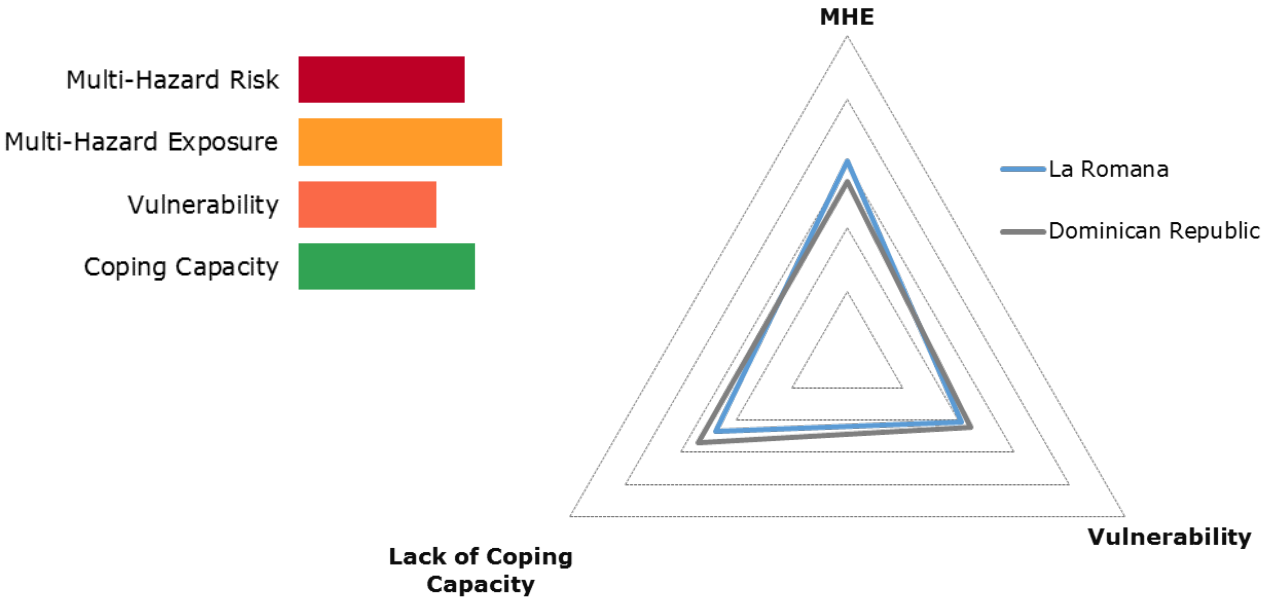


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 overall governance
Ranked 5 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

Low gender inequality
Ranked 29 of 32 provinces, 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.

High information access
High information access indicates that the population has an increased ability to access and comprehend disaster-related information before, during, and after events.

Recommendations

01

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

02

Increase health care availability
Increase clinics and medical personnel through incentivized programs and investments to increase the health resilience of the population.

03

Increase environmental programs
Invest in programs to provide protection for the environment, including protected lands and reforestation projects, to increase the ability of the environment to recover after a disaster.

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La Vega

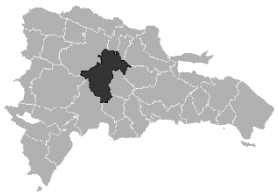
Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: La Vega

Province Capital: La Vega



Area: 2,579 km^2

La Vega is centrally located and includes the fertile La Vega Real region. La Vega is a prosperous commercial, manufacturing, and transportation center which yields cacao, coffee, tobacco, rice, fruits, and cattle.

406,990 Population (2017)

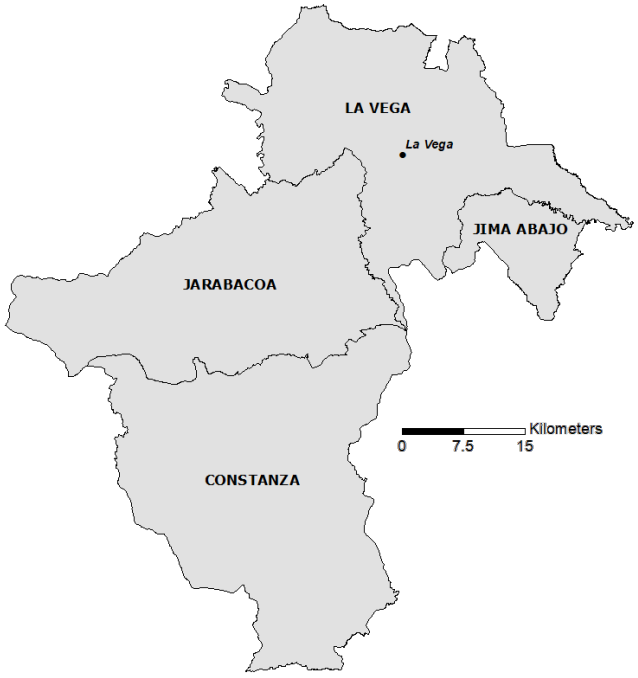
30.4% Population in Poverty

14.7% Illiterate Population

23.2 Infant Mortality Rate

71.9% Access to Improved Water

Municipality	Population
La Vega	256,146
Constanza	60,954
Jarabacoa	58,646
Jima Abajo	31,244



Multi-Hazard Risk Rank: Medium (15 of 32)

Lack of Resilience Rank: Very Low (27 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) 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 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.525	15	0.425	27	0.725	7	0.398	21	0.547	5

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 7 of 32 Provinces (Score: 0.725)

Table 2. Estimated ambient population[2] exposed to each hazard

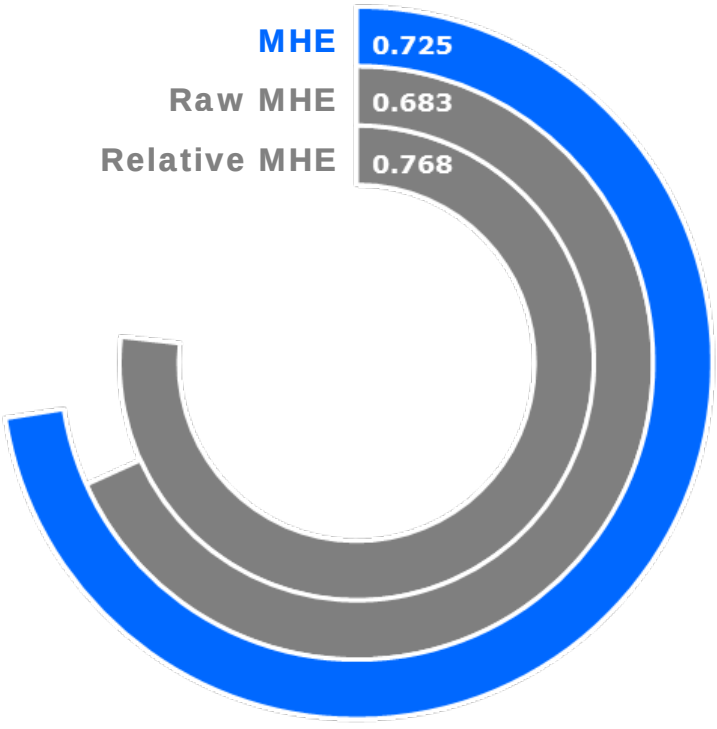
Cyclone
100%
469,044 People

Earthquake
100%
469,044 People

Landslide
71%
332,991 People

Flood
39%
184,350 People

Tsunami
0%
0 People



Case Study: Flooding in La Vega Province

In early April 2018, the Province of La Vega experienced a significant flooding event after "heavy rain caused the Camú and Yaque del Norte rivers to overflow, flooding several areas…". With over 99mm of rain in a 24-hour period, the country's Emergency Operations Center (COE) declared a red alert for the province. More than 4,000 people were evacuated, and over 800 homes were damaged or destroyed. The national social service agency worked to return affected areas to normal within days of the disaster.

"Dominican Republic – Thousands Evacuated After Floods in La Vega Province" – Floodlist, 10 April 2018

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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 21 of 32 Provinces (Score: 0.398) Despite this relatively low rank, vulnerability in La Vega is strongly influenced by a high **Gender Inequality**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

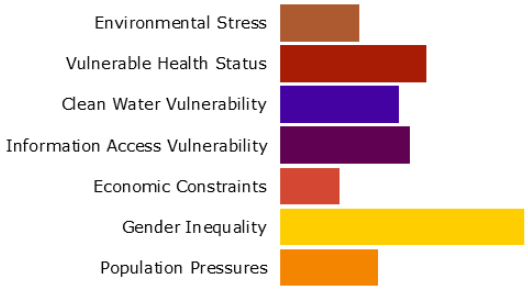


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-1.6%** Average Annual Forest Change				
Vulnerable Health Status	**23.2** Infant Mortality Rate	**67.8** Maternal Mortality Rate	**11.5** Chronic Malnutrition	**7.6%** Population Disabled		
Clean Water Vulnerability	**28.1%** Households without Access to Improved Water	**4.8%** Households without Access to Flush Toilets				
Information Access Vulnerability	**14.7%** Illiteracy	**83.1%** Primary School Enrollment	**91.1%** Households without Internet	**20.1%** Households without TV	**47.5%** Households without Radio	**6.4** Average years of Schooling
Economic Constraints	**54.0** Economic Dependency Ratio	**30.4%** Population in Poverty	**33.0%** CEP Beneficiaries			
Gender Inequality	**28.7%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.52** Female to Male Labor Ratio			
Population Pressures	**0.41%** Average Annual Population Change	**0.96%** 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 Capacity[4] Rank: 5 of 32 Provinces (Score: 0.547)
La Vega exhibits moderate relative scores in the thematic areas of **Health Care Capacity, Economic Capacity** and **Governance.** The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

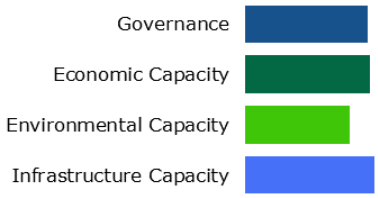


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.05** Debt to Service Ratio	**94.2%** Employment Rate (Male)	**RD$ 24,585** Average Annual Income per Capita			
Governance	**72.7%** Registered Voter Participation (2016 Election)	**17.1** Homicide Rate per 100k persons	**71.5%** Households with Garbage Collection			
Environmental Capacity	**31.9%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**11.9** Hospital Beds per 10,000 Persons	**14.8** Nurses per 10,000 Persons	**14.0** Physicians per 10,000 Persons	**4.2 km** Average Distance to Nearest Hospital	**0.93** Vaccination Index[5]
Communications Capacity	**18.2%** Households with Access to Fixed Phone Line	**78.4%** Households with Access to Mobile Phone			
Transportation Capacity	**19.0 km** Average Distance to Nearest Port or Airport	**0.82 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 27 of 32 Provinces (Score: 0.425)

La Vega's score and ranking are due to low Vulnerability combined with high Coping Capacity scores. La Vega ranks 21st in Vulnerability and 5th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Gender Inequality	**Health Care Infrastructure Capacity**	**Economic Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 15 of 32 Provinces (Score: 0.525)

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

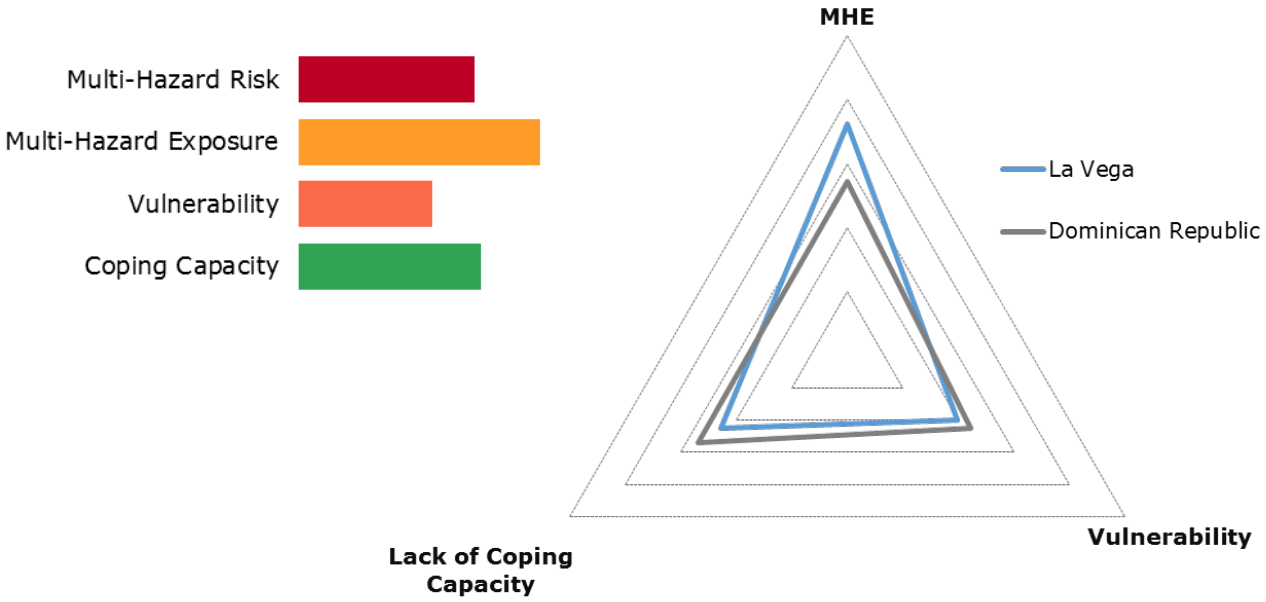


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 25 of 32 provinces, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Low population pressures
Ranked 25 of 32 provinces, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Low economic constraints
Ranked 26 of 32 provinces, low economic constraints indicate that La Vega may be able to invest in additional mitigation and preparedness measures at the local and community level.

Recommendations

01

Increase business development
Invest in business development and education programs to boost economic capacity and increase the number of businesses and the likelihood of success of those businesses.

02

Increase health care availability
Increase clinics and medical personnel through incentivized programs and investments to increase the health resilience of the population.

03

Provide increased opportunities for women
Public education and awareness programs that focus on increasing the role of women in the workplace and the society will improve resilience and decrease vulnerability.

Better solutions.
Fewer disasters.
Safer world.

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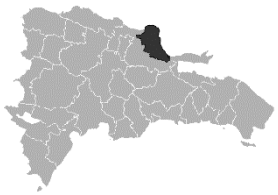
María Trinidad Sánchez

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: María Trinidad Sánchez

Province Capital: Nagua



Area: 1,364 km^2

Located in the northern region, María Trinidad Sánchez is known for its ecotourism, national parks and agricultural products including rice, coconut and cocoa.

141,284 Population (2017)

41.6% Population in Poverty

14.3% Illiterate Population

16.3 Infant Mortality Rate

75.3% Access to Improved Water

Municipality	Population
Nagua	77,192
Cabrera	24,587
El Factor	24,301
Rio San Juan	15,204

Multi-Hazard Risk Rank: Very High (7 of 32)

Lack of Resilience Rank: Medium (18 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Medium		High		Medium		Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.555	7	0.487	18	0.691	11	0.398	20	0.423	23

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 11 of 32 Provinces (Score: 0.691)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
163,100 People

Earthquake
100%
163,100 People

Landslide
61%
99,011 People

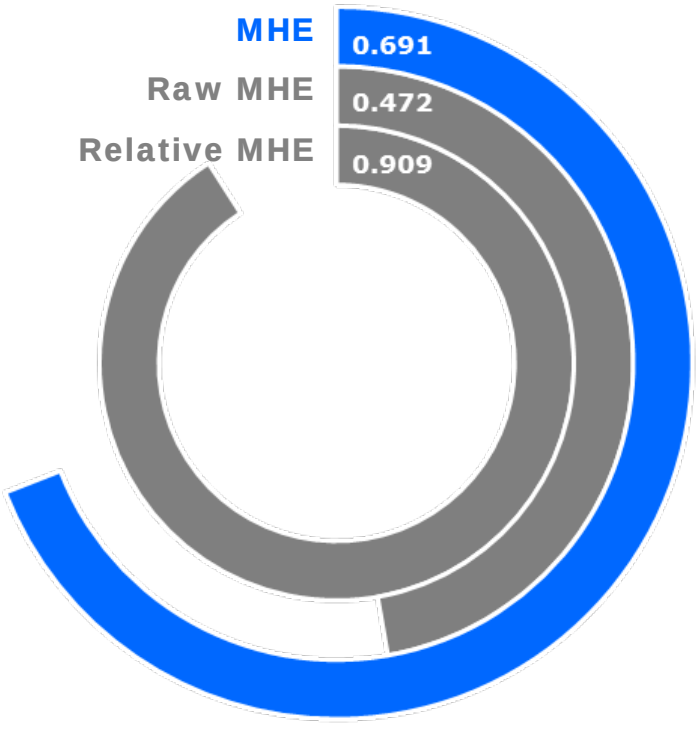
Flood
46%
75,103 People

Tsunami
29%
46,632 People

Case Study: Oxfam Support in María Trinidad Sánchez

Following Hurricane Irma, the northern coast of the Dominican Republic was heavily affected. The province of María Trinidad Sánchez experienced significant impacts to people's livelihoods, with "nearly 5,000 acres of crops and more than 100 houses" destroyed. Oxfam, alongside other Caribbean partner organizations, supported relief efforts in the province, "calling on the government to provide humanitarian assistance to the most affected people." This was just one such example of community advocacy which helped to support the larger disaster recovery process in the country.

"Hurricane Irma: Oxfam assists those hit hardest in Haiti, Dominican Republic" – Oxfam, 12 September 2017



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 20 of 32 Provinces (Score: 0.398) Vulnerability in María Trinidad Sánchez is influenced by **Gender Inequality** and **Information Access Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

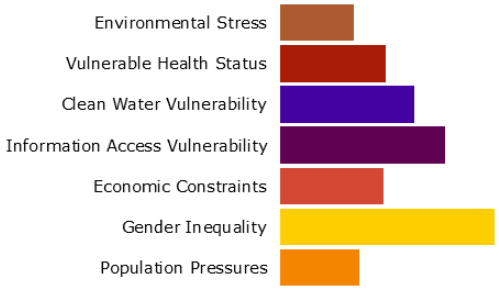


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-1.1%** Average Annual Forest Change				
Vulnerable Health Status	**16.3** Infant Mortality Rate	**86.0** Maternal Mortality Rate	**9.1** Chronic Malnutrition	**7.6%** Population Disabled		
Clean Water Vulnerability	**24.7%** Households without Access to Improved Water	**9.1%** Households without Access to Flush Toilets				
Information Access Vulnerability	**14.3%** Illiteracy	**78.9%** Primary School Enrollment	**93.1%** Households without Internet	**25.6%** Households without TV	**54.8%** Households without Radio	**6.4** Average years of Schooling
Economic Constraints	**54.5** Economic Dependency Ratio	**41.6%** Population in Poverty	**40.6%** CEP Beneficiaries			
Gender Inequality	**34.7%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.53** Female to Male Labor Ratio			
Population Pressures	**0.01%** Average Annual Population Change	**2.6%** 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 Capacity[4] Rank: 23 of 32 Provinces (Score: 0.423) The thematic areas with the weakest relative scores are **Environmental Capacity, Health Care Capacity** and **Governance.** The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

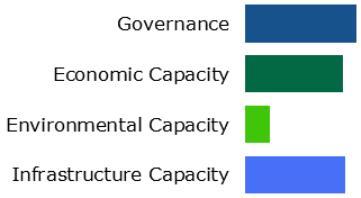


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.06** Debt to Service Ratio	**92.6%** Employment Rate (Male)	**RD$ 23,874** Average Annual Income per Capita			
Governance	**76.2%** Registered Voter Participation (2016 Election)	**17.7** Homicide Rate per 100k persons	**56.8%** Households with Garbage Collection			
Environmental Capacity	**7.7%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**9.9** Hospital Beds per 10,000 Persons	**19.2** Nurses per 10,000 Persons	**13.9** Physicians per 10,000 Persons	**3.5 km** Average Distance to Nearest Hospital	**0.17** Vaccination Index[5]
Communications Capacity	**10.9%** Households with Access to Fixed Phone Line	**76.9%** Households with Access to Mobile Phone			
Transportation Capacity	**33.4 km** Average Distance to Nearest Port or Airport	**0.70 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 18 of 32 Provinces (Score: 0.487)

María Trinidad Sánchez's score and ranking are due to low Vulnerability combined with low Coping Capacity scores. María Trinidad Sánchez ranks 20th in Vulnerability and 23rd in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Health Care Infrastructure Capacity

Gender Inequality

Environmental Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 7 of 32 Provinces (Score: 0.555)

María Trinidad Sánchez's score and ranking are due to high Multi-Hazard Exposure combined with low Vulnerability and Coping Capacity.

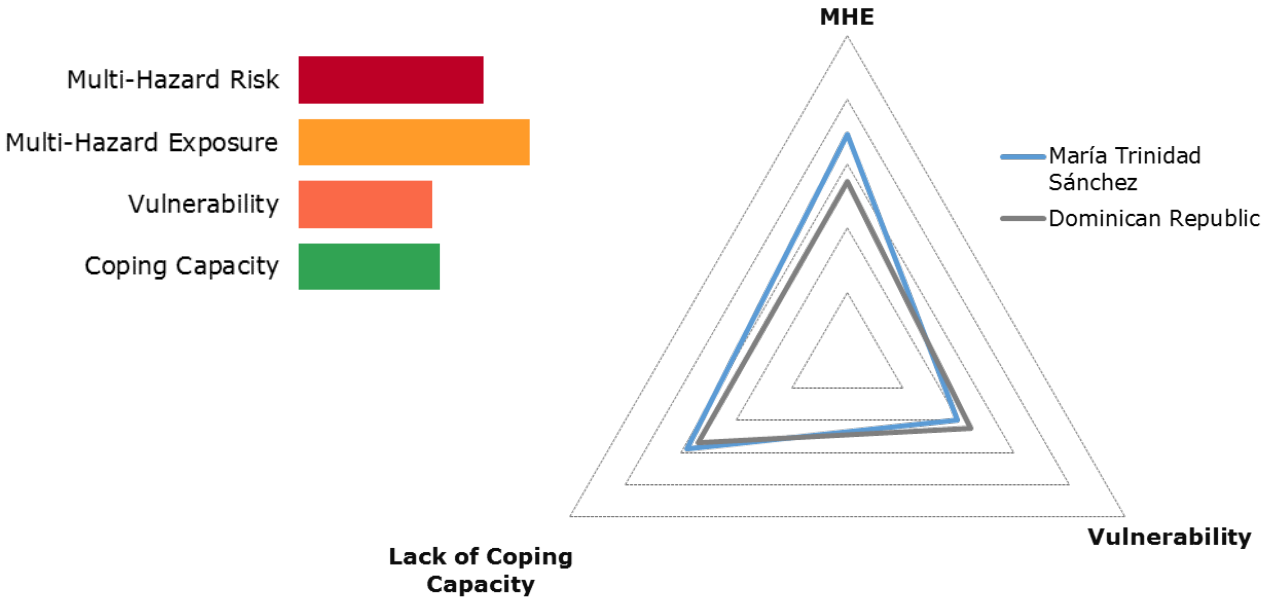


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 environmental stress
Ranked 26 of 32 provinces, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Low vulnerable health status
Ranked 25 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Low population pressures
Ranked 28 of 32 provinces, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Recommendations

01

Increase health care availability
Increase clinics and medical personnel through incentivized programs and investments to increase the health resilience of the population.

02

Increase environmental programs
Invest in programs to provide protection for the environment, including protected lands and reforestation projects, to increase the ability of the environment to recover after a disaster.

03

Provide opportunities for women
Public education and awareness programs that focus on increasing the role of women in the workplace and the society will improve the resilience of women during disasters.

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Monseñor Nouel

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Monseñor Nouel

Province Capital: Bonao

Area: 1,114 km^2

Located in the center of the country, Monseñor Nouel is a mountainous region known for its mining and agricultural sectors.

171,865
Population (2017)

26.1%
Population in Poverty

12.7%
Illiterate Population

18.0
Infant Mortality Rate

90.7%
Access to Improved Water

Municipality	Population
Bonao	130,381
Maimón	19,711
Piedra Blanca	21,773

Multi-Hazard Risk Rank: Low (21 of 32)

Lack of Resilience Rank: Very Low (28 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Very Low		High		Very Low		High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.504	21	0.406	28	0.701	9	0.320	29	0.508	10

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 9 of 32 Provinces (Score: 0.701)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
202,908 People

Earthquake
100%
202,908 People

Landslide
60%
121,035 People

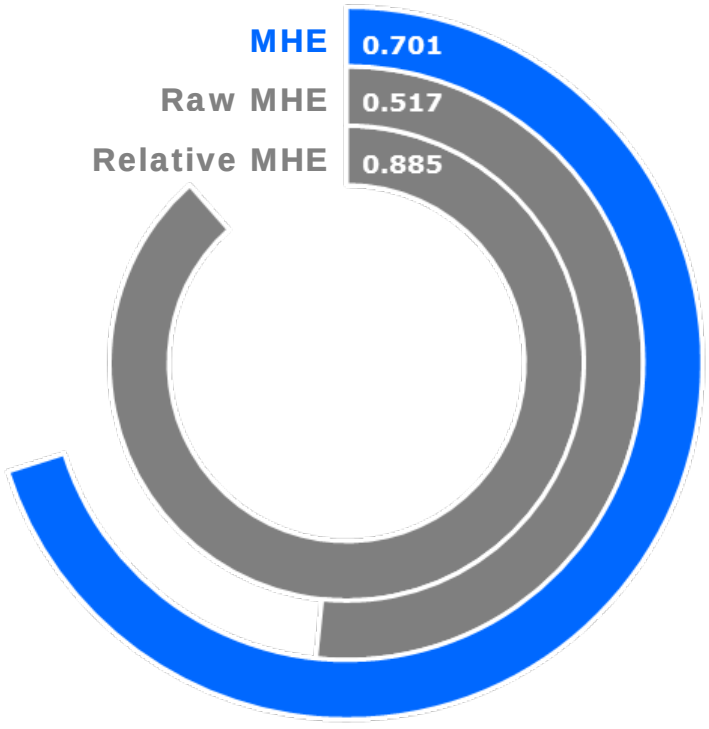
Flood
71%
144,874 People

Tsunami
0%
0 People

Case Study: *Emergency Recovery and Disaster Management* Project – Monseñor Nouel

In March of 2016, the World Bank collaborated with the Dominican Republic's National Institute of Hydraulic Resources (INDRHI) for a joint project focused on the rehabilitation of canals, roads, and irrigation infrastructure in the province. This maintenance project was developed in response to the infrastructure damage caused by Storms Noel and Olga and was intended to manage risks posed by natural disasters within Monseñor Nouel.

"Dominican Republic - Emergency Recovery and Disaster Management Project: Plan de Reasentamiento Abreviado del Municipio, Bonao, Provincia Monseñor Nouel" – World Bank, 11 March 2016



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 29 of 32 Provinces (Score: 0.320) Vulnerability in Monseñor Nouel is influenced by moderate subcomponent score in the thematic areas of **Gender Inequality** and **Vulnerable Health Status**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

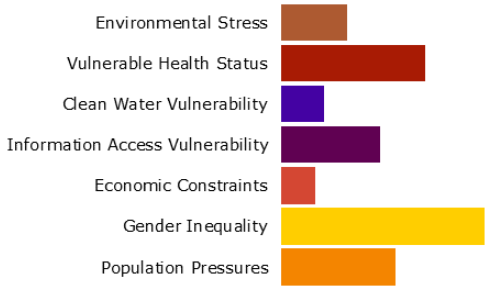


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-0.3%** Average Annual Forest Change					
Vulnerable Health Status	**18.0** Infant Mortality Rate	**96.2** Maternal Mortality Rate	**12.7** Chronic Malnutrition	**7.8%** Population Disabled			
Clean Water Vulnerability	**9.3%** Households without Access to Improved Water	**3.9%** Households without Access to Flush Toilets					
Information Access Vulnerability	**12.7%** Illiteracy	**90.2%** Primary School Enrollment	**88.6%** Households without Internet	**19.9%** Households without TV	**49.9%** Households without Radio	**6.8** Average years of Schooling	
Economic Constraints	**54.8** Economic Dependency Ratio	**26.1%** Population in Poverty	**25.7%** CEP Beneficiaries				
Gender Inequality	**32.3%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.49** Female to Male Labor Ratio				
Population Pressures	**0.52%** Average Annual Population Change	**1.3%** 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 Capacity[4] Rank: 10 of 32 Provinces (Score: 0.508) The thematic areas with the weakest relative scores are **Environmental Capacity, Economic Capacity,** and **Infrastructure (Health Care Capacity and Transportation)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

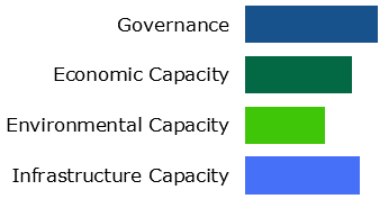


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.93** Debt to Service Ratio	**91.2%** Employment Rate (Male)	**RD$ 26,666** Average Annual Income per Capita			
Governance	**72.1%** Registered Voter Participation (2016 Election)	**17.7** Homicide Rate per 100k persons	**82.4%** Households with Garbage Collection			
Environmental Capacity	**24.4%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**11.5** Hospital Beds per 10,000 Persons	**11.2** Nurses per 10,000 Persons	**13.5** Physicians per 10,000 Persons	**3.1 km** Average Distance to Nearest Hospital	**0.78** Vaccination Index[5]
Communications Capacity	**21.2%** Households with Access to Fixed Phone Line	**78.4%** Households with Access to Mobile Phone			
Transportation Capacity	**35.9 km** Average Distance to Nearest Port or Airport	**0.46 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 28 of 32 Provinces (Score: 0.406)

Monseñor Nouel's score and ranking are due to very low Vulnerability combined with high Coping Capacity scores. Monseñor Nouel ranks 29th in Vulnerability and 10th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Gender Inequality	**Transportation Infrastructure Capacity**	**Health Care Infrastructure Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 21 of 32 Provinces (Score: 0.504)

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

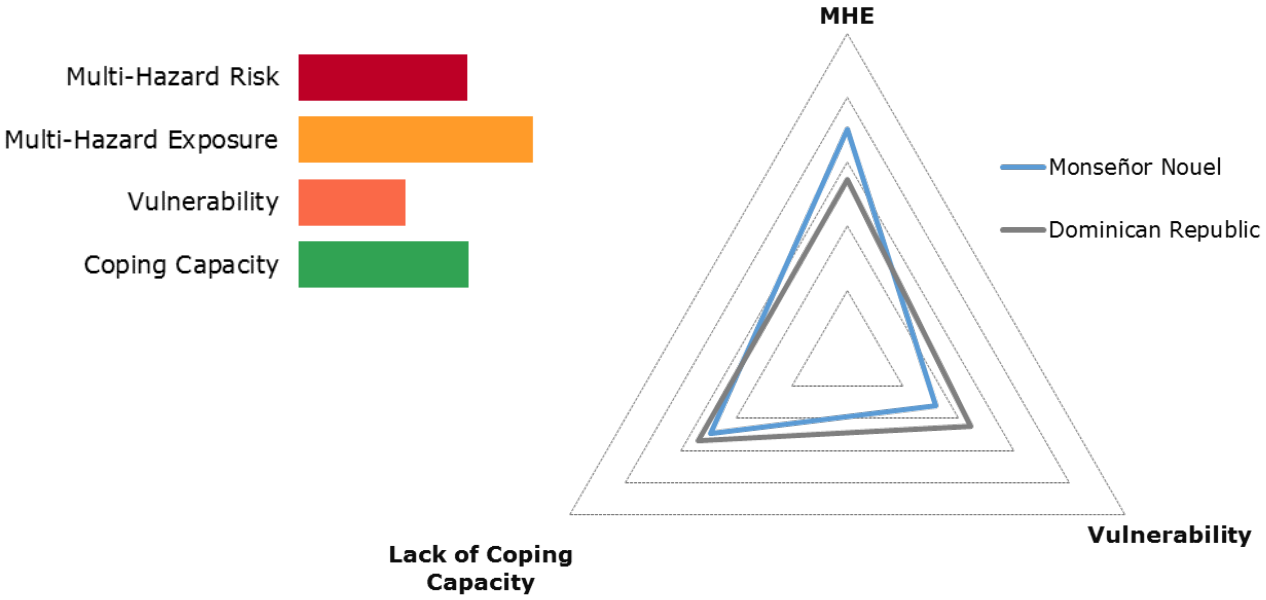


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 29 of 32 provinces, low economic constraints indicate that Monseñor Nouel may be able to invest in additional mitigation and preparedness measures at the local and community level.

Lowest poverty rate
Ranked 32 of 32 provinces (26.1% Poverty Rate), low poverty rates indicate an increased ability to invest in mitigation and preparedness measures at the individual, household, and provincial level.

High information access
High information access indicates that the population has an increased ability to access and comprehend disaster-related information before, during, and after events.

Recommendations

01

Invest in Infrastructure
Invest in Health Care, Transportation and Communication Infrastructures to increase coping capacity and resiliency within the province.

02

Provide opportunities for women
Public education and awareness programs that focus on increasing the role of women in the workplace and the society will improve the resilience of women during disasters.

Better solutions.
Fewer disasters.
Safer world.

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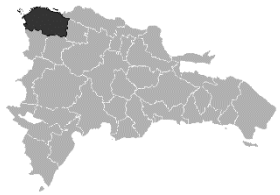
Monte Cristi

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Monte Cristi

Province Capital: San Fernando de Monte Cristi



Area: 2,137 km^2

Monte Cristi is located in the northwest of the country in the coastal lowlands near the border with Haiti. Monte Cristi is an important commercial and transportation center, trading mainly in rice, cotton, coffee, bananas, goats, hides and skins from the western portion of the fertile Cibao Valley.

115,278
Population (2017)

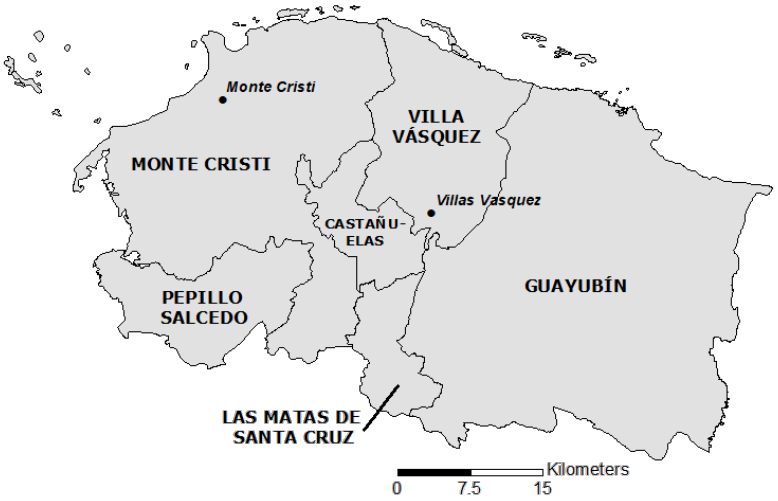
59.7%
Population in Poverty

22.4%
Illiterate Population

23.0
Infant Mortality Rate

89.4%
Access to Improved Water

Municipality	Population
Monte Cristi	25,918
Castañuelas	15,693
Guayabin	37,777
Las Matas De Santa Cruz	11,107
Pepillo Salcedo	9,611
Villa Vázquez	15,172



Multi-Hazard Risk Rank: Very High (6 of 32)

Lack of Resilience Rank: High (8 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		High		Medium		Very High		High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.558	6	0.545	8	0.584	15	0.565	7	0.475	14

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 15 of 32 Provinces (Score: 0.584)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
135,611 People

Earthquake
100%
135,611 People

Landslide
46%
62,132 People

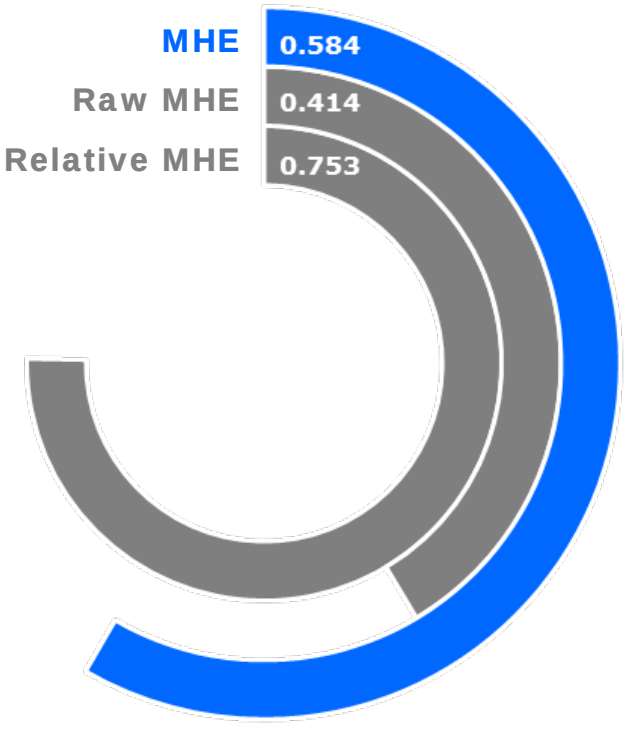
Flood
58%
78,551 People

Tsunami
4%
5,357 People

Case Study: Improving Emergency Medical Services in the Dominican Republic

Trek Medics, a nonprofit medical organization, has been working in the provinces of Monte Cristi and Puerto Plata in the Dominican Republic since 2014. Through partnerships with public safety and health agencies, as well as the Dominican Red Cross, Trek Medics has sought to improve emergency medical services in rural and urban communities. Trek Medic's projects have included the development of "a 24-7 emergency response network" across the provinces, as well as "prehospital emergency care and inter-facility transfers… to promote reliable emergency care and transport."

DR Program - Trek Medics, 2019 https://www.trekmedics.org/programs/dr/



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 7 of 32 Provinces (Score: 0.565) Vulnerability in Monte Cristi is strongly influenced by **Vulnerable Health Status, Gender Inequality,** and **Information Access Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

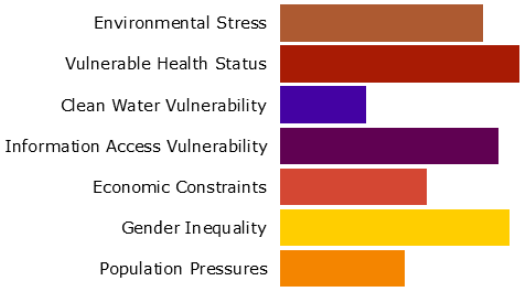


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**100%** Province Susceptible to Drought	**1.6%** Average Annual Forest Change					
Vulnerable Health Status	**23.0** Infant Mortality Rate	**250.7** Maternal Mortality Rate	**11.9** Chronic Malnutrition	**10.5%** Population Disabled			
Clean Water Vulnerability	**10.6%** Households without Access to Improved Water	**9.7%** Households without Access to Flush Toilets					
Information Access Vulnerability	**22.4%** Illiteracy	**77.4%** Primary School Enrollment	**95.6%** Households without Internet	**37.3%** Households without TV	**58.3%** Households without Radio	**5.8** Average years of Schooling	
Economic Constraints	**58.4** Economic Dependency Ratio	**59.7%** Population in Poverty	**38.9%** CEP Beneficiaries				
Gender Inequality	**38.0%** Female Seats in Government	**1.2** Female to Male Years of Schooling	**0.55** Female to Male Labor Ratio				
Population Pressures	**0.69%** Average Annual Population Change	**1.3%** 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 Capacity[4] Rank: 14 of 32 Provinces (Score: 0.475) The thematic areas with the weakest relative scores are **Environmental Capacity** and **Infrastructure (Communications)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

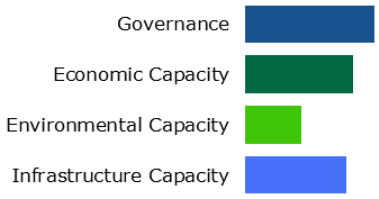


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.97** Debt to Service Ratio	**93.5%** Employment Rate (Male)	**RD$ 18,980** Average Annual Income per Capita			
Governance	**78.7%** Registered Voter Participation (2016 Election)	**14.1** Homicide Rate per 100k persons	**51.5%** Households with Garbage Collection			
Environmental Capacity	**17.3%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**14.8** Hospital Beds per 10,000 Persons	**18.5** Nurses per 10,000 Persons	**15.4** Physicians per 10,000 Persons	**4.2 km** Average Distance to Nearest Hospital	**0.88** Vaccination Index[5]	
Communications Capacity	**11.3%** Households with Access to Fixed Phone Line	**68.7%** Households with Access to Mobile Phone				
Transportation Capacity	**33.6 km** Average Distance to Nearest Port or Airport	**0.61 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 8 of 32 Provinces (Score: 0.545)

Monte Cristi's score and ranking are due to high Vulnerability combined with moderate Coping Capacity scores. Monte Cristi ranks 7th in Vulnerability and 14th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Vulnerable Health Status

Gender Inequality

Information Access Vulnerability

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 6 of 32 Provinces (Score: 0.558)

Monte Cristi's score and ranking are due to moderate Multi-Hazard Exposure combined with high Vulnerability and moderate Coping Capacity.

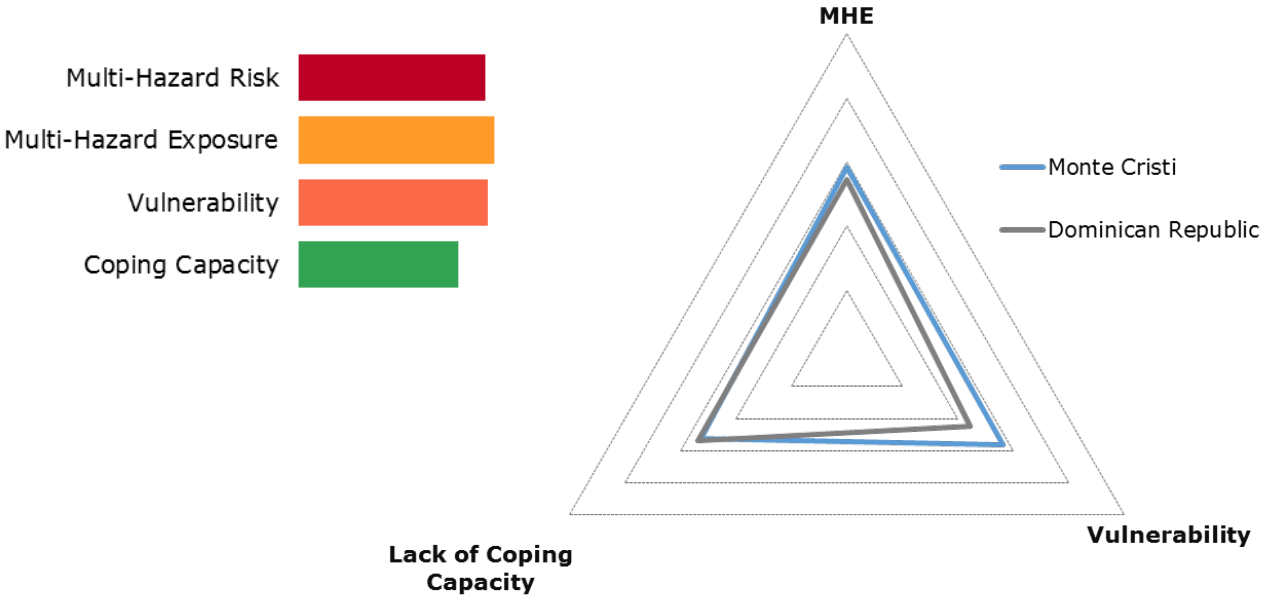


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 clean water vulnerability

Ranked 21 of 32 provinces, low clean water vulnerability indicates that a population has access to high water quality and good containment systems, reducing susceptibility to disaster.

High overall governance

Ranked 11 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

Recommendations

01

Invest in access to health care

Through education, facility construction, and traveling care programs, increase the citizens' ability to access health-related information and physical care, especially for new/expectant mothers and young children.

02

Invest in communication infrastructure

Invest in communication infrastructure to allow for easier access to information and education material, increasing literacy and situational awareness of the population.

03

Provide opportunities for women

Public education and awareness programs, as well as increased business and political opportunities that focus on advancing the role of women in the workplace and the society, will improve resilience and decrease vulnerability.

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Monte Plata

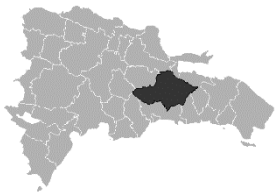
Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Monte Plata

Province Capital: Monte Plata



Area: 2,921 km^2

Located in the eastern region of the country, Monte Plata is known for agriculture and possesses a wealth of folkloric elements and rich culture.

189,649
Population (2017)

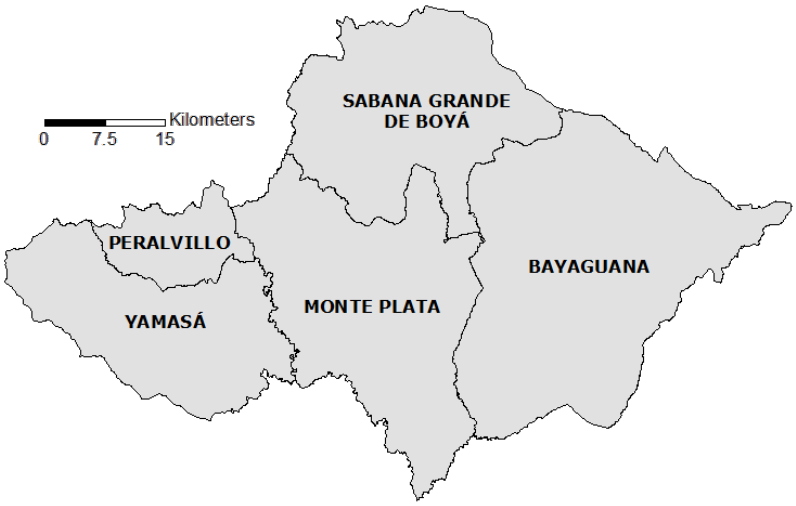
69.7%
Population in Poverty

17.6%
Illiterate Population

15.8
Infant Mortality Rate

61.7%
Access to Improved Water

Municipality	Population
Monte Plata	47,652
Bayaguana	32,521
Sabana Grande De Boya	31,713
Yamasá	56,447
Peralvillo	21,316



Multi-Hazard Risk Rank: Very High (3 of 32)

Lack of Resilience Rank: Very High (7 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Very High		Medium		High		Very Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.567	3	0.566	7	0.569	16	0.497	10	0.365	29

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 16 of 32 Provinces (Score: 0.569)

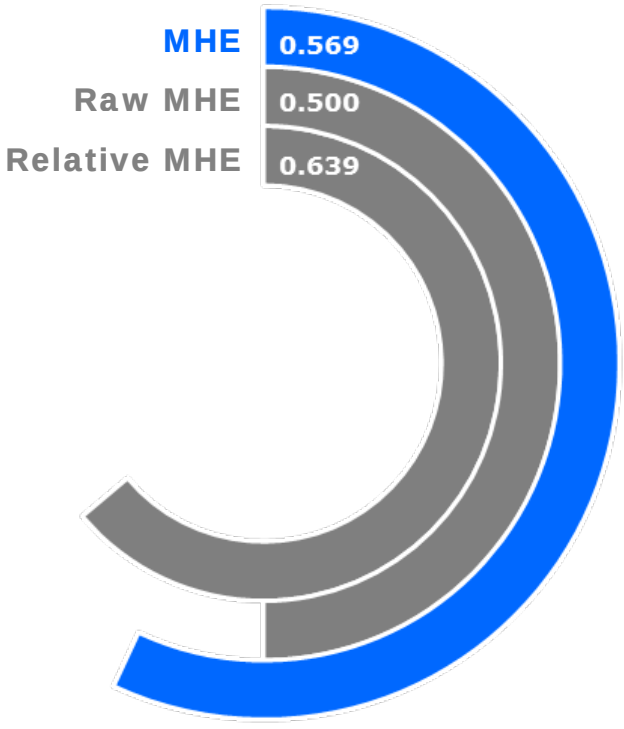
Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone	100 %	216,438 People
Earthquake	100 %	216,438 People
Landslide	61 %	131,619 People
Flood	27 %	57,582 People
Tsunami	0 %	0 People

Case Study: Ozama River Flooding in Monte Plata

In April 2017, the province of Monte Plata experienced significant flooding, with more than 500 homes destroyed by overflow from the Ozama River. The flooding caused the evacuation of nearly 3,000 people from their homes, as well as significant impacts to local infrastructure. Dozens of communities became inaccessible as roads and bridges were washed away. In response to the floods, the Dominican Republic activated its Emergency Operations Center (COE) to issue warnings for landslides and additional flooding, providing a valuable service to the affected population.

"Flood in Dominican Republic" – International Space Charter Activation, 24 April 2017, https://disasterscharter.org/web/guest/activations/-/article/flood-in-dominican-republic-call-605-



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 10 of 32 Provinces (Score: 0.497) Vulnerability in Monte Plata is influenced by **Clean Water Vulnerability, Economic Constraints,** and **Information Access Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

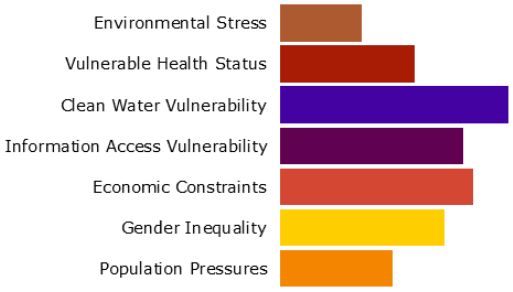


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-1.8%** Average Annual Forest Change					
Vulnerable Health Status	**15.8** Infant Mortality Rate	**132.0** Maternal Mortality Rate	**8.6** Chronic Malnutrition	**9.3%** Population Disabled			
Clean Water Vulnerability	**38.3%** Households without Access to Improved Water	**15.8%** Households without Access to Flush Toilets					
Information Access Vulnerability	**17.6** Illiteracy	**88.4%** Primary School Enrollment	**96.9%** Households without Internet	**31.7%** Households without TV	**59.2%** Households without Radio	**5.7** Average years of Schooling	
Economic Constraints	**64.6** Economic Dependency Ratio	**69.7%** Population in Poverty	**40.1%** CEP Beneficiaries				
Gender Inequality	**39.2%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.49** Female to Male Labor Ratio				
Population Pressures	**0.23%** Average Annual Population Change	**2.4%** 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 Capacity[4] Rank: 29 of 32 Provinces (Score: 0.365) Monte Plata's weakest relative scores are **Environmental Capacity, Communications Infrastructure,** and **Health Care Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

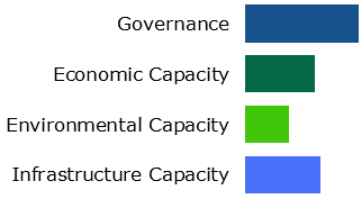


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.97** Debt to Service Ratio	**91.6%** Employment Rate (Male)	**RD$ 15,957** Average Annual Income per Capita			
Governance	**79.7%** Registered Voter Participation (2016 Election)	**15.4** Homicide Rate per 100k persons	**42.1%** Households with Garbage Collection			
Environmental Capacity	**13.4%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**12.7** Hospital Beds per 10,000 Persons	**11.6** Nurses per 10,000 Persons	**14.1** Physicians per 10,000 Persons	**4.0 km** Average Distance to Nearest Hospital	**0.14** Vaccination Index[5]
Communications Capacity	**4.9%** Households with Access to Fixed Phone Line	**67.0%** Households with Access to Mobile Phone			
Transportation Capacity	**30.0 km** Average Distance to Nearest Port or Airport	**0.51 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 7 of 32 Provinces (Score: 0.566)

Monte Plata's score and ranking are due to high Vulnerability combined with very low Coping Capacity scores. Monte Plata ranks 10th in Vulnerability and 29th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Communications Infrastructure Capacity	**Health Care Infrastructure Capacity**	**Clean Water Vulnerability**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 3 of 32 Provinces (Score: 0.567)

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

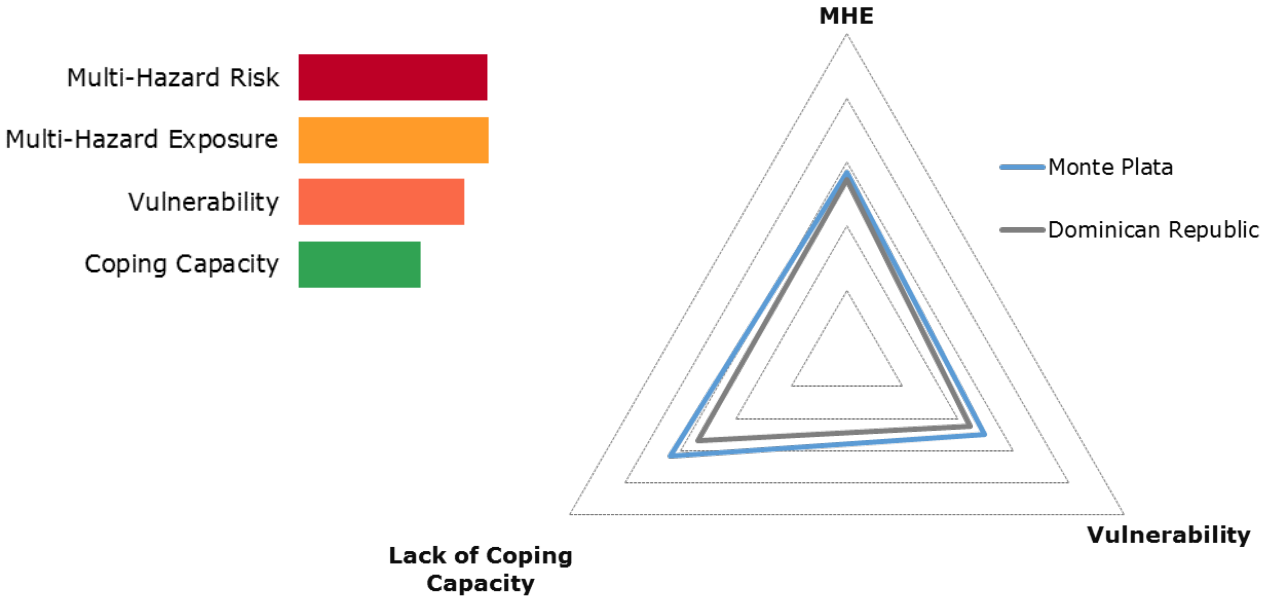


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 22 of 32 provinces, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Low environmental stress

Ranked 24 of 32 provinces, 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 water and sanitation services

Invest in public water and waste facilities to increase water quality and access and reduce the spread of disease.

02

Invest in infrastructure

Invest in Health Care, Transportation and Communication Infrastructures to increase coping capacity and resiliency within the province.

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Pedernales

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Pedernales

Province Capital: Pedernales

Area: 2,309 km^2

The most southwestern province, Pedernales serves as a commercial center for the surrounding agricultural region, which yields sugarcane, coffee and corn. Bauxite is also mined in Pedernales.

34,070 Population (2017)

77.9% Population in Poverty

37.7% Illiterate Population

6.3 Infant Mortality Rate

78.3% Access to Improved Water

Municipality	Population
Pedernales	26,202
Oviedo	7,868

Multi-Hazard Risk Rank: Very Low (29 of 32)

Lack of Resilience Rank: Very High (5 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Very High		Very Low		Very High		Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.440	29	0.606	5	0.109	31	0.631	3	0.419	25

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 31 of 32 Provinces (Score: 0.109)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
28,544 People

Earthquake
0%
0 People

Landslide
52%
14,979 People

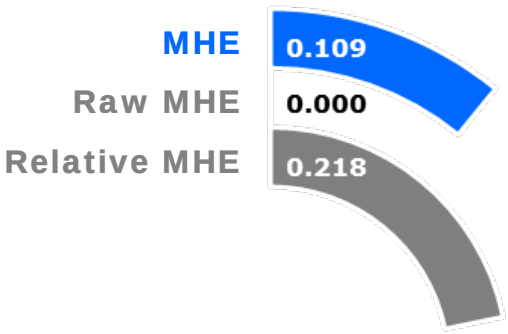
Flood
57%
16,192 People

Tsunami
4%
1,029 People

Case Study: EU Disaster Preparedness Projects in Pedernales

During 2015-2016, the European Union's DIPECHO program invested $2.7 million "in the provinces of Dajabon, San Cristobal and Pedernales […] to reduce the impact of natural hazards by preparing vulnerable populations and the strengthening of state institutions in disaster risk management issues." The DIPECHO projects were implemented at both the national and subnational levels in areas prone to disaster impacts, and were developed in collaboration with local communities. Projects included "risk maps, emergency and contingency plans, early warning systems, and community educational campaigns."

"*Dominican Republic prepares for disaster: Launches new projects funded by the EU" – UNDRR AM, 25 May 2015*



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 3 of 32 Provinces (Score: 0.631) Vulnerability in Pedernales is strongly influenced by **Information Access Vulnerability, Economic Constraints,** and **Clean Water Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

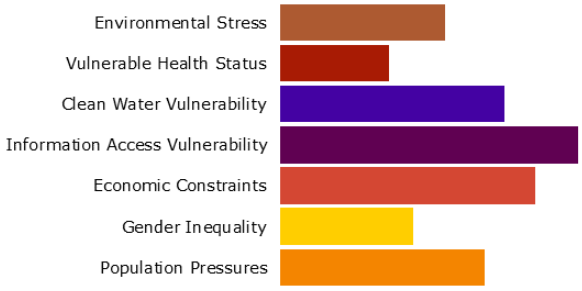


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**68.6%** Province Susceptible to Drought	**0.55%** Average Annual Forest Change					
Vulnerable Health Status	**6.3** Infant Mortality Rate	**NO DATA** Maternal Mortality Rate	**16.7** Chronic Malnutrition	**5.7%** Population Disabled			
Clean Water Vulnerability	**21.7%** Households without Access to Improved Water	**24.8%** Households without Access to Flush Toilets					
Information Access Vulnerability	**37.7%** Illiteracy	**60.8%** Primary School Enrollment	**96.9%** Households without Internet	**51.6%** Households without TV	**67.9%** Households without Radio	**4.4** Average years of Schooling	
Economic Constraints	**66.1** Economic Dependency Ratio	**77.9%** Population in Poverty	**54.7%** CEP Beneficiaries				
Gender Inequality	**32.4%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.39** Female to Male Labor Ratio				
Population Pressures	**1.07%** Average Annual Population Change	**5.1%** 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 Capacity[4] Rank: 25 of 32 Provinces (Score: 0.419) The thematic areas with the weakest relative scores are **Infrastructure (Communications and Transportation) and Economic Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

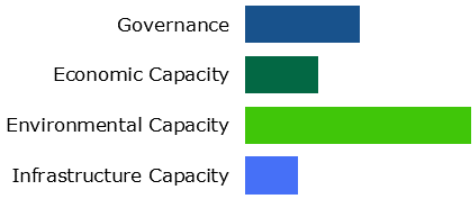


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.02** Debt to Service Ratio	**93.1%** Employment Rate (Male)	**RD$ 12,512** Average Annual Income per Capita			
Governance	**79.0%** Registered Voter Participation (2016 Election)	**18.1** Homicide Rate per 100k persons	**52.9%** Households with Garbage Collection			
Environmental Capacity	**68.7%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**7.3** Hospital Beds per 10,000 Persons	**11.5** Nurses per 10,000 Persons	**12.1** Physicians per 10,000 Persons	**10.2 km** Average Distance to Nearest Hospital	**0.96** Vaccination Index[5]	
Communications Capacity	**3.7%** Households with Access to Fixed Phone Line	**53.7%** Households with Access to Mobile Phone				
Transportation Capacity	**19.0 km** Average Distance to Nearest Port or Airport	**0.17 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 5 of 32 Provinces (Score: 0.606)

Pedernales's score and ranking are due to very high Vulnerability combined with low Coping Capacity scores. Pedernales ranks 3rd in Vulnerability and 25th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Communications Infrastructure Capacity

Information Access Vulnerability

Economic Constraints

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 29 of 32 Provinces (Score: 0.440)

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

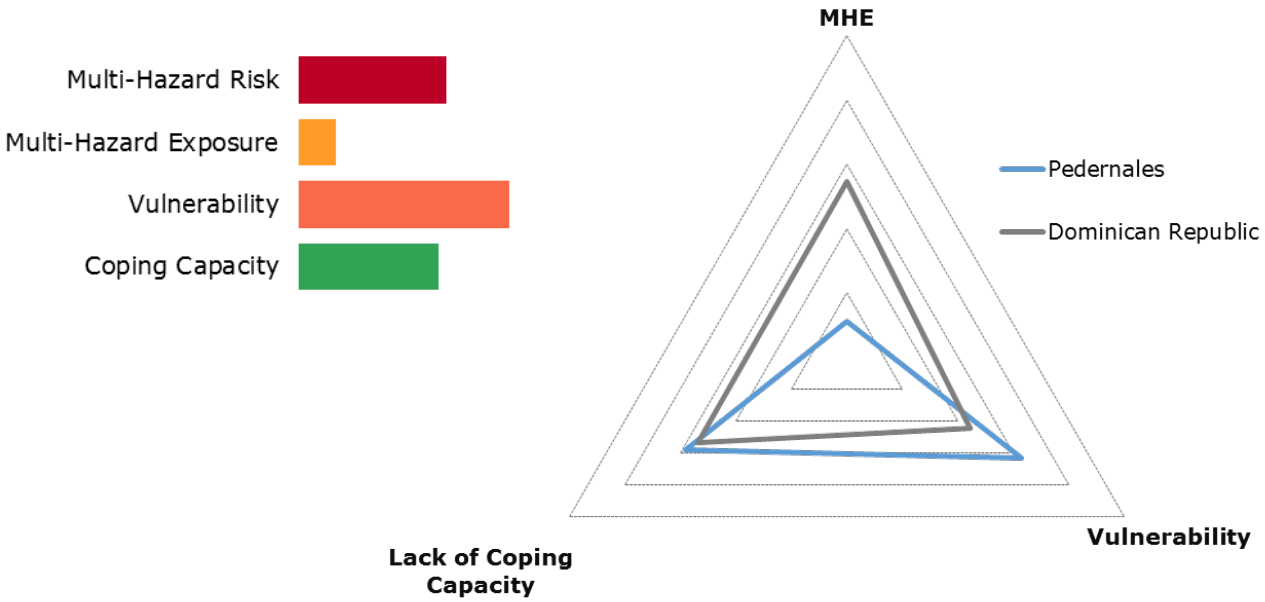


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 gender inequality

Ranked 27 of 32 provinces, 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.

Low vulnerable health status

Ranked 23 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Highest environmental capacity

Ranked 1 of 32 provinces, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Invest in communication infrastructure

Invest in communication infrastructure to allow for easier access to information and education material, increasing literacy and situational awareness of the population.

02

Increase economic capacity

Encourage business development and education programs to increase economic opportunities in the region.

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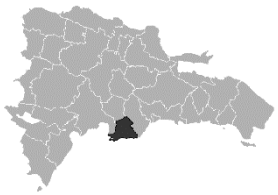
Peravia

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Peravia

Province Capital: Baní



Area: 875 km^2

Peravia is located in the south of the Dominican Republic, forming part of the Valdesia Region. Agriculture in the province is very diverse, with the main products being bananas, coffee, tomatoes, onions, rice and mango.

193,869 Population (2017)

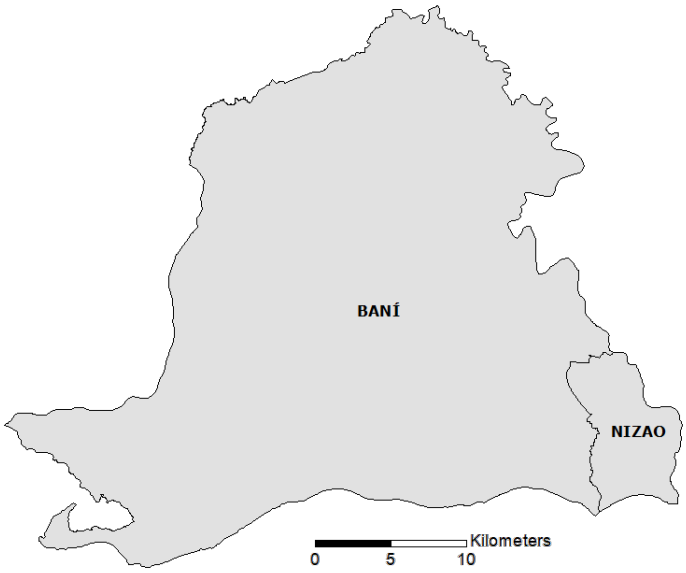
47.3% Population in Poverty

14.7% Illiterate Population

18.1 Infant Mortality Rate

82.3% Access to Improved Water

Municipality	Population
Bani	165,446
Nizao	28,423



Multi-Hazard Risk Rank: Low (23 of 32)

Lack of Resilience Rank: High (14 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		High		Low		High		Medium	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.490	23	0.506	14	0.459	21	0.473	14	0.462	18

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 21 of 32 Provinces (Score: 0.459)

Table 2. Estimated ambient population[2] exposed to each hazard

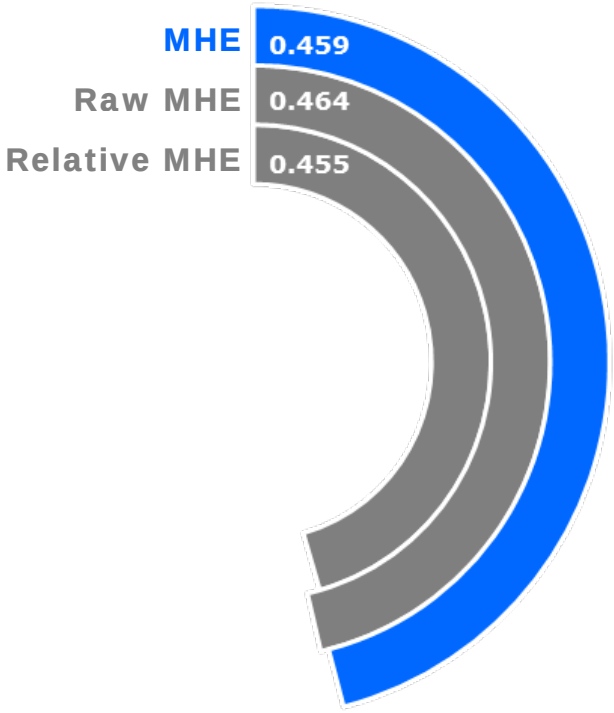
Cyclone
100%
205,995 People

Earthquake
0%
0 People

Landslide
72%
148,601 People

Flood
76%
156,475 People

Tsunami
7%
13,966 People



Case Study: Potable Water in Peravia

In January 2017, the Peravia Multiple Aqueduct Project was completed by ACCIONA Aqua in the province of Peravia. With the opening of the aqueduct, more than 138,000 people were able to be supplied with potable water in the southern Dominican Republic. This infrastructure development was a significant accomplishment for an area that struggled with access to quality water resources for more than four decades. The project is operating at full capacity and includes a Potable Water Treatment Station, with the potential to reach over 300,000 people in the near future.

"ACCIONA improves potable water supplies in the Dominican Republic with the opening of the Peravia aqueduct" - ACCIONA Agua, 03 January 2017

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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 14 of 32 Provinces (Score: 0.473) Vulnerability in Peravia is influenced by **Gender Inequality, Population Pressures,** and **Environmental Stress**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

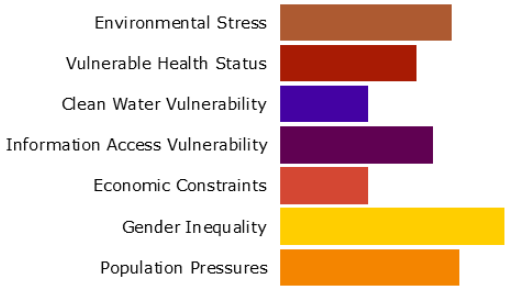


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**96.6%** Province Susceptible to Drought	**4.0%** Average Annual Forest Change					
Vulnerable Health Status	**18.1** Infant Mortality Rate	**73.4** Maternal Mortality Rate	**10.4** Chronic Malnutrition	**9.1%** Population Disabled			
Clean Water Vulnerability	**17.7%** Households without Access to Improved Water	**6.0%** Households without Access to Flush Toilets					
Information Access Vulnerability	**14.7%** Illiteracy	**79.9%** Primary School Enrollment	**92.4%** Households without Internet	**18.2%** Households without TV	**51.1%** Households without Radio	**5.7** Average years of Schooling	
Economic Constraints	**59.3** Economic Dependency Ratio	**47.3%** Population in Poverty	**25.0%** CEP Beneficiaries				
Gender Inequality	**34.9%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.50** Female to Male Labor Ratio				
Population Pressures	**0.68%** Average Annual Population Change	**4.8%** 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 Capacity[4] Rank: 18 of 32 Provinces (Score: 0.462) The thematic areas with the weakest relative scores are **Environmental Capacity** and **Governance**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

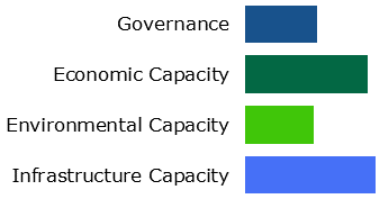


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.92** Debt to Service Ratio	**93.1%** Employment Rate (Male)	**RD$ 22,498** Average Annual Income per Capita			
Governance	**70.1%** Registered Voter Participation (2016 Election)	**26.8** Homicide Rate per 100k persons	**74.3%** Households with Garbage Collection			
Environmental Capacity	**20.8%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**11.7** Hospital Beds per 10,000 Persons	**13.4** Nurses per 10,000 Persons	**12.9** Physicians per 10,000 Persons	**2.5 km** Average Distance to Nearest Hospital	**0.81** Vaccination Index[5]	
Communications Capacity	**22.1%** Households with Access to Fixed Phone Line	**74.4%** Households with Access to Mobile Phone				
Transportation Capacity	**15.4 km** Average Distance to Nearest Port or Airport	**0.63 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 14 of 32 Provinces (Score: 0.506)

Peravia's score and ranking are due to moderate Vulnerability combined with moderate Coping Capacity scores. Peravia ranks 14th in Vulnerability and 18th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Population Pressures	**Environmental Capacity**	**Governance**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 23 of 32 Provinces (Score: 0.490)

Peravia's score and ranking are due to low Multi-Hazard Exposure combined with moderate Vulnerability and Coping Capacity.

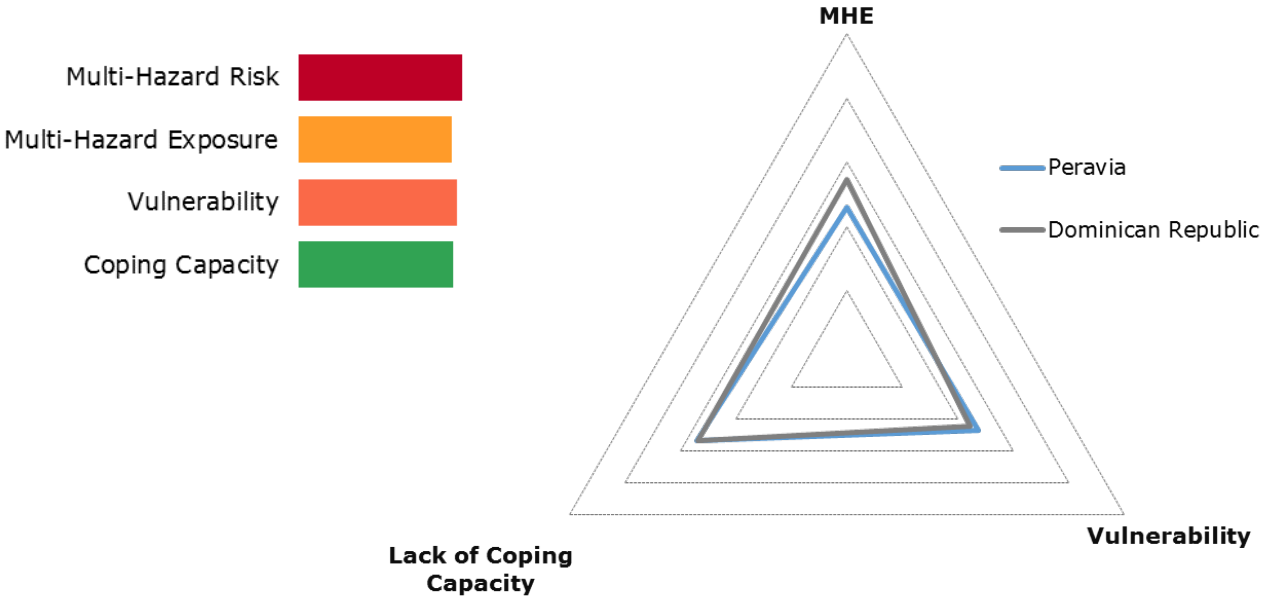


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 23 of 32 provinces, low economic constraints indicate that Peravia may be able to invest in additional mitigation and preparedness measures at the local and community level.

High overall infrastructure capacity

Ranked 6 of 32 provinces, well developed infrastructure – communication, health care, transportation - facilitates the exchange of information, and physical distribution of goods and services to the population.

Recommendations

01

Increase environmental programs

Invest in programs to provide protection for the environment, including protected lands and reforestation projects, to increase the ability of the environment to recover after a disaster.

02

Reduce population pressure

Rapid population changes are difficult to plan for, and can destabilize social, economic, and environmental systems. Analyze trends in the province to determine potential population changes and increase the update frequency of plans and SOPS to accommodate the changes.

03

Increase governance

High crime rates result in low governance scores. Youth-education programs, increased law enforcement, and personal safety-education messages can decrease crime and increase coping capacity.

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Puerto Plata

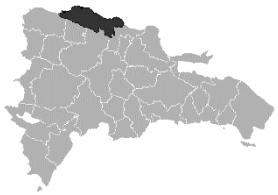
Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Puerto Plata

Province Capital: San Felipe de Puerto Plata



Area: 2,048 km^2

The northern province of Puerto Plata is known for agribusiness and ecotourism, with coffee and tobacco-growing regions and beaches contributing to the local and national economy.

330,439 Population (2017)

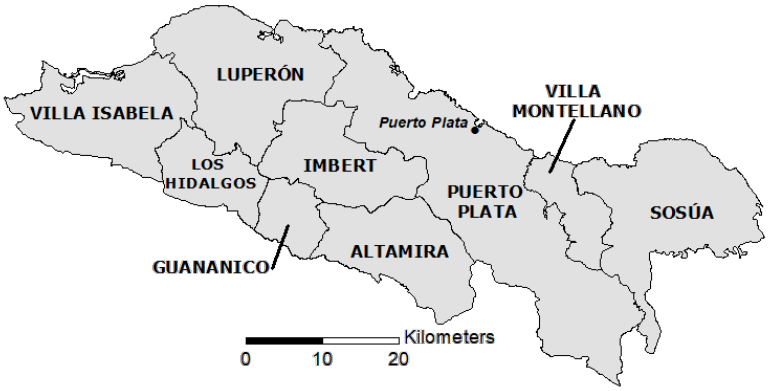
35.7% Population in Poverty

14.3% Illiterate Population

15.7 Infant Mortality Rate

81.5% Access to Improved Water

Municipality	Population
Puerto Plata	163,137
Altamira	19,380
Guananico	6,505
Imbert	22,666
Los Hidalgos	12,987
Luperón	16,911
Sosúa	50,956
Villa Isabela	17,637
Villa Montellano	20,260



Multi-Hazard Risk Rank: Medium (18 of 32)

Lack of Resilience Rank: Very Low (30 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Very Low		Very High		Very Low		Very High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.516	18	0.366	30	0.815	3	0.311	30	0.579	3

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 3 of 32 Provinces (Score: 0.815)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
379,762 People

Earthquake
100%
379,762 People

Landslide
63%
240,132 People

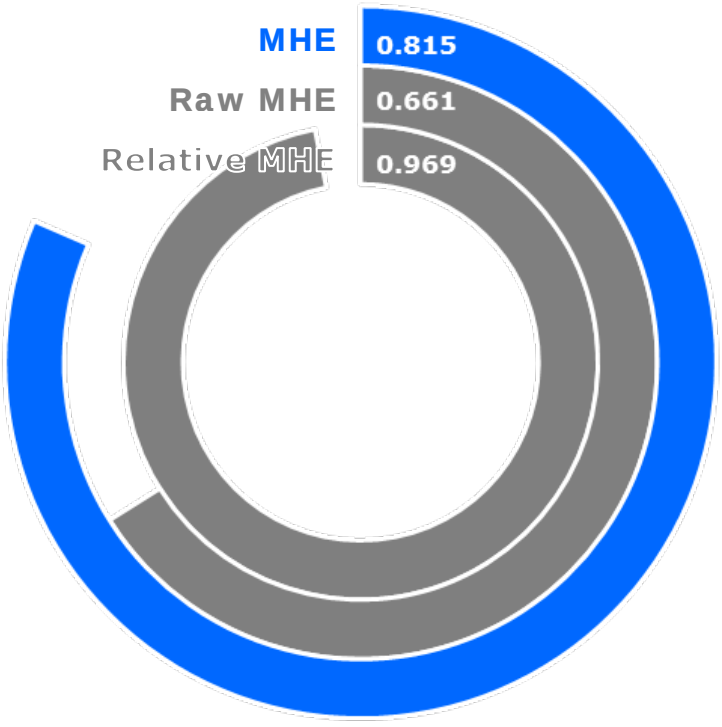
Flood
54%
204,277 People

Tsunami
29%
109,905 People

Case Study: Earthquake Resilience in Puerto Plata

With high seismic risk, Puerto Plata has many poor inhabitants exposed to inadequate infrastructure. In order to improve the resilience of the Province, UNDP instituted a project – "Communities Resilient to Earthquakes and Tsunamis in Puerto Plata" – in coordination with CODIA and UASD. Through this program, over "200 master builders and 30 professional engineers and architects" were trained on earthquake-resistant building. In addition, "1,000 families were briefed on how to construct quake-resistant buildings through the distribution of flyers with information on existing national regulations."

"Dominican Republic: Ready to act when faced with disaster" - UNDP



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 30 of 32 Provinces (Score: 0.311) Vulnerability is influenced by moderate subcomponent scores in the thematic areas of **Gender Inequality, Environmental Stress,** and **Population Pressures**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

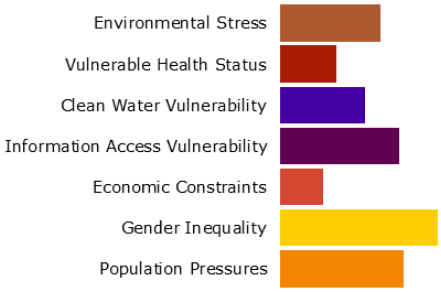


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**7.1%** Province Susceptible to Drought	**-2.5%** Average Annual Forest Change					
Vulnerable Health Status	**15.7** Infant Mortality Rate	**67.4** Maternal Mortality Rate	**7.8** Chronic Malnutrition	**4.8%** Population Disabled			
Clean Water Vulnerability	**18.5%** Households without Access to Improved Water	**5.1%** Households without Access to Flush Toilets					
Information Access Vulnerability	**14.3%** Illiteracy	**88.0%** Primary School Enrollment	**87.6%** Households without Internet	**26.5%** Households without TV	**53.0%** Households without Radio	**6.6** Average years of Schooling	
Economic Constraints	**52.9** Economic Dependency Ratio	**35.7%** Population in Poverty	**25.2%** CEP Beneficiaries				
Gender Inequality	**34.9%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.45** Female to Male Labor Ratio				
Population Pressures	**0.34%** Average Annual Population Change	**2.4%** 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 Capacity[4] Rank: 3 of 32 Provinces (Score: 0.579) Puerto Plata has relatively weak scores in the thematic areas of **Environmental Capacity** and **Infrastructure (Health Care Capacity)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

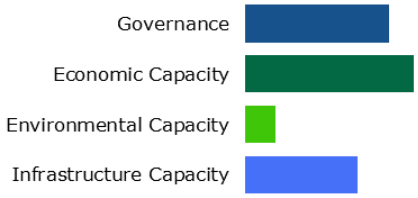


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.50** Debt to Service Ratio	**91.6%** Employment Rate (Male)	**RD$ 30,394** Average Annual Income per Capita			
Governance	**75.1%** Registered Voter Participation (2016 Election)	**15.0** Homicide Rate per 100k persons	**73.2%** Households with Garbage Collection			
Environmental Capacity	**9.3%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**9.5** Hospital Beds per 10,000 Persons	**10.7** Nurses per 10,000 Persons	**9.2** Physicians per 10,000 Persons	**3.2 km** Average Distance to Nearest Hospital	**0.76** Vaccination Index[5]
Communications Capacity	**17.1%** Households with Access to Fixed Phone Line	**76.2%** Households with Access to Mobile Phone			
Transportation Capacity	**21.2 km** Average Distance to Nearest Port or Airport	**0.55 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 30 of 32 Provinces (Score: 0.366)

Puerto Plata's score and ranking are due to very low Vulnerability combined with very high Coping Capacity scores. Puerto Plata ranks 30th in Vulnerability and 3rd in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity

Health Care Infrastructure Capacity

Environmental Stress

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 18 of 32 Provinces (Score: 0.516)

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

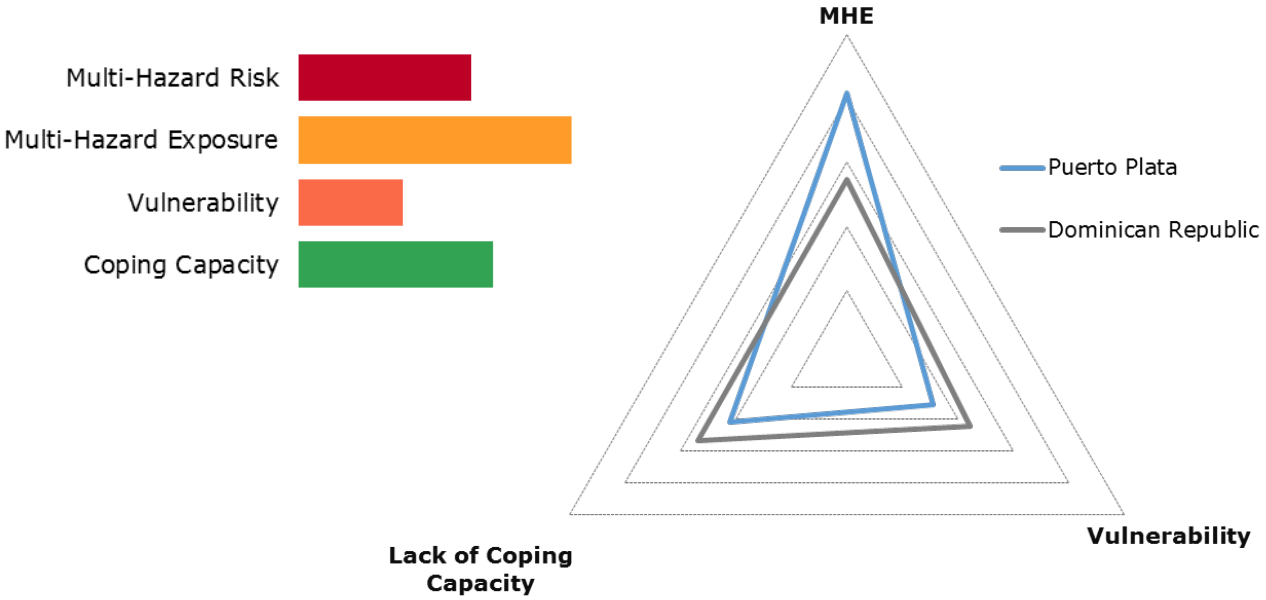


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 overall governance
Ranked 4 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

Low vulnerable health status
Ranked 31 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Low economic constraints
Ranked 28 of 32 provinces, low economic constraints indicate that Puerto Plata may be able to invest in additional mitigation and preparedness measures at the local and community level.

Recommendations

01

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

02

Increase environmental programs
Invest in programs to provide protection for the environment, including protected lands and reforestation projects, to increase the ability of the environment to recover after a disaster.

03

Increase health education and access
Provide increased access to healthcare services through construction of facilities, incentive programs for doctors and nurses to practice in remote areas, and general health-education programs for the population. Increasing healthcare access facilitates access to vital resources before, during, and after a disaster event.

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Samaná

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Samaná

Province Capital: Samaná City

Area: 973 km^2

The northeast province of Samaná serves as a commercial and manufacturing center for the hinterland, which yields timber, cacao, coconuts, rice, and marble. Tanning is also an important economic activity.

109,226
Population (2017)

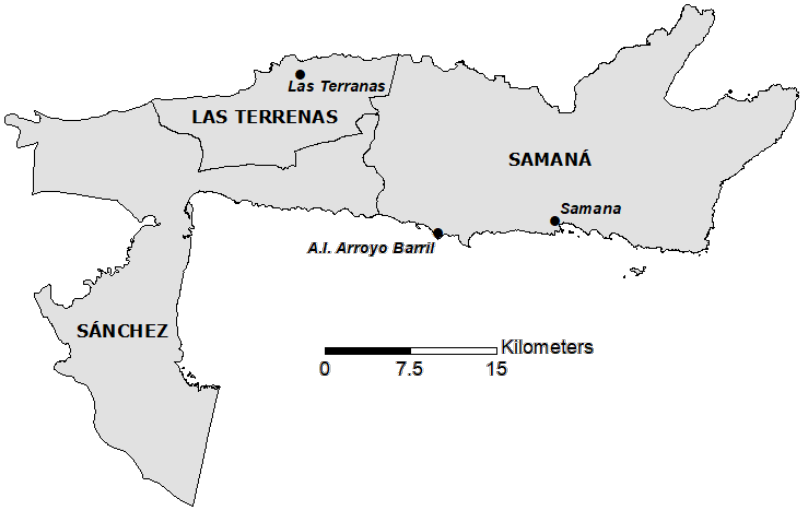
47.7%
Population in Poverty

15.4%
Illiterate Population

10.4
Infant Mortality Rate

73.2%
Access to Improved Water

Municipality	Population
Samaná	62,589
Sánchez	26,376
Las Terrenas	2,219



Multi-Hazard Risk Rank: Medium (20 of 32)

Lack of Resilience Rank: Medium (17 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

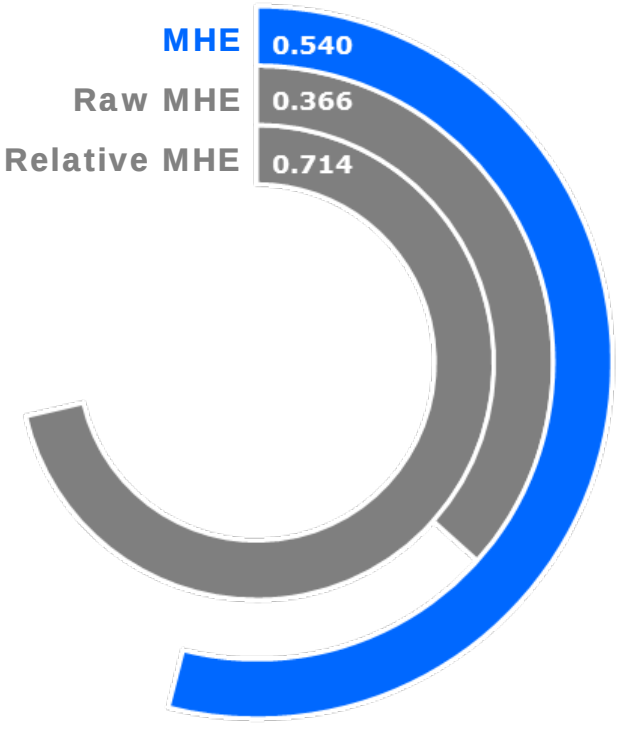
Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Medium		Medium		Medium		Medium	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.507	20	0.491	17	0.540	18	0.446	16	0.463	16

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 18 of 32 Provinces (Score: 0.540)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone	100%	111,079 People
Earthquake	100%	111,079 People
Landslide	65%	71,811 People
Flood	14%	15,565 People
Tsunami	22%	24,471 People



Case Study: Conservation in Samaná

In the Province of Samaná, an NGO is working towards the conservation of the province's natural resources and areas through community participation and sustainable development. Established in 1991, The Center for the Conservation of Samaná Bay and its Surroundings focuses on coordinating conservation efforts with the development of the province, requiring legitimate community buy-in as well as engagement from the private sector and national government. Actions include community participation, training and environmental education, sustainable development, and biodiversity conservation – in the hopes of alleviating poverty and protecting the province's natural resources.

- *Center for the Conservation and Eco-Development of Samaná Bay and its Surroundings, http://www.dlwap.de/cebse/body_cebse.html*

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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 16 of 32 Provinces (Score: 0.446) Vulnerability in Samaná is influenced by **Population Pressures, Information Access Vulnerability,** and **Environmental Stress**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

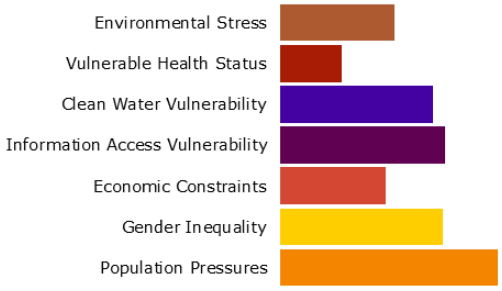


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-4.9%** Average Annual Forest Change					
Vulnerable Health Status	**10.4** Infant Mortality Rate	**94.4** Maternal Mortality Rate	**11.1** Chronic Malnutrition	**4.6%** Population Disabled			
Clean Water Vulnerability	**26.8%** Households without Access to Improved Water	**10.9%** Households without Access to Flush Toilets					
Information Access Vulnerability	**15.4%** Illiteracy	**86.3%** Primary School Enrollment	**94.6%** Households without Internet	**26.4%** Households without TV	**59.8%** Households without Radio	**6.3** Average years of Schooling
Economic Constraints	**55.8** Economic Dependency Ratio	**47.7%** Population in Poverty	**35.8%** CEP Beneficiaries			
Gender Inequality	**40.9%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.45** Female to Male Labor Ratio			
Population Pressures	**1.03%** Average Annual Population Change	**6.5%** 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 Capacity[4] Rank: 16 of 32 Provinces (Score: 0.463) The thematic areas with the weakest relative scores are **Governance, and Infrastructure (Health Care Capacity and Communications)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

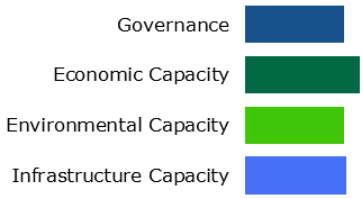


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.85** Debt to Service Ratio	**90.6%** Employment Rate (Male)	**RD$ 27,992** Average Annual Income per Capita			
Governance	**77.1%** Registered Voter Participation (2016 Election)	**20.7** Homicide Rate per 100k persons	**54.9%** Households with Garbage Collection			
Environmental Capacity	**30.3%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**11.5** Hospital Beds per 10,000 Persons	**18.6** Nurses per 10,000 Persons	**14.6** Physicians per 10,000 Persons	**4.0 km** Average Distance to Nearest Hospital	**0.38** Vaccination Index[5]	
Communications Capacity	**6.5%** Households with Access to Fixed Phone Line	**72.8%** Households with Access to Mobile Phone				
Transportation Capacity	**9.6 km** Average Distance to Nearest Port or Airport	**0.51 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 17 of 32 Provinces (Score: 0.491)

Samaná's score and ranking are due to moderate Vulnerability combined with moderate Coping Capacity scores. Samaná ranks 16th in Vulnerability and 16th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Population Pressures

Health Care Infrastructure Capacity

Communications Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 20 of 32 Provinces (Score: 0.507)

Samaná's score and ranking are due to moderate Multi-Hazard Exposure combined with moderate Vulnerability and Coping Capacity.

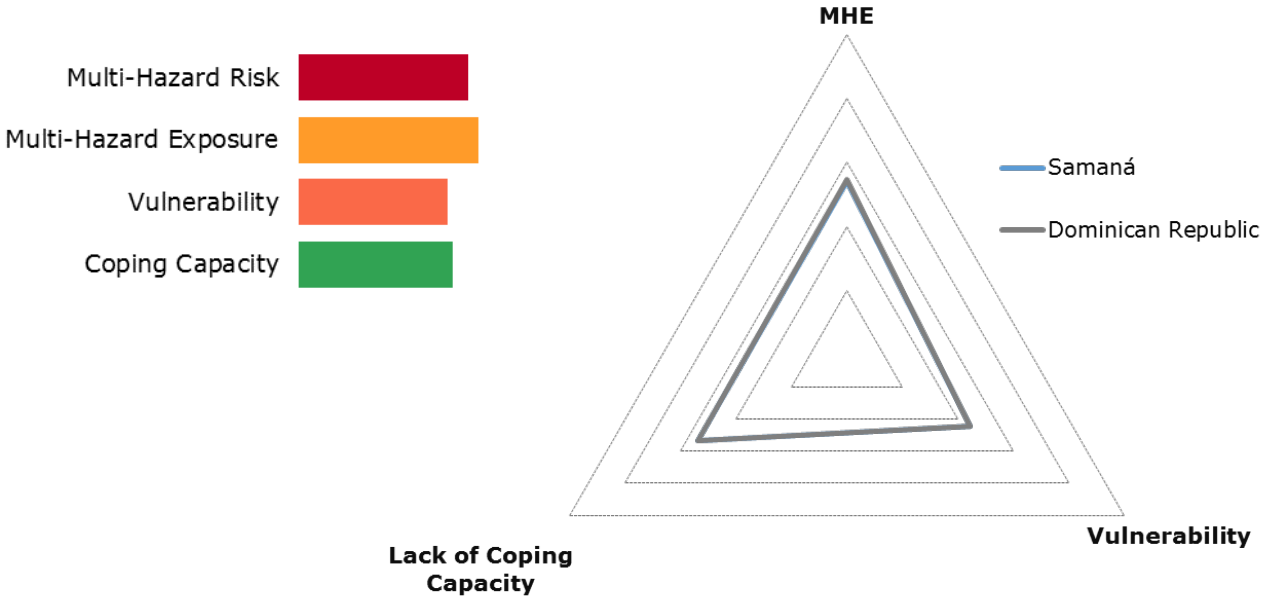


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 transportation capacity
Ranked 7 of 32 provinces, well developed transportation networks facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

High environmental capacity
Ranked 8 of 32 provinces, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Low vulnerable health status
Ranked 30 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Recommendations

01

Reduce population pressure
Rapid population changes are difficult to plan for, and can destabilize social, economic, and environmental systems. Analyze trends in the province to determine potential population changes and increase the update frequency of plans and SOPS to accommodate the changes.

02

Invest in communication infrastructure
Invest in communication infrastructure to allow for easier access to information and education material, increasing literacy and situational awareness of the population.

03

Increase health education and access
Provide increased access to healthcare services through construction of facilities, incentive programs for doctors and nurses to practice in remote areas, and general health-education programs for the population. Increasing healthcare access facilitates access to vital resources before, during, and after a disaster event.

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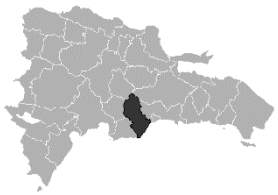
San Cristóbal

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: San Cristóbal

Province Capital: San Cristóbal



Area: 1,388 km^2

San Cristóbal is located in the south-central part of the country near the national capital. Main contributions to the economy include industry, agriculture, port activities and tourism.

618,165
Population (2017)

35.9%
Population in Poverty

12.1%
Illiterate Population

17.1
Infant Mortality Rate

84.3%
Access to Improved Water

Municipality	Population
San Cristóbal	252,469
Sabana Grande De Palanque	16,776
Bajos De Haina	134,705
Cambita Garabitos	33,683
Villa Altagracia	91,446
Yaguate	45,908
San Gregorio De Nigua	32,831
Los Cacaos	10,347

Multi-Hazard Risk Rank: Very Low (28 of 32)

Lack of Resilience Rank: Low (25 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Low		Medium		Very Low		Medium	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.451	28	0.437	25	0.478	20	0.338	27	0.463	17

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 20 of 32 Provinces (Score: 0.478)

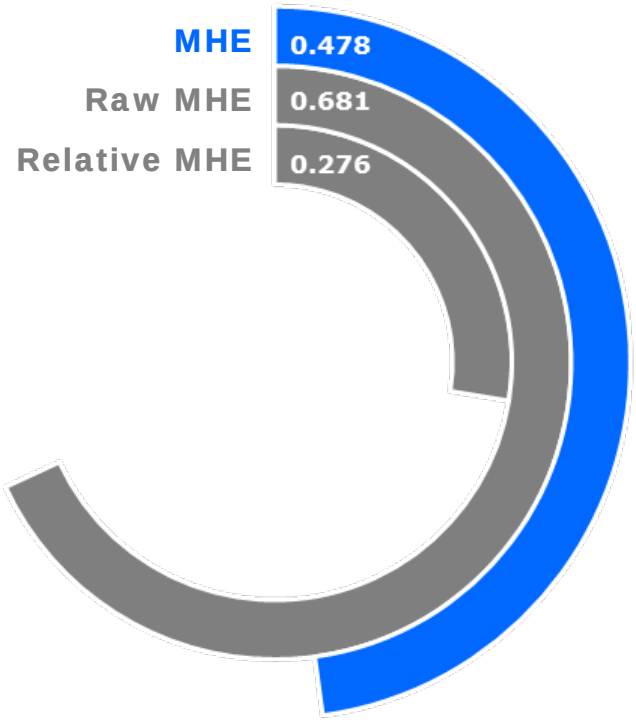
Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone	100%	647,479 People
Earthquake	18%	116,801 People
Landslide	77%	500,298 People
Flood	20%	128,283 People
Tsunami	8%	51,612 People

Case Study: Community Protection in San Cristóbal

Over a one-year period, a pilot program was instituted in the Province of San Cristóbal to establish community-based protection brigades, designed to address threats of abuse and lack of access to essential services for vulnerable populations affected by disasters. The riverside urban barrios of San Cristóbal experience "poverty and a lack of adequate land planning", resulting in "extreme risk of being washed away when the next hurricane, tropical storm or flash flood takes place." As such, efforts were made to train and organize communities to form "specialized protection brigades" responsible for DRR and community protection.

"Integrating protection into disaster risk preparedness in the Dominican Republic" – Andrea Verdeja, October 2016



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 27 of 32 Provinces (Score: 0.338) Vulnerability in San Cristóbal is influenced by **Population Pressures** and **Clean Water Vulnerability**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

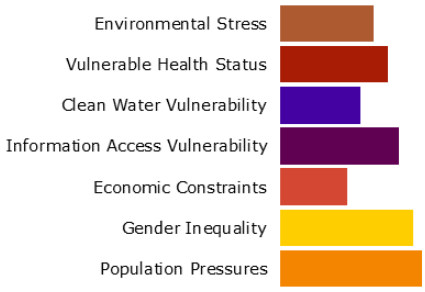


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**12%** Province Susceptible to Drought	**-1.1%** Average Annual Forest Change					
Vulnerable Health Status	**17.1** Infant Mortality Rate	**88.0** Maternal Mortality Rate	**10.1** Chronic Malnutrition	**6.8%** Population Disabled			
Clean Water Vulnerability	**15.7%** Households without Access to Improved Water	**6.0%** Households without Access to Flush Toilets					
Information Access Vulnerability	**12.1%** Illiteracy	**89.8%** Primary School Enrollment	**91.0%** Households without Internet	**20.2%** Households without TV	**55.0%** Households without Radio	**6.6** Average years of Schooling	
Economic Constraints	**58.1** Economic Dependency Ratio	**35.9%** Population in Poverty	**26.6%** CEP Beneficiaries				
Gender Inequality	**37.3%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.39** Female to Male Labor Ratio				
Population Pressures	**1.1%** Average Annual Population Change	**1.0%** 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 Capacity[4] Rank: 17 of 32 Provinces (Score: 0.463) The thematic areas with the weakest relative scores are **Environmental Capacity, Economic Capacity,** and **Health Care Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

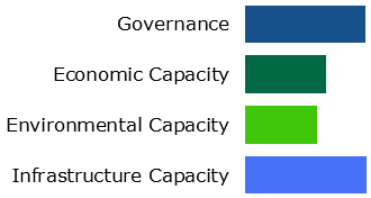


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.02** Debt to Service Ratio	**91.9%** Employment Rate (Male)	**RD$ 20,106** Average Annual Income per Capita			
Governance	**76.4%** Registered Voter Participation (2016 Election)	**19.5** Homicide Rate per 100k persons	**68.6%** Households with Garbage Collection			
Environmental Capacity	**22.0%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**7.9** Hospital Beds per 10,000 Persons	**12.6** Nurses per 10,000 Persons	**12.2** Physicians per 10,000 Persons	**3.2 km** Average Distance to Nearest Hospital	**0.88** Vaccination Index[5]
Communications Capacity	**17.3%** Households with Access to Fixed Phone Line	**77.8%** Households with Access to Mobile Phone			
Transportation Capacity	**22.7 km** Average Distance to Nearest Port or Airport	**0.74 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 25 of 32 Provinces (Score: 0.437)

San Cristóbal's score and ranking are due to very low Vulnerability combined with moderate Coping Capacity scores. San Cristóbal ranks 27th in Vulnerability and 17th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity

Economic Capacity

Health Care Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 28 of 32 Provinces (Score: 0.451)

San Cristóbal's score and ranking are due to low Multi-Hazard Exposure combined with very low Vulnerability and moderate Coping Capacity.

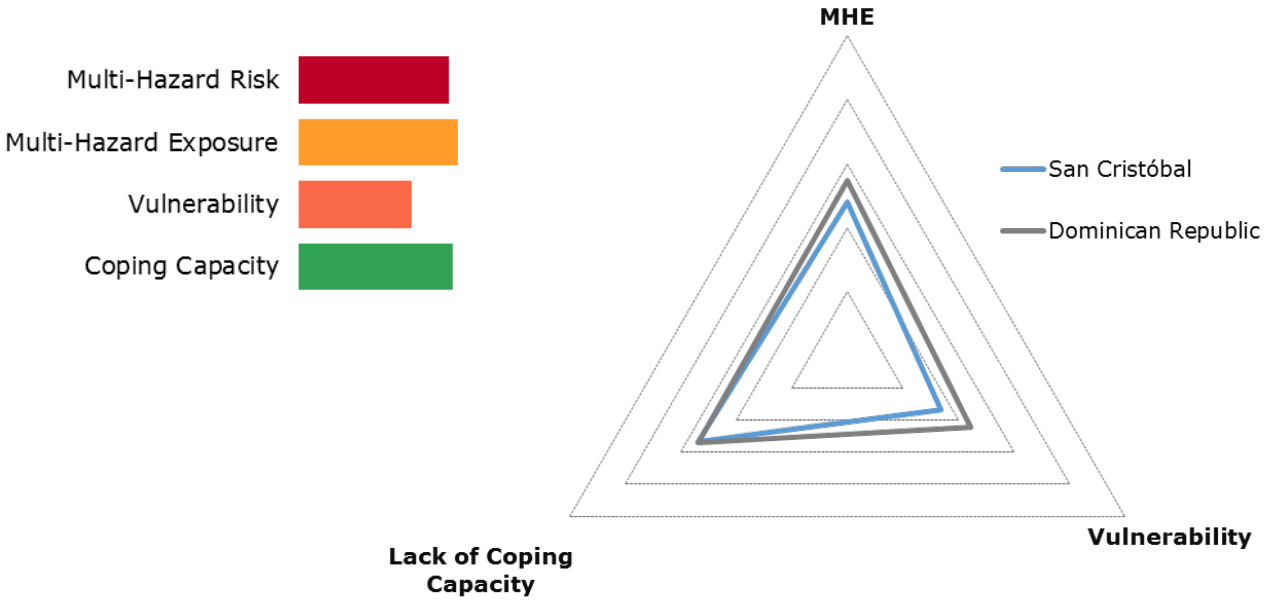


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 information access
High information access indicates that the population has an increased ability to access and comprehend disaster-related information before, during, and after events.

Low gender inequality
Ranked 26 of 32 provinces, 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.

High transportation capacity
Ranked 9 of 32 provinces, well developed transportation networks facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

Recommendations

01

Increase economic capacity
Encourage business development and education programs to increase economic opportunities in the region.

02

Increase health education and access
Provide increased access to healthcare services through construction of facilities, incentive programs for doctors and nurses to practice in remote areas, and general health-education programs for the population. Increasing healthcare access facilitates access to vital resources before, during, and after a disaster event.

03

Increase environmental programs
Invest in programs to provide protection for the environment, including protected lands and reforestation projects, to increase the ability of the environment to recover after a disaster.

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Fewer disasters.
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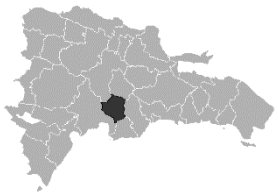
San José de Ocoa

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: San José de Ocoa

Province Capital: San José de Ocoa



Area: 955 km^2

Located in the southern foothills of the Cordillera Central (mountain), San José de Ocoa economy is fueled by forestry, fishing and agriculture including the production of coffee, potatoes, beans, carrots, cabbage, peanuts and avocados.

56,027
Population (2017)

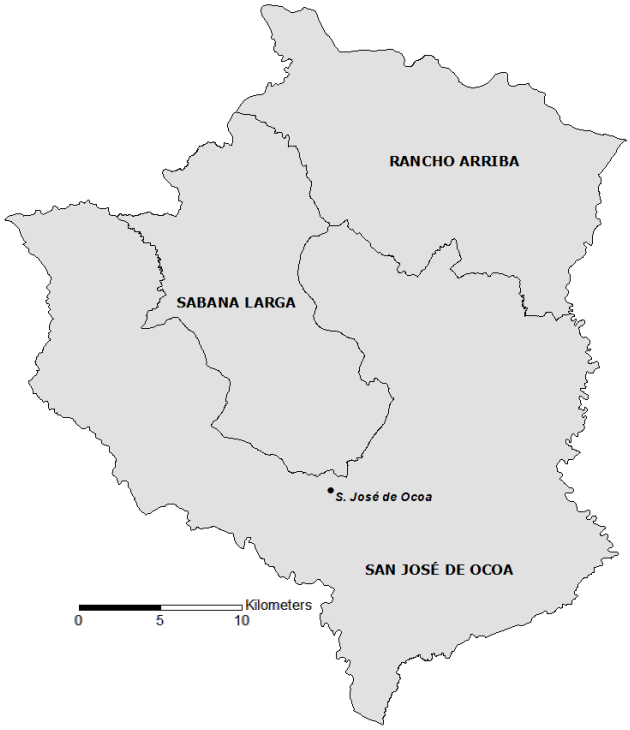
59.3%
Population in Poverty

24.3%
Illiterate Population

17.6
Infant Mortality Rate

90.4%
Access to Improved Water

Municipality	Population
San José De Ocoa	37,114
Sabana Larga	9,214
Rancho Arriba	9,699



Multi-Hazard Risk Rank: Very Low (32 of 32)

Lack of Resilience Rank: Medium (15 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Medium		Very Low		High		Medium	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.393	32	0.503	15	0.172	30	0.476	13	0.470	15

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 30 of 32 Provinces (Score: 0.172)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
74,851 People

Earthquake
14%
10,189 People

Landslide
81%
60,664 People

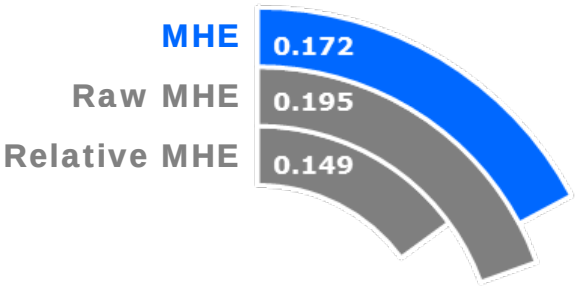
Flood
6%
4,510 People

Tsunami
0%
0 People

Case Study: Fog Collection in San José de Ocoa

In the mountain province of San José de Ocoa, rural communities frequently experience water shortages. To address this issue, various projects have explored the idea of fog collection and whether it could potentially "provide additional water to… rural villages." In collaboration with Asociacion para el Desarrollo de San José de Ocoa Inc. (ADESJO), fog collection has included needs analyses for "clean drinking water, especially in the dry winter season," as well as "an examination of the local topography." Projects have proven successful, demonstrating that fog collection can provide substantial water to rural communities, alongside rainwater collection and storage.

"Fog Collection Evaluation Project" - http://www.fogquest.org/project-information/projects/dominican-republic/



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 13 of 32 Provinces (Score: 0.476) Vulnerability in San José de Ocoa is influenced by **Gender Inequality, Information Access Vulnerability,** and **Vulnerable Health Status**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

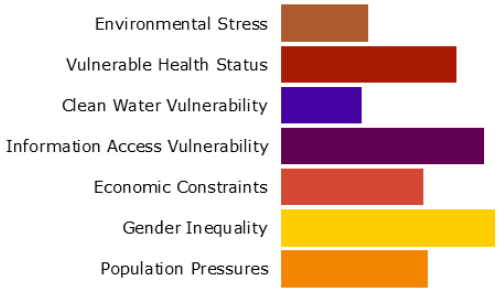


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**6.3%** Province Susceptible to Drought	**-1.4%** Average Annual Forest Change					
Vulnerable Health Status	**17.6** Infant Mortality Rate	**97.8** Maternal Mortality Rate	**12.6** Chronic Malnutrition	**10.7%** Population Disabled			
Clean Water Vulnerability	**9.6%** Households without Access to Improved Water	**9.4%** Households without Access to Flush Toilets					
Information Access Vulnerability	**22.0%** Illiteracy	**89.0%** Primary School Enrollment	**96.5%** Households without Internet	**41.5%** Households without TV	**59.4%** Households without Radio	**5.4** Average years of Schooling	
Economic Constraints	**55.0** Economic Dependency Ratio	**59.3%** Population in Poverty	**42.1%** CEP Beneficiaries				
Gender Inequality	**34.9%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.53** Female to Male Labor Ratio				
Population Pressures	**0.90%** Average Annual Population Change	**1.7%** 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 Capacity[4] Rank: 15 of 32 Provinces (Score: 0.470) The thematic areas with the weakest relative scores are **Economic Capacity and Infrastructure (Transportation and Communications)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

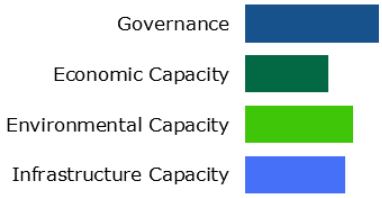


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.03** Debt to Service Ratio	**92.0%** Employment Rate (Male)	**RD$ 20,683** Average Annual Income per Capita			
Governance	**76.7%** Registered Voter Participation (2016 Election)	**17.3** Homicide Rate per 100k persons	**69.8%** Households with Garbage Collection			
Environmental Capacity	**32.8%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**17.5** Hospital Beds per 10,000 Persons	**22.2** Nurses per 10,000 Persons	**19.8** Physicians per 10,000 Persons	**3.4 km** Average Distance to Nearest Hospital	**0.79** Vaccination Index[5]	
Communications Capacity	**8.6%** Households with Access to Fixed Phone Line	**69.1%** Households with Access to Mobile Phone				
Transportation Capacity	**36.0 km** Average Distance to Nearest Port or Airport	**0.44 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 15 of 32 Provinces (Score: 0.503)

San José de Ocoa's score and ranking are due to moderate Vulnerability combined with moderate Coping Capacity scores. San José de Ocoa ranks 13th in Vulnerability and 15th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Vulnerable Health Status

Transportation Infrastructure Capacity

Communications Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 32 of 32 Provinces (Score: 0.393)

San José de Ocoa's score and ranking are due to very low Multi-Hazard Exposure combined with moderate Vulnerability and Coping Capacity.

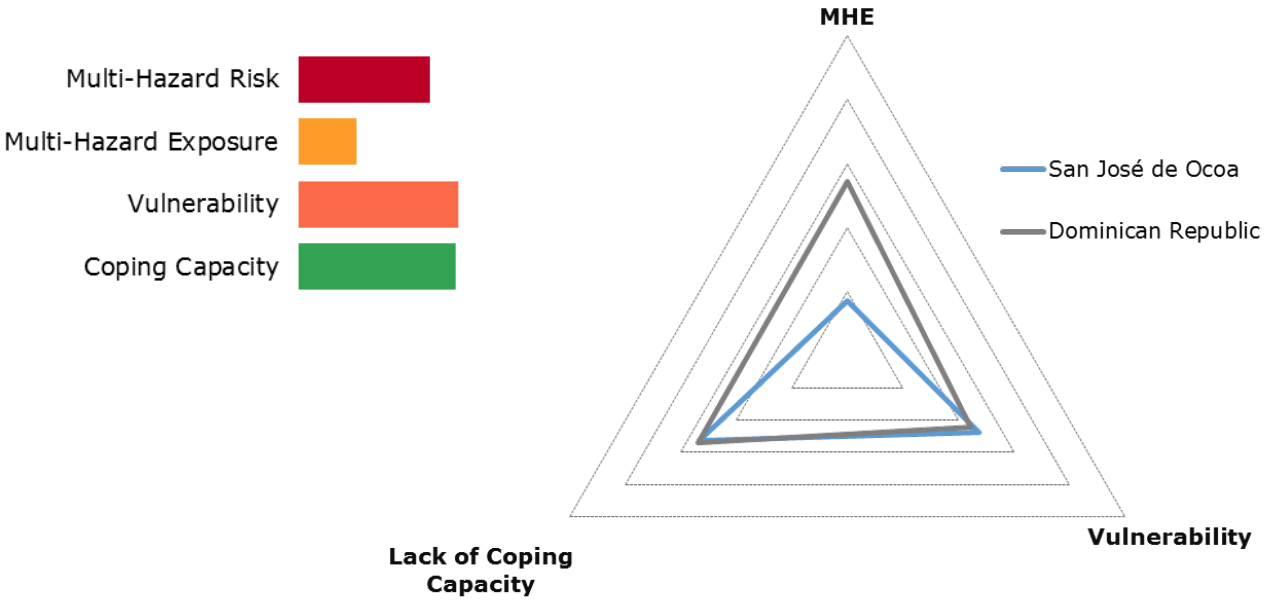


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 environmental capacity
Ranked 6 of 32 provinces, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Lowest overall multi-hazard risk
Ranked 30th in Multi-Hazard Exposure, 13th in Vulnerability, and 15th in Coping Capacity. Low multi-hazard risk indicates a low susceptibility to impact and the ability to absorb, respond to, and recover from negative impacts that occur over the short term (Coping Capacity).

High overall governance
Ranked 8 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

Recommendations

01

Increase health education
Provide health-education services for the population, especially new mothers and other special needs populations.

02

Invest in communication infrastructure
Invest in communication infrastructure to allow for easier access to information and education material, increasing literacy and situational awareness of the population.

03

Invest in transportation infrastructure
Investing in transportation infrastructure will facilitate the distribution of goods and services before, during, and after a disaster event.

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San Juan

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: San Juan

Province Capital: San Juan de la Maguana

Area: 3,774 km^2

Located in the valley region, San Juan is the largest province in Dominican Republic. Economic activities include livestock and agriculture and the province several hydro-electric dams.

225,318 Population (2017)

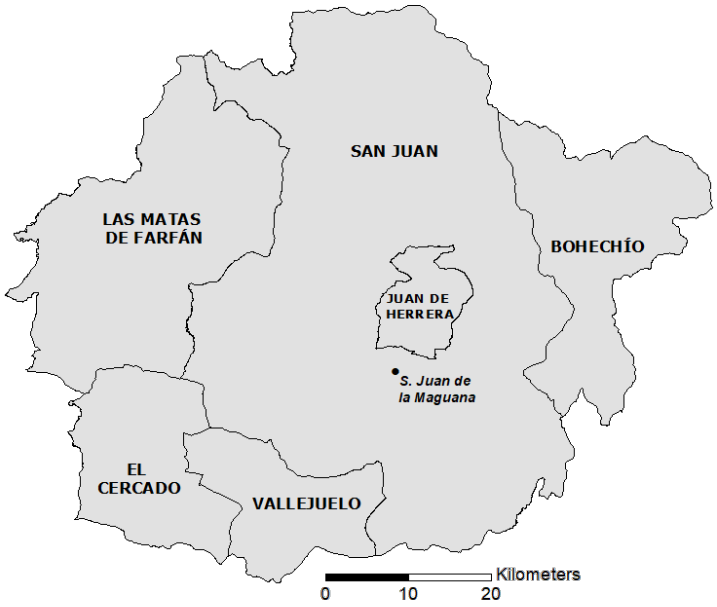
62.2% Population in Poverty

23.6% Illiterate Population

15.4 Infant Mortality Rate

86.6% Access to Improved Water

Municipality	Population
San Juan	128,188
Bohechío	9,393
El Cercado	20,217
Juan De Herrera	12,665
Las Matas De Farfán	42,828
Vallejuelo	12,027



Multi-Hazard Risk Rank: Medium (19 of 32)

Lack of Resilience Rank: Very High (6 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Very High		Low		High		Very Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.515	19	0.586	6	0.372	25	0.540	9	0.367	28

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 25 of 32 Provinces (Score: 0.372)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
291,246 People

Earthquake
1%
4,191 People

Landslide
70%
202,629 People

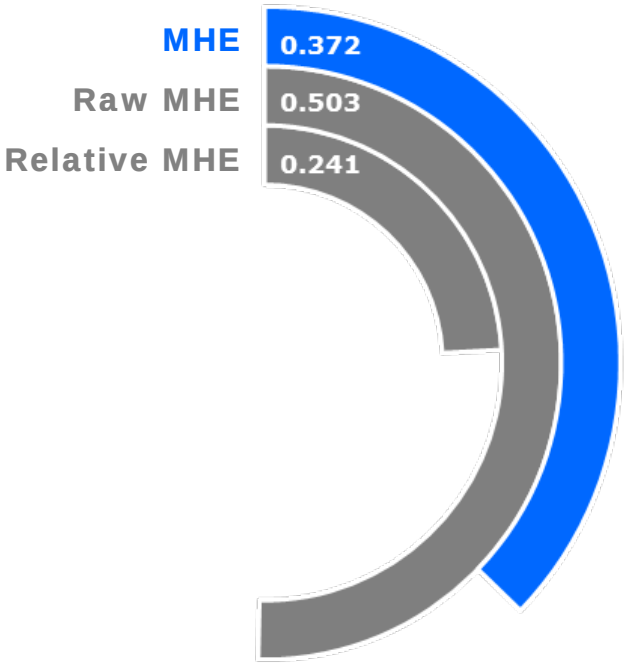
Flood
46%
133,888 People

Tsunami
0%
0 People

Case Study: SAFE Agriculture in San Juan

USDA has funded a five year program to "improve agricultural productivity for livestock and expand exports and trade." Known in the Dominican Republic as Progana, the Safe Agriculture/Food Export (SAFE) Program works with "smallholder livestock owners with 100 heads of cattle or less". Farmers are trained on improving management and production techniques, as well as animal nutrition and sanitary concerns. Local farm field schools are used for trainings to provide hands-on experience for the participants. The SAFE Program is expected to significantly increase export earning potential for Dominican farmers.

"Safe Agriculture/Food Export (SAFE) Program" – NGO Aid Map, https://www.ngoaidmap.org/projects/16809



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 9 of 32 Provinces (Score: 0.540) Vulnerability in San Juan is influenced by **Economic Constraints, Gender Inequality,** and **Vulnerable Health Status**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

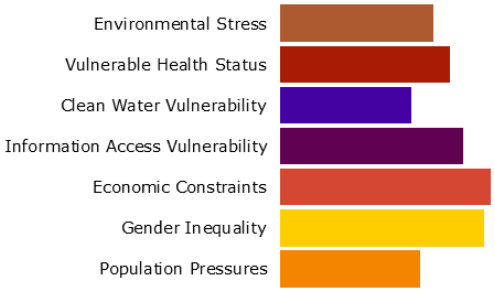


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**45.8%** Province Susceptible to Drought	**-1.7%** Average Annual Forest Change					
Vulnerable Health Status	**15.4** Infant Mortality Rate	**160.3** Maternal Mortality Rate	**15.2** Chronic Malnutrition	**7.8%** Population Disabled			
Clean Water Vulnerability	**13.4%** Households without Access to Improved Water	**15.0%** Households without Access to Flush Toilets					
Information Access Vulnerability	**23.6%** Illiteracy	**92.8%** Primary School Enrollment	**95.6%** Households without Internet	**34.8%** Households without TV	**57.6%** Households without Radio	**5.4** Average years of Schooling	
Economic Constraints	**66.7** Economic Dependency Ratio	**62.2%** Population in Poverty	**48.1%** CEP Beneficiaries				
Gender Inequality	**33.5%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.55** Female to Male Labor Ratio				
Population Pressures	**0.48%** Average Annual Population Change	**2.8%** 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 Capacity[4] Rank: 28 of 32 Provinces (Score: 0.367) San Juan's weakest relative scores are in the thematic areas of **Economic Capacity** and **Infrastructure**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

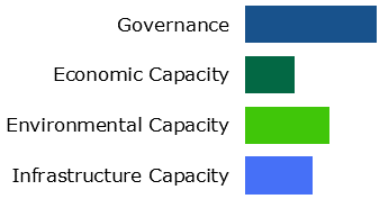


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.12** Debt to Service Ratio	**91.3%** Employment Rate (Male)	**RD$ 18,130** Average Annual Income per Capita			
Governance	**78.0%** Registered Voter Participation (2016 Election)	**17.0** Homicide Rate per 100k persons	**63.7%** Households with Garbage Collection			
Environmental Capacity	**25.6%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**17.0** Hospital Beds per 10,000 Persons	**26.9** Nurses per 10,000 Persons	**13.7** Physicians per 10,000 Persons	**4.7 km** Average Distance to Nearest Hospital	**0.37** Vaccination Index[5]	
Communications Capacity	**9.8%** Households with Access to Fixed Phone Line	**66.6%** Households with Access to Mobile Phone				
Transportation Capacity	**59.9 km** Average Distance to Nearest Port or Airport	**0.32 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 6 of 32 Provinces (Score: 0.586)

San Juan's score and ranking are due to high Vulnerability combined with very low Coping Capacity scores. San Juan ranks 9th in Vulnerability and 28th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Transportation Infrastructure Capacity

Economic Capacity

Economic Constraints

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 19 of 32 Provinces (Score: 0.515)

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

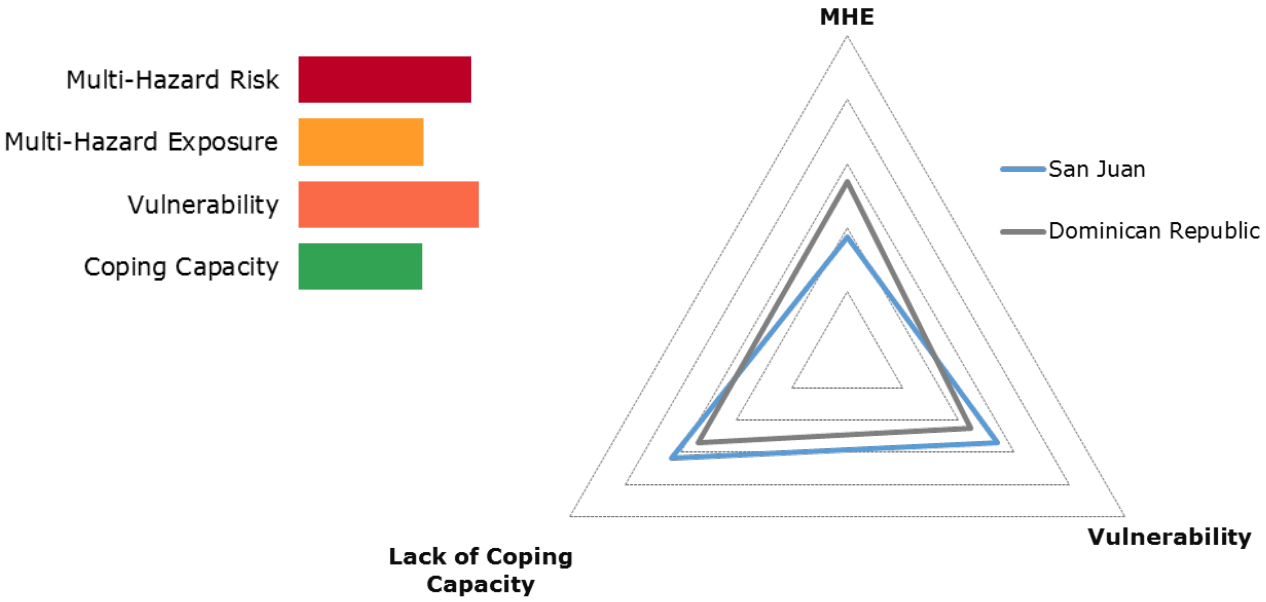


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 overall governance

Ranked 10 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

High environmental capacity

Ranked 11 of 32 provinces, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Invest in transportation infrastructure

Investing in transportation infrastructure will facilitate the distribution of goods and services before, during, and after a disaster event.

02

Increase economic capacity

Encourage business development and education programs to increase economic opportunities in the region.

Better solutions.
Fewer disasters.
Safer world.

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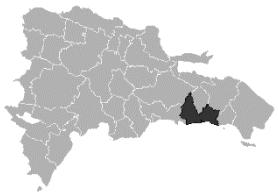
San Pedro de Macorís

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: San Pedro de Macorís

Province Capital: San Pedro de Macorís



Area: 1,403 km^2

Located in the southeast of the country, San Pedro de Macorís is known for the production of sugar. It also includes a commercial port which handles exports of sugar, cement, cattle, and timber. Other industries include corn milling, the manufacture of clothing and soap, and alcohol distilling.

301,215
Population (2017)

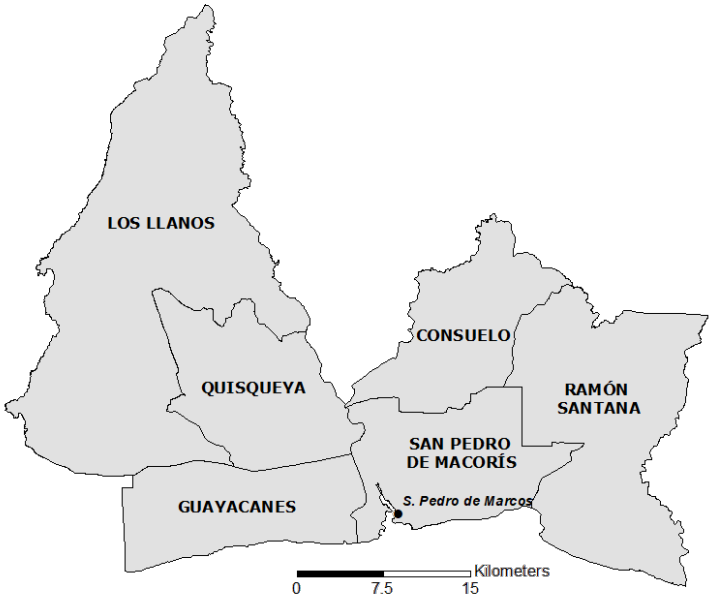
46.7%
Population in Poverty

10.7%
Illiterate Population

17.9
Infant Mortality Rate

75.6%
Access to Improved Water

Municipality	Population
San Pedro De Macorís	202,545
Los Llanos	23,409
Ramon Santana	9,229
Consuelo	31,163
Quisqueya	19,740
Guayacanes	15,129



Multi-Hazard Risk Rank: Medium (17 of 32)

Lack of Resilience Rank: Low (26 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Medium		Low		High		Low		High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.519	17	0.433	26	0.691	10	0.351	26	0.485	12

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 10 of 32 Provinces (Score: 0.691)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
364,283 People

Earthquake
100%
364,283 People

Landslide
62%
224,908 People

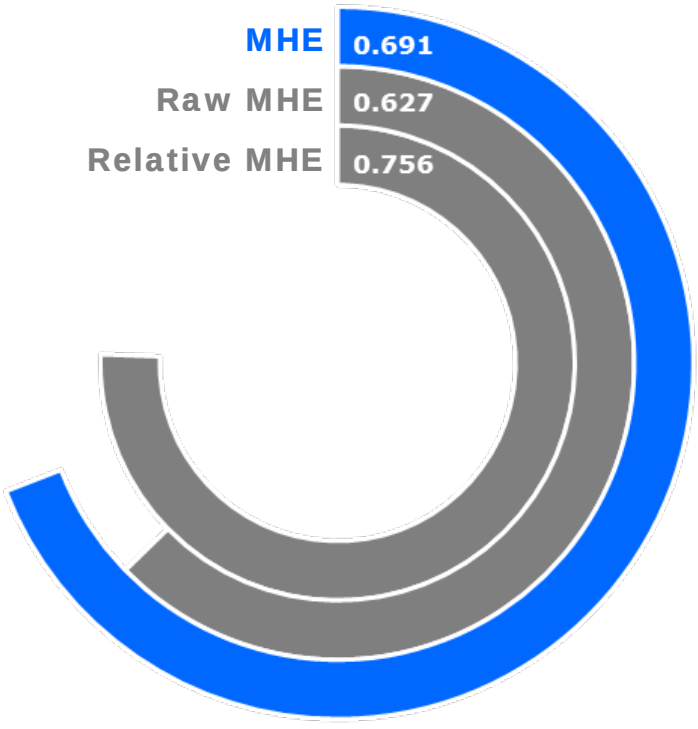
Flood
14%
50,058 People

Tsunami
33%
119,080 People

Case Study: Improved Climate Information Project

From March 2015-2018, USAID worked to develop a web-based National Climate Observatory for areas of the Dominican Republic most vulnerable to climate change impacts, including San Pedro de Macorís. This tool promoted effective "climate risk-based decision-making" through local planning efforts. Implemented through Instituto Tecnológico de Santo Domingo, this project supported the training of climate change professionals to enable data gathering and sharing.

"USAID Dominican Republic Factsheet: Improved Climate Information Project" – https://www.climatelinks.org/sites/default/files/asset/document/2.5%20FACT%20SHEET%20-%20Improved%20Climate%20Information%20-%20FINAL.pdf



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 26 of 32 Provinces (Score: 0.351) Vulnerability in San Pedro de Macorís is influenced by **Clean Water Vulnerability, Environmental Stress,** and **Gender Inequality.** The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

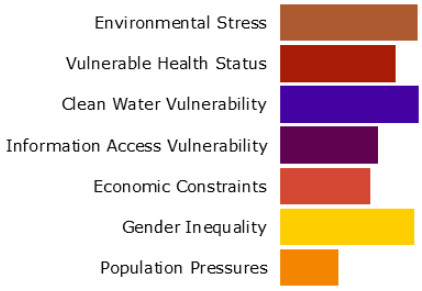


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**60.8%** Province Susceptible to Drought	**1.9%** Average Annual Forest Change					
Vulnerable Health Status	**17.9** Infant Mortality Rate	**84.5** Maternal Mortality Rate	**8.5** Chronic Malnutrition	**8.2%** Population Disabled			
Clean Water Vulnerability	**24.4%** Households without Access to Improved Water	**10.1%** Households without Access to Flush Toilets					
Information Access Vulnerability	**10.7%** Illiteracy	**94.8%** Primary School Enrollment	**89.8%** Households without Internet	**22.1%** Households without TV	**55.1%** Households without Radio	**6.9** Average years of Schooling	
Economic Constraints	**55.4** Economic Dependency Ratio	**46.7%** Population in Poverty	**31.6%** CEP Beneficiaries				
Gender Inequality	**36.4%** Female Seats in Government	**11** Female to Male Years of Schooling	**0.40** Female to Male Labor Ratio				
Population Pressures	**0.48%** Average Annual Population Change	**0.02%** 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 Capacity[4] Rank: 12 of 32 Provinces (Score: 0.485) The thematic areas with the weakest relative scores are **Environmental Capacity** and **Economic Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

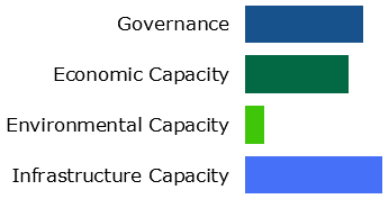


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.01** Debt to Service Ratio	**92.2%** Employment Rate (Male)	**RD$ 24,607** Average Annual Income per Capita			
Governance	**72.3%** Registered Voter Participation (2016 Election)	**19.8** Homicide Rate per 100k persons	**77.8%** Households with Garbage Collection			
Environmental Capacity	**6.0%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**11.0** Hospital Beds per 10,000 Persons	**11.7** Nurses per 10,000 Persons	**23.0** Physicians per 10,000 Persons	**2.9 km** Average Distance to Nearest Hospital	**0.76** Vaccination Index[5]	
Communications Capacity	**18.2%** Households with Access to Fixed Phone Line	**76.9%** Households with Access to Mobile Phone				
Transportation Capacity	**17.6 km** Average Distance to Nearest Port or Airport	**0.94 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 26 of 32 Provinces (Score: 0.433)

San Pedro de Macorís's score and ranking are due to very low Vulnerability combined with high Coping Capacity scores. San Pedro de Macorís ranks 26th in Vulnerability and 12th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity	**Economic Capacity**	**Clean Water Vulnerability**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 17 of 32 Provinces (Score: 0.519)

San Pedro de Macorís's score and ranking are due to high Multi-Hazard Exposure combined with very low Vulnerability and high Coping Capacity.

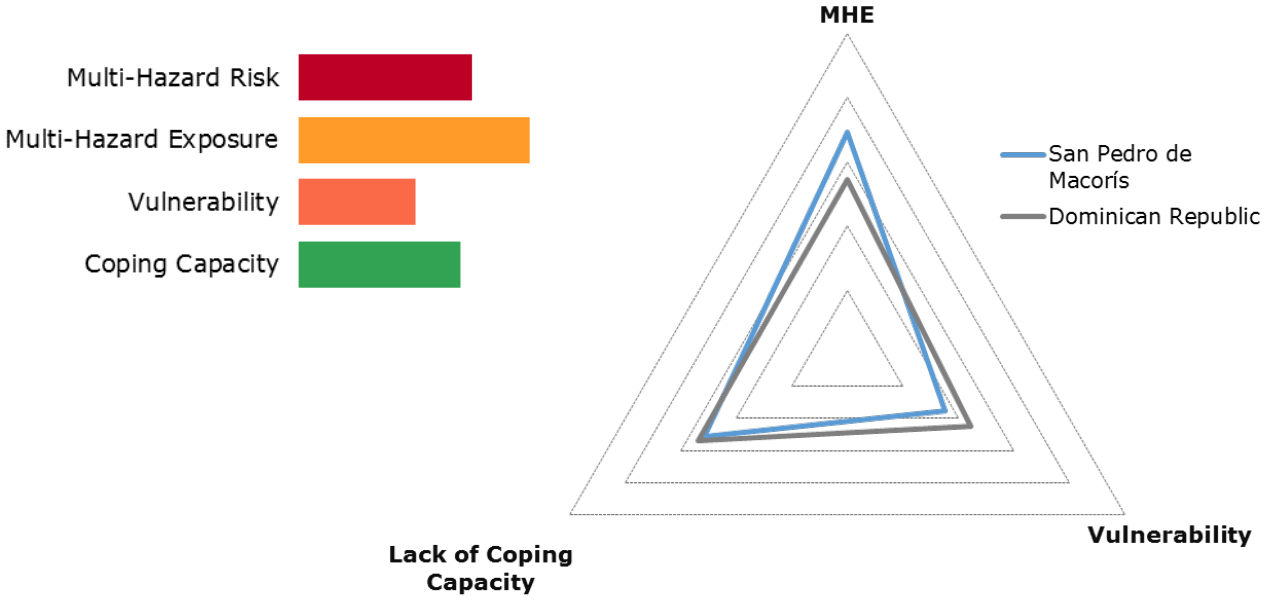


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 information access
High information access indicates that the population has an increased ability to access and comprehend disaster-related information before, during, and after events.

Low population pressures
Ranked 30 of 32 provinces, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

High overall infrastructure capacity
Ranked 5 of 32 provinces, well developed infrastructure – communication, health care, transportation - facilitates the exchange of information, and physical distribution of goods and services to the population.

Recommendations

01

Increase economic capacity
Encourage business development and education programs to increase economic opportunities in the region.

02

Increase environmental programs
Invest in programs to provide protection for the environment, including protected lands and reforestation projects, to increase the ability of the environment to recover after a disaster.

02

Increase government water services
Investments in public water and sewer facilities will help to decrease vulnerability and increase access to clean water during a disaster.

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Sánchez Ramírez

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Sánchez Ramírez

Province Capital: Cotuí

Area: 1,334 km^2

Sánchez Ramírez is located in the center of the country, in the sub-region of the Cibao Central. It is known for its caverns, mining and the production of rice and citrus.

152,027
Population (2017)

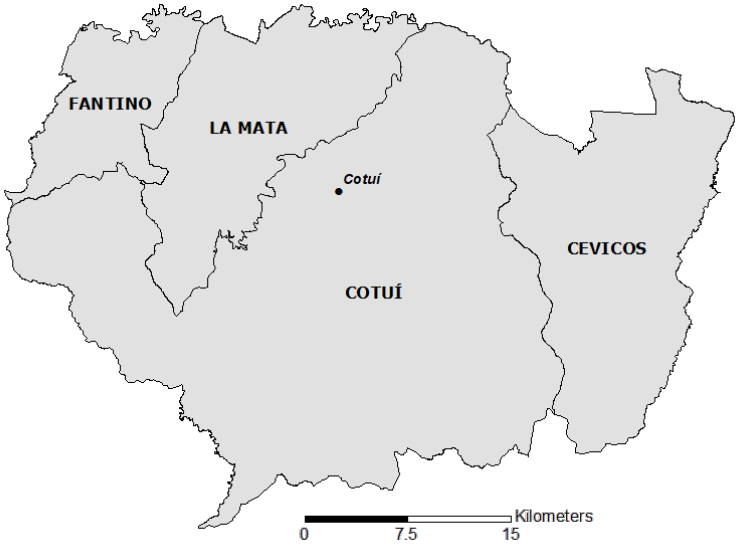
44.7%
Population in Poverty

14.3%
Illiterate Population

16.2
Infant Mortality Rate

74.3%
Access to Improved Water

Municipality	Population
Cotuí	6,337
Cevicos	13,818
Fantino	22,210
La Mata	39,124



Multi-Hazard Risk Rank: High (13 of 32)

Lack of Resilience Rank: Medium (16 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Medium		High		Medium		Low	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.530	13	0.501	16	0.588	14	0.403	19	0.401	26

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 14 of 32 Provinces (Score: 0.588)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
182,229 People

Earthquake
100%
182,229 People

Landslide
52%
93,950 People

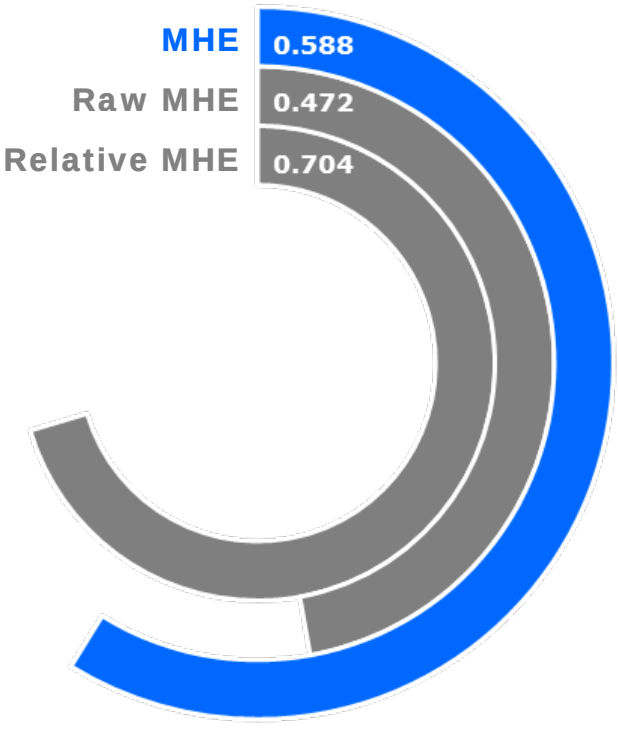
Flood
47%
86,490 People

Tsunami
0%
0 People

Case Study: Mining Impacts in Sánchez Ramírez

The Pueblo Viejo gold mines are located within the Province of Sánchez Ramírez "in a world-class mineral reserve with one of the largest untapped gold deposits in the world." Rural communities near the mines experience direct impacts from the mining, including polluted rivers and dust clouds which expose the local population to a variety of health concerns. Chemicals used in the mining have brought on significant environmental degradation, including the loss of agriculture and wildlife.

"Mining Contamination Threatens Lives in Cotuí" – https://www.diccionariomedioambiente.org/DiccionarioMedioAmbiente_en/en/noticiaVer.asp?id=1652, 24 September 2014



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 19 of 32 Provinces (Score: 0.403) Vulnerability in Sánchez Ramírez is strongly influenced by a high **Gender Inequality**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

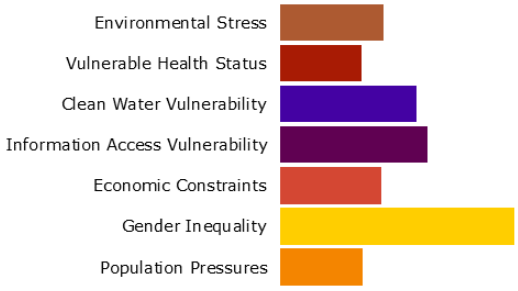


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0%** Province Susceptible to Drought	**-3.8%** Average Annual Forest Change					
Vulnerable Health Status	**16.2** Infant Mortality Rate	**121.7** Maternal Mortality Rate	**7.4** Chronic Malnutrition	**5.6%** Population Disabled			
Clean Water Vulnerability	**25.7%** Households without Access to Improved Water	**8.9%** Households without Access to Flush Toilets					
Information Access Vulnerability	**14.3%** Illiteracy	**82.6%** Primary School Enrollment	**94.0%** Households without Internet	**21.8%** Households without TV	**52.0%** Households without Radio	**6.5** Average years of Schooling	
Economic Constraints	**55.9** Economic Dependency Ratio	**44.7%** Population in Poverty	**36.0%** CEP Beneficiaries				
Gender Inequality	**32.1%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.52** Female to Male Labor Ratio				
Population Pressures	**0.01%** Average Annual Population Change	**2.9%** 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 Capacity[4] Rank: 26 of 32 Provinces (Score: 0.401) The thematic areas with the weakest relative scores are **Environmental Capacity, Transportation Infrastructure,** and **Economic Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

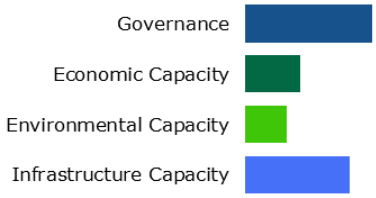


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.01** Debt to Service Ratio	**90.2%** Employment Rate (Male)	**RD$ 19,436** Average Annual Income per Capita			
Governance	**79.3%** Registered Voter Participation (2016 Election)	**16.4** Homicide Rate per 100k persons	**55.6%** Households with Garbage Collection			
Environmental Capacity	**12.6%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**11.2** Hospital Beds per 10,000 Persons	**23.9** Nurses per 10,000 Persons	**17.8** Physicians per 10,000 Persons	**2.8 km** Average Distance to Nearest Hospital	**0.44** Vaccination Index[5]
Communications Capacity	**13.4%** Households with Access to Fixed Phone Line	**76.0%** Households with Access to Mobile Phone			
Transportation Capacity	**44.0 km** Average Distance to Nearest Port or Airport	**0.55 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 16 of 32 Provinces (Score: 0.501)

Sánchez Ramírez's score and ranking are due to moderate Vulnerability combined with very low Coping Capacity scores. Sánchez Ramírez ranks 19th in Vulnerability and 26th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity

Economic Capacity

Gender Inequality

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 13 of 32 Provinces (Score: 0.530)

Sánchez Ramírez's score and ranking are due to moderate Multi-Hazard Exposure combined with moderate Vulnerability and very low Coping Capacity.

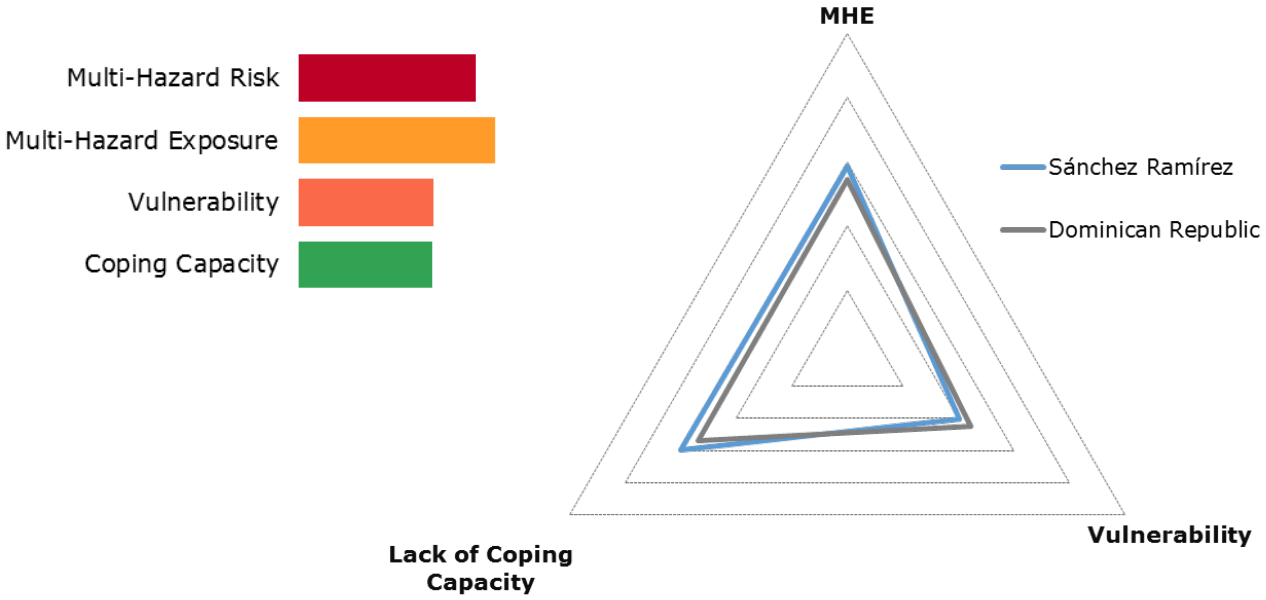


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 vulnerable health status
Ranked 28 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Low population pressures
Ranked 27 of 32 provinces, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Recommendations

01

Increase economic capacity
Encourage business development and education programs to increase economic opportunities in the region.

02

Provide opportunities for women
Public education and awareness programs that focus on increasing the role of women in the workplace and the society will improve resilience and decrease vulnerability.

02

Increase environmental programs
Invest in programs to provide protection for the environment, including protected lands and reforestation projects, to increase the ability of the environment to recover after a disaster.

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Santiago

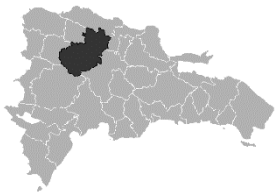
Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Santiago

Province Capital: Santiago de los Caballeros



Area: 3,167 km^2

Located in the north of the country, Santiago is the second most populated province in Dominican Republic. Santiago is an important political and financial center which includes the production of rum, textiles, tobacco, leather goods and furniture.

1,022,916 Population (2017)

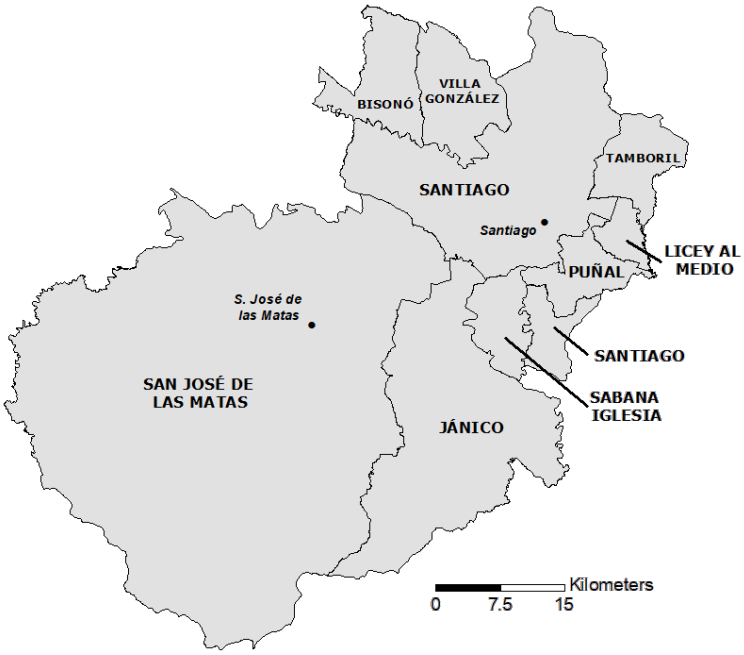
31.6% Population in Poverty

11.8% Illiterate Population

24.3 Infant Mortality Rate

95.2% Access to Improved Water

Municipality	Population
Santiago	734,026
Villa Bisonó	44,687
Jánico	18,028
Licey Al Medio	27,113
San José De Las Matas	40,986
Tamboril	54,879
Villa González	39,649
Puñal	49,381
Sabana Iglesia	14,167



Multi-Hazard Risk Rank: High (14 of 32)

Lack of Resilience Rank: Very Low (31 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Very Low		Very High		Very Low		Very High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.528	14	0.327	31	0.930	1	0.261	31	0.606	2

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 1 of 32 Provinces (Score: 0.930)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
1,095,394 People

Earthquake
100%
1,095,394 People

Landslide
80%
873,076 People

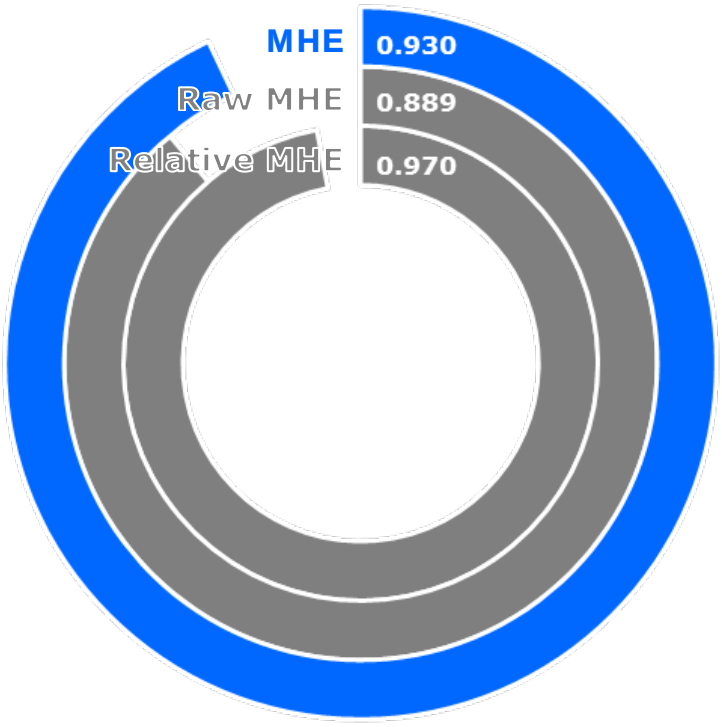
Flood
66%
728,380 People

Tsunami
0%
0 People

Case Study: Community-Based Mapping in Santiago

Santiago is exposed to a multitude of risks, and the Dominican Red Cross has worked to provide effective risk solutions to the province through a community-based mapping approach. By encouraging communities to engage in their own hazard and capacities identification, the Dominican Red Cross has been able to successfully develop detailed maps for the purposes of risk management across the province. These maps have been shared with relevant stakeholders in Santiago, encouraging partner collaboration through a shared understanding of community vulnerabilities.

"Community Learning on Disaster Risk Management in Dominican Republic" – DIPECHO, March 2011



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 31 of 32 Provinces (Score: 0.261) Vulnerability in Santiago is strongly influenced by moderate **Population Pressures** and **Gender Inequality**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

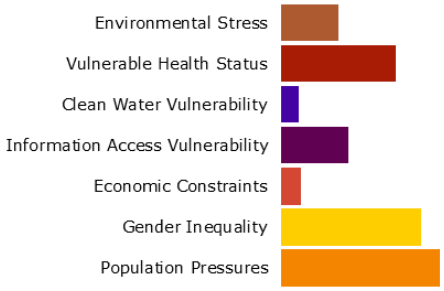


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**3.1%** Province Susceptible to Drought	**0.9%** Average Annual Forest Change					
Vulnerable Health Status	**24.3** Infant Mortality Rate	**102.7** Maternal Mortality Rate	**8.2** Chronic Malnutrition	**5.5%** Population Disabled			
Clean Water Vulnerability	**4.8%** Households without Access to Improved Water	**2.5%** Households without Access to Flush Toilets					
Information Access Vulnerability	**11.8%** Illiteracy	**87.2%** Primary School Enrollment	**83.0%** Households without Internet	**16.1%** Households without TV	**43.0%** Households without Radio	**7.0** Average years of Schooling
Economic Constraints	**50.0** Economic Dependency Ratio	**31.6%** Population in Poverty	**23.9%** CEP Beneficiaries			
Gender Inequality	**37.5%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.43** Female to Male Labor Ratio			
Population Pressures	**0.83%** Average Annual Population Change	**2.6%** 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 Capacity[4] Rank: 2 of 32 Provinces (Score: 0.606) Santiago exhibits weakness in the thematic areas of **Governance** and **Health Care Capacity**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

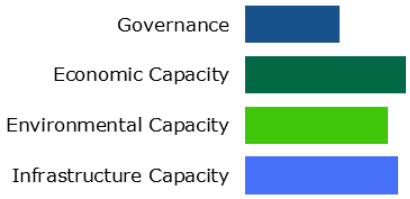


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**1.00** Debt to Service Ratio	**94.1%** Employment Rate (Male)	**RD$ 33,371** Average Annual Income per Capita			
Governance	**64.9%** Registered Voter Participation (2016 Election)	**20.3** Homicide Rate per 100k persons	**82.6%** Households with Garbage Collection			
Environmental Capacity	**43.5%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**10.2** Hospital Beds per 10,000 Persons	**14.2** Nurses per 10,000 Persons	**16.5** Physicians per 10,000 Persons	**3.8 km** Average Distance to Nearest Hospital	**0.69** Vaccination Index[5]	
Communications Capacity	**30.1%** Households with Access to Fixed Phone Line	**81.8%** Households with Access to Mobile Phone				
Transportation Capacity	**29.8 km** Average Distance to Nearest Port or Airport	**2.11 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 31 of 32 Provinces (Score: 0.327)

Santiago's score and ranking are due to very low Vulnerability combined with very high Coping Capacity scores. Santiago ranks 31st in Vulnerability and 2nd in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Health Care Infrastructure Capacity

Governance

Population Pressures

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 14 of 32 Provinces (Score: 0.528)

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

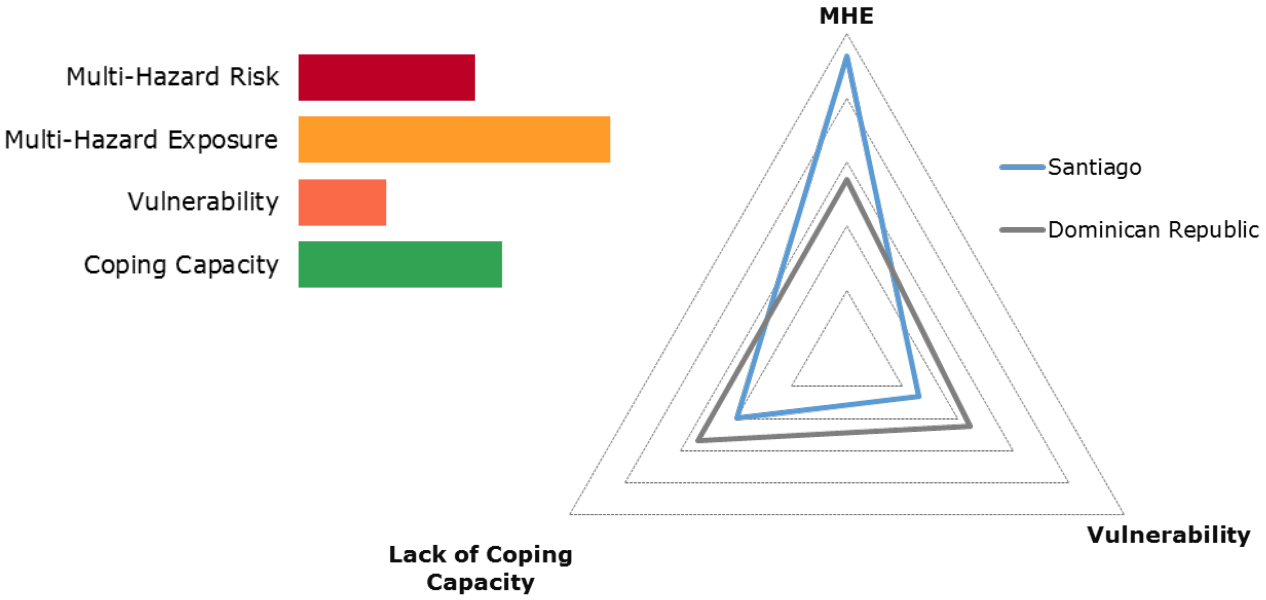


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 economic constraints

Ranked 32 of 32 provinces, low economic constraints indicate an increased ability to invest in mitigation and preparedness measures at the individual, household, and provincial level.

High overall coping capacity

Ranking 2 of 32 provinces, high coping capacity indicates the province's ability, using existing skills and resources, to face and manage adverse conditions, emergencies, or disasters.

Recommendations

01

Increase health care availability

Increase clinics and medical personnel through incentivized programs and investments to increase the health resilience of the population.

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.

03

Reduce population pressure

Rapid population changes are difficult to plan for, and can destabilize social, economic, and environmental systems. Analyze trends in the province to determine potential population changes and increase the update frequency of plans and SOPS to accommodate the changes.

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Santiago Rodríguez

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Santiago Rodríguez

Province Capital: San Ignacio de Sabaneta

Area: 1,295 km^2

Located in the northwest of the country in the Cibao sub-region, Santiago Rodríguez is an important center of commerce in the region including manufacturing and agriculture.

57,390
Population (2017)

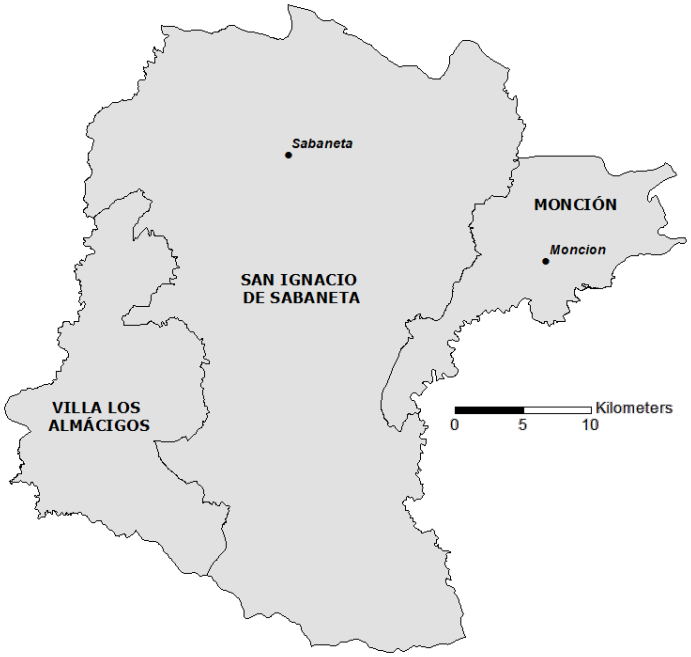
48.2%
Population in Poverty

19.1%
Illiterate Population

15.4
Infant Mortality Rate

84.5%
Access to Improved Water

Municipality	Population
San Ignacio De Sabaneta	34,490
Los Almácigos	11,167
Monción	11,733



Multi-Hazard Risk Rank: Very Low (31 of 32)

Lack of Resilience Rank: Low (24 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Low		Very Low		Low		High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.411	31	0.439	24	0.355	28	0.353	25	0.475	13

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 28 of 32 Provinces (Score: 0.355)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
72,132 People

Earthquake
100%
72,132 People

Landslide
55%
39,828 People

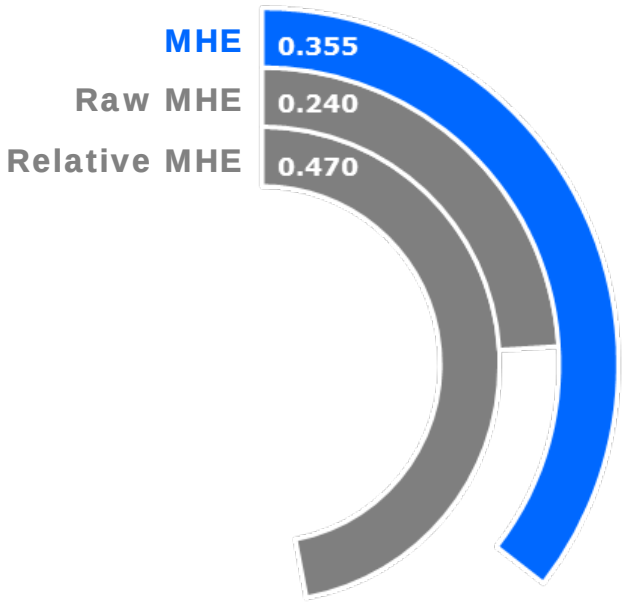
Flood
2%
1,690 People

Tsunami
0%
0 People

Case Study: Bananas, Climate, and Deforestation

Santiago Rodríguez falls within the Yaque del Norte River basin and is an important location for the country's banana production. However, this production has been negatively affected in recent years "by the destruction of the forest layer in the upper part of the Yaque del Norte basin, and by the erosion of soils that lost their water retention capacity and the sedimentation of the river bed…" Environmental degradation, alongside substantial drought concerns, are proving to be of significant concern for one of the country's primary exports and, in extension, for the country's economy.

"Dominican Republic: Deforestation and Climate Affect Banana Exports" – https://www.freshplaza.com/article/2199779/dominican-republic-deforestation-and-climate-affect-banana-exports/, 21 August 2018



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 25 of 32 Provinces (Score: 0.353) Vulnerability in Santiago Rodríguez is moderately influenced by **Gender Inequality, Information Access Vulnerability,** and **Economic Constraints**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

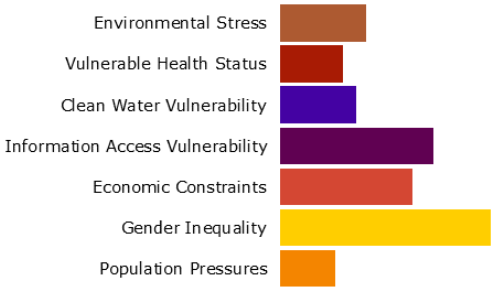


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**16.6%** Province Susceptible to Drought	**0.3%** Average Annual Forest Change				
Vulnerable Health Status	**15.4** Infant Mortality Rate	**110.0** Maternal Mortality Rate	**7.5** Chronic Malnutrition	**4.6%** Population Disabled		
Clean Water Vulnerability	**15.5%** Households without Access to Improved Water	**5.4%** Households without Access to Flush Toilets				
Information Access Vulnerability	**19.1%** Illiteracy	**83.9%** Primary School Enrollment	**92.2%** Households without Internet	**29.2%** Households without TV	**47.3%** Households without Radio	**6.1** Average years of Schooling
Economic Constraints	**58.0** Economic Dependency Ratio	**48.2%** Population in Poverty	**41.9%** CEP Beneficiaries			
Gender Inequality	**35.7%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.56** Female to Male Labor Ratio			
Population Pressures	**0.07%** Average Annual Population Change	**0.8%** 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 Capacity[4] Rank: 13 of 32 Provinces (Score: 0.475) The thematic areas with the weakest relative scores are **Economic Capacity** and **Infrastructure (Transportation)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

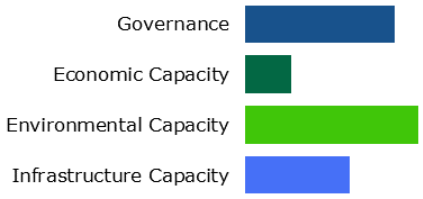


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.98** Debt to Service Ratio	**90.2%** Employment Rate (Male)	**RD$ 15,118** Average Annual Income per Capita			
Governance	**76.6%** Registered Voter Participation (2016 Election)	**10.4** Homicide Rate per 100k persons	**58.7%** Households with Garbage Collection			
Environmental Capacity	**52.6%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**23.1** Hospital Beds per 10,000 Persons	**28.5** Nurses per 10,000 Persons	**16.7** Physicians per 10,000 Persons	**3.8 km** Average Distance to Nearest Hospital	**0.70** Vaccination Index[5]	
Communications Capacity	**14.0%** Households with Access to Fixed Phone Line	**73.2%** Households with Access to Mobile Phone				
Transportation Capacity	**53.9 km** Average Distance to Nearest Port or Airport	**0.47 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 14 of 32 Provinces (Score: 0.439)

Santiago Rodríguez's score and ranking are due to low Vulnerability combined with moderate Coping Capacity scores. Santiago Rodríguez ranks 25th in Vulnerability and 13th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Economic Capacity

Transportation Infrastructure Capacity

Gender Inequality

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 31 of 32 Provinces (Score: 0.411)

Santiago Rodríguez's score and ranking are due to very low Multi-Hazard Exposure combined with low Vulnerability and moderate Coping Capacity.

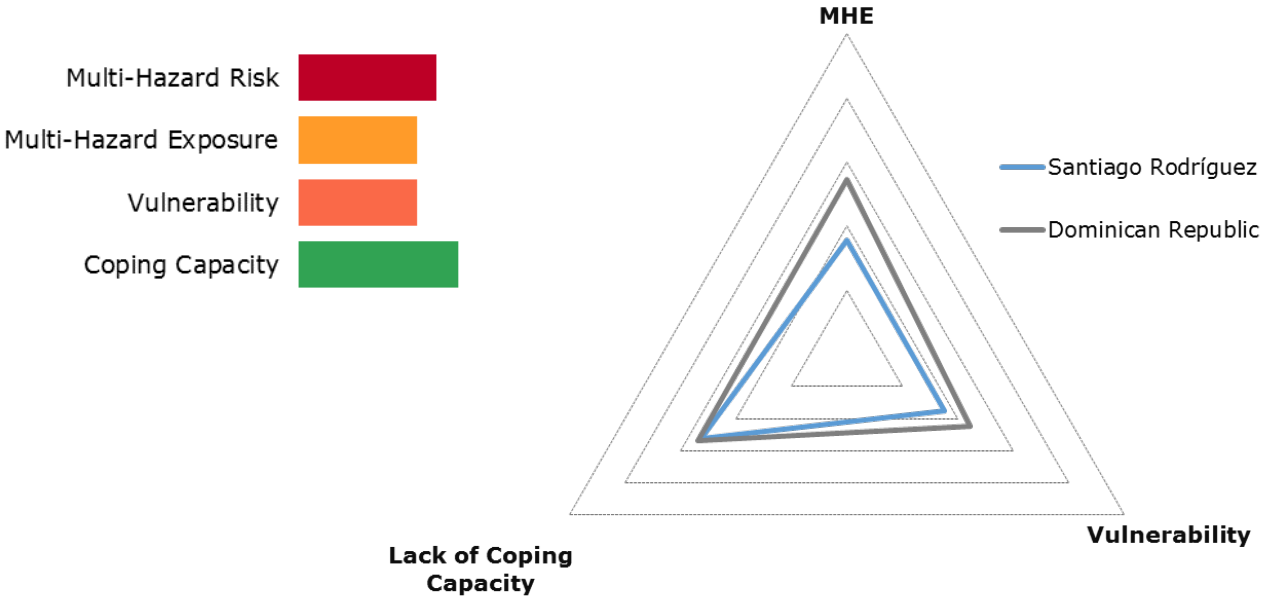


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 overall governance
Ranked 3 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

Low vulnerable health status
Ranked 29 of 32 provinces, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Lowest population pressures
Ranked 32 of 32 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Recommendations

01

Increase business development
Invest in business development and education programs to boost economic capacity and increase the number of businesses and the likelihood of success of those businesses.

02

Provide opportunities for women
Public education and awareness programs, as well as increased business and political opportunities that focus on advancing the role of women in the workplace and the society, will improve resilience and decrease vulnerability.

03

Invest in transportation infrastructure
Investing in transportation infrastructure will facilitate the distribution of goods and services before, during, and after a disaster event.

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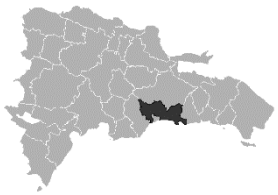
Santo Domingo

Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Province: Santo Domingo

Province Capital: Santo Domingo



Area: 1,457 km^2

Located in the south of the country, Santo Domingo is the industrial, commercial and financial center of the country. It's city, of the same name, is the oldest and most populous in The Caribbean.

2,753,219 Population (2017)

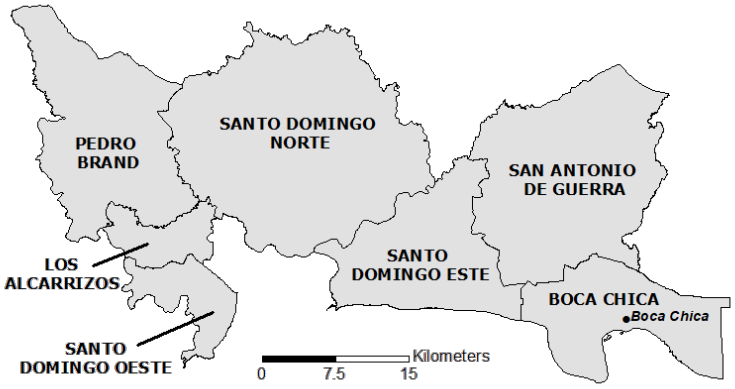
34.6% Population in Poverty

8.7% Illiterate Population

19.9 Infant Mortality Rate

89% Access to Improved Water

Municipality	Population
Santo Domingo Este	1,100,336
Santo Domingo Oeste	421,299
Santo Domingo Norte	613,833
Boca Chica	164,670
San Antonio De Guerra	50,972
Pedro Brand	85,825
Los Alcarrizos	316,284



Multi-Hazard Risk Rank: High (8 of 32)

Lack of Resilience Rank: Very Low (29 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Very Low		Very High		Very Low		Very High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.538	8	0.392	29	0.829	2	0.328	28	0.544	6

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 2 of 32 Provinces (Score: 0.829)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
2,188,077 People

Earthquake
95%
2,087,669 People

Landslide
79%
1,725,564 People

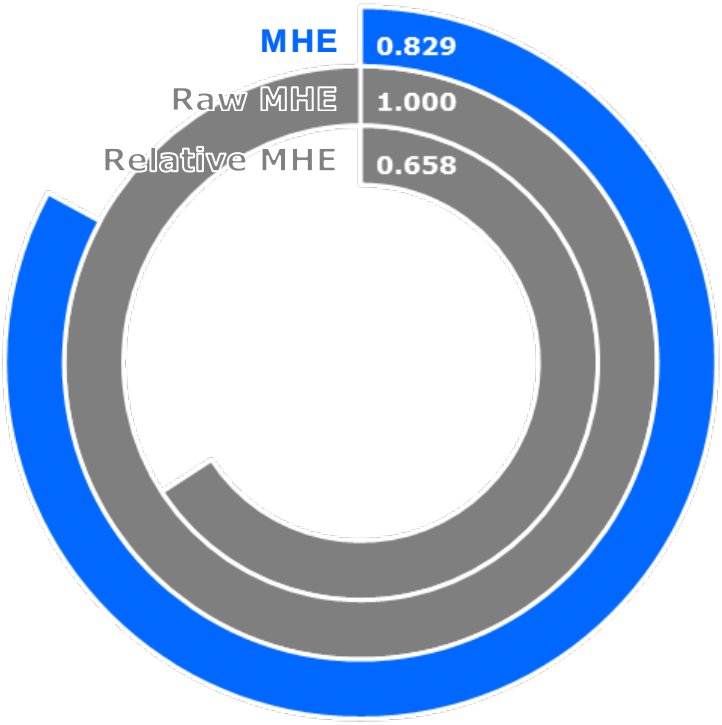
Flood
6%
134,252 People

Tsunami
11%
229,768 People

Case Study: Post-Storm Recovery in the DR

In October 2007, the Dominican Republic was struck by Tropical Storm Noel and, five weeks later, by Tropical Storm Olga. Water infrastructure was severely damaged by these events, requiring the country to work with the United Nations to design and implement the *Emergency Recovery and Disaster Management Project* from 2008 to 2016. For the duration of the project, "over a million gallons of drinking water were provided to the population cut off from the regular water supply" in Santo Domingo as the country worked to restore the city's water treatment facilities.

"Contributing to Post-Storm Recovery in the Dominican Republic" – The World Bank, 19 October 2017



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 28 of 32 Provinces (Score: 0.328) Vulnerability in Santo Domingo is notably influenced by a high **Population Pressures**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

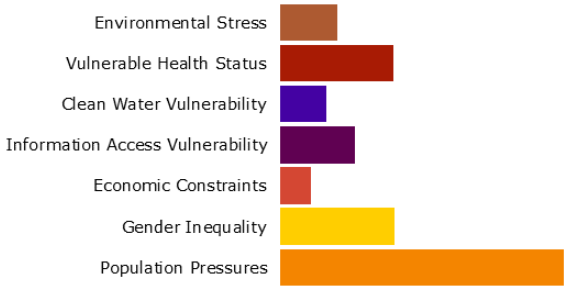


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**0.03%** Province Susceptible to Drought	**0.5%** Average Annual Forest Change					
Vulnerable Health Status	**19.9** Infant Mortality Rate	**84.6** Maternal Mortality Rate	**8.7** Chronic Malnutrition	**7.2%** Population Disabled			
Clean Water Vulnerability	**11.0%** Households without Access to Improved Water	**3.5%** Households without Access to Flush Toilets					
Information Access Vulnerability	**8.7%** Illiteracy	**80.3%** Primary School Enrollment	**82.8%** Households without Internet	**15.3%** Households without TV	**46.9%** Households without Radio	**7.6** Average years of Schooling	
Economic Constraints	**53.7** Economic Dependency Ratio	**34.6%** Population in Poverty	**20.7%** CEP Beneficiaries				
Gender Inequality	**35.6%** Female Seats in Government	**1.1** Female to Male Years of Schooling	**0.36** Female to Male Labor Ratio				
Population Pressures	**2.18%** Average Annual Population Change	**8.6%** 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 Capacity[4] Rank: 6 of 32 Provinces (Score: 0.544)
The thematic areas with the weakest relative scores are **Environmental Capacity, Health Care Capacity** and **Governance**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

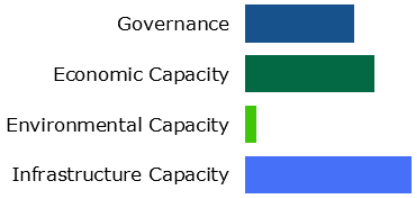


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.91** Debt to Service Ratio	**92.7%** Employment Rate (Male)	**RD$ 25,555** Average Annual Income per Capita			
Governance	**65.4%** Registered Voter Participation (2016 Election)	**16.7** Homicide Rate per 100k persons	**80.0%** Households with Garbage Collection			
Environmental Capacity	**3.5%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**6.7** Hospital Beds per 10,000 Persons	**6.9** Nurses per 10,000 Persons	**9.3** Physicians per 10,000 Persons	**2.2 km** Average Distance to Nearest Hospital	**0.52** Vaccination Index[5]	
Communications Capacity	**34.0%** Households with Access to Fixed Phone Line	**83.6%** Households with Access to Mobile Phone				
Transportation Capacity	**9.7 km** Average Distance to Nearest Port or Airport	**2.76 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 29 of 32 Provinces (Score: 0.392)

Santo Domingo's score and ranking are due to very low Vulnerability combined with very high Coping Capacity scores. Santo Domingo ranks 28th in Vulnerability and 6th in Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Environmental Capacity	**Population Pressures**	**Health Care Infrastructure Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 8 of 32 Provinces (Score: 0.538)

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

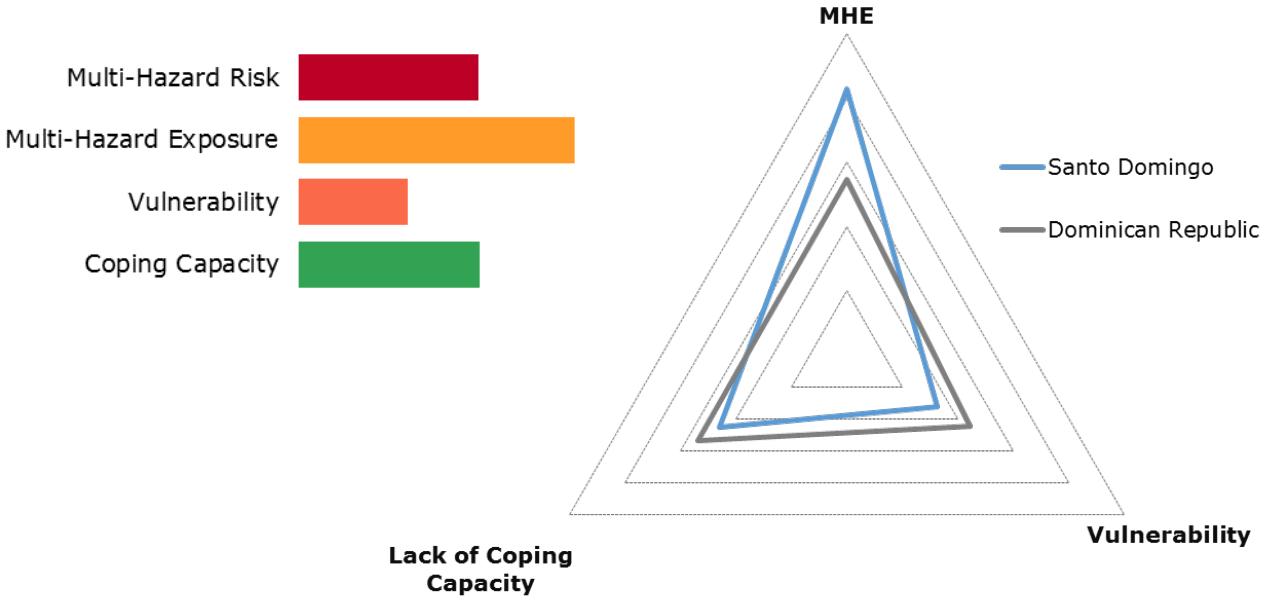


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 economic capacity
Ranked 6 of 32 provinces, high economic capacity indicates that Santo Domingo may be able to invest in additional mitigation and preparedness measures at the local and community level.

High overall infrastructure capacity
Ranked 2 of 32 provinces, well developed infrastructure – communication, health care, transportation - facilitates the exchange of information, and physical distribution of goods and services to the population.

High overall coping capacity
Ranking 6 of 32 provinces, high coping capacity indicates the province's ability, using existing skills and resources, to face and manage adverse conditions, emergencies, or disasters.

Recommendations

01

Improve environmental capacity
Invest in protected areas to reduce environmental stress and degradation.

02

Reduce population pressure
Rapid population changes are difficult to plan for, and can destabilize social, economic, and environmental systems. Analyze trends in the province to determine potential population changes and increase the update frequency of plans and SOPS to accommodate the changes.

03

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.

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Valverde

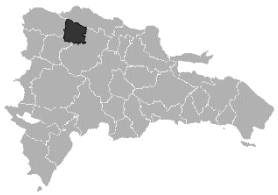
Dominican Republic National Disaster Preparedness Baseline Assessment

Province Profile

Findings: Risk and Vulnerability Assessment (RVA)

Province: Valverde

Province Capital: Santa Cruz de Mao



Area: 931 km^2

Located in the Northwest Region, Valverde is known for rice production and milling, with a variety of other crops grown in the area as well. Livestock and mining also contribute to the economy.

173,011
Population (2017)

55.1%
Population in Poverty

19.6%
Illiterate Population

18.4
Infant Mortality Rate

93.6%
Access to Improved Water

Municipality	Population
Mao	81,575
Esperanza	66,014
Laguna Salada	25,422

Multi-Hazard Risk Rank: High (10 of 32)

Lack of Resilience Rank: Medium (20 of 32)

RVA Component Scores

Table 1. Province Scores and Ranks (compared across Provinces) for each Index

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Medium		High		High		Very High	
Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)	Score	Rank (of 32)
0.536	10	0.463	20	0.682	12	0.482	12	0.556	4

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 12 of 32 Provinces (Score: 0.682)

Table 2. Estimated ambient population[2] exposed to each hazard

Cyclone
100%
190,513 People

Earthquake
100%
190,513 People

Landslide
54%
102,102 People

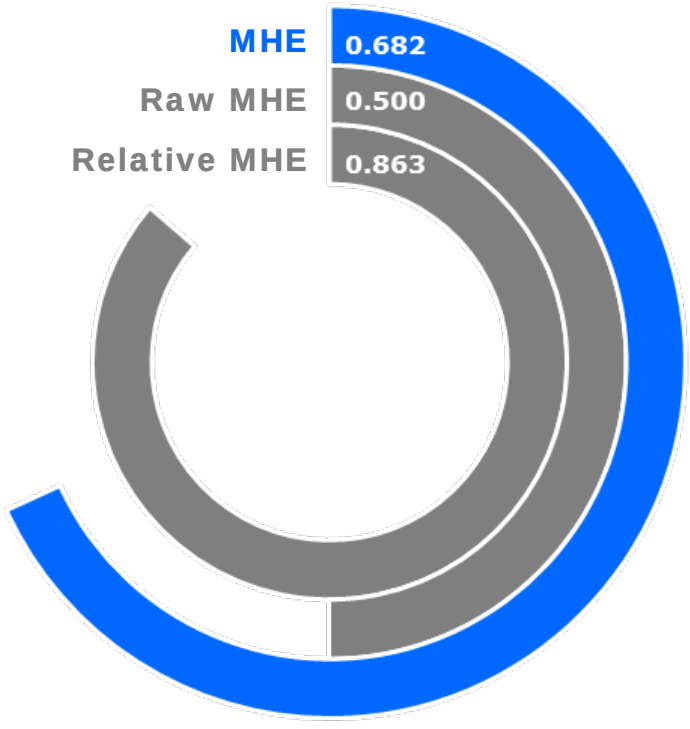
Flood
74%
140,136 People

Tsunami
0%
0 People

Case Study: Fighting HIV in Valverde

In collaboration with USAID, the province of Valverde has worked to control the HIV epidemic among its communities through the PEPFAR program. PEPFAR "seeks to increase the availability of testing, improve linkages and retention of persons living with HIV into care and treatment services, achieve viral suppression, and reduce the number of newly HIV-infected individuals." With a population at high risk of HIV infection, Valverde seeks to strengthen its capacity to manage this significant health risk by increasing community awareness and resilience.

"AIDS-Free Generation" – USAID, 1 August 2017



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

[2] **Ambient Population**: 24-hour average estimate of the population in each province. Ambient population typically differs from census population.

Vulnerability (V)

Vulnerability[3] Rank: 12 of 32 Provinces (Score: 0.482) Vulnerability in Valverde is influenced by **Gender Inequality, Environmental Stress,** and **Vulnerable Health Status**. The bar chart on the right indicates the socioeconomic themes contributing to the Province's overall Vulnerability score.

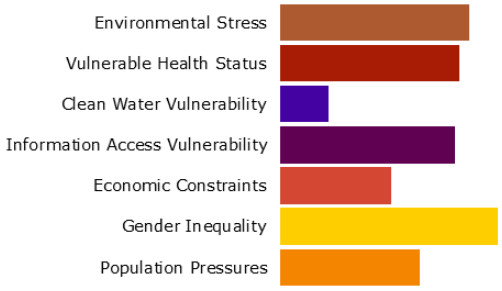


Table 3. Component Scores for each Vulnerability Sub-component

Environmental Stress	**81.4%** Province Susceptible to Drought	**0.2%** Average Annual Forest Change					
Vulnerable Health Status	**18.4** Infant Mortality Rate	**150.6** Maternal Mortality Rate	**10.7** Chronic Malnutrition	**10.5%** Population Disabled			
Clean Water Vulnerability	**6.4%** Households without Access to Improved Water	**6.3%** Households without Access to Flush Toilets					
Information Access Vulnerability	**19.6%** Illiteracy	**80.4%** Primary School Enrollment	**92.9%** Households without Internet	**27.6%** Households without TV	**53.5%** Households without Radio	**6.0** Average years of Schooling
Economic Constraints	**55.0** Economic Dependency Ratio	**55.1%** Population in Poverty	**34.2%** CEP Beneficiaries			
Gender Inequality	**37.7%** Female Seats in Government	**1.2** Female to Male Years of Schooling	**0.52** Female to Male Labor Ratio			
Population Pressures	**0.82%** Average Annual Population Change	**1.6%** 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 Capacity[4] Rank: 4 of 32 Provinces (Score: 0.556) The thematic areas with the weakest relative scores are **Environmental Capacity** and **Infrastructure (Health Care)**. The bar chart on the right indicates the socioeconomic themes contributing to the province's overall Coping Capacity score.

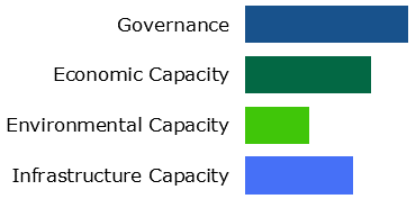


Table 4. Component Scores for each Coping Capacity Sub-component

Economic Capacity	**0.96** Debt to Service Ratio	**94.4%** Employment Rate (Male)	**RD$ 19,937** Average Annual Income per Capita			
Governance	**74.9%** Registered Voter Participation (2016 Election)	**14.2** Homicide Rate per 100k persons	**84.2%** Households with Garbage Collection			
Environmental Capacity	**19.4%** Protected or Reforested Land					
Infrastructure Capacity						
Health Care Capacity	**9.3** Hospital Beds per 10,000 Persons	**12.1** Nurses per 10,000 Persons	**12.9** Physicians per 10,000 Persons	**2.8 km** Average Distance to Nearest Hospital	**0.45** Vaccination Index[5]	
Communications Capacity	**15.9%** Households with Access to Fixed Phone Line	**76.7%** Households with Access to Mobile Phone				
Transportation Capacity	**43.3 km** Average Distance to Nearest Port or Airport	**1.04 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.

[5] **Vaccination Coverage Index:** Coverage of DPT (diphtheria, pertussis, and tetanus), Polio, Tuberculosis, and Measles vaccinations. Index values range from 0 to 1, with 1 indicating higher coverage.

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 20 of 32 Provinces (Score: 0.463)

Valverde's score and ranking are due to high Vulnerability combined with very high Coping Capacity scores. Valverde has the highest Vulnerability and the 7th highest Coping Capacity.

Table 5. The 3 Thematic areas with the Weakest Relative Scores

Vulnerable Health Status

Gender Inequality

Health Care Infrastructure Capacity

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 10 of 32 Provinces (Score: 0.536)

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

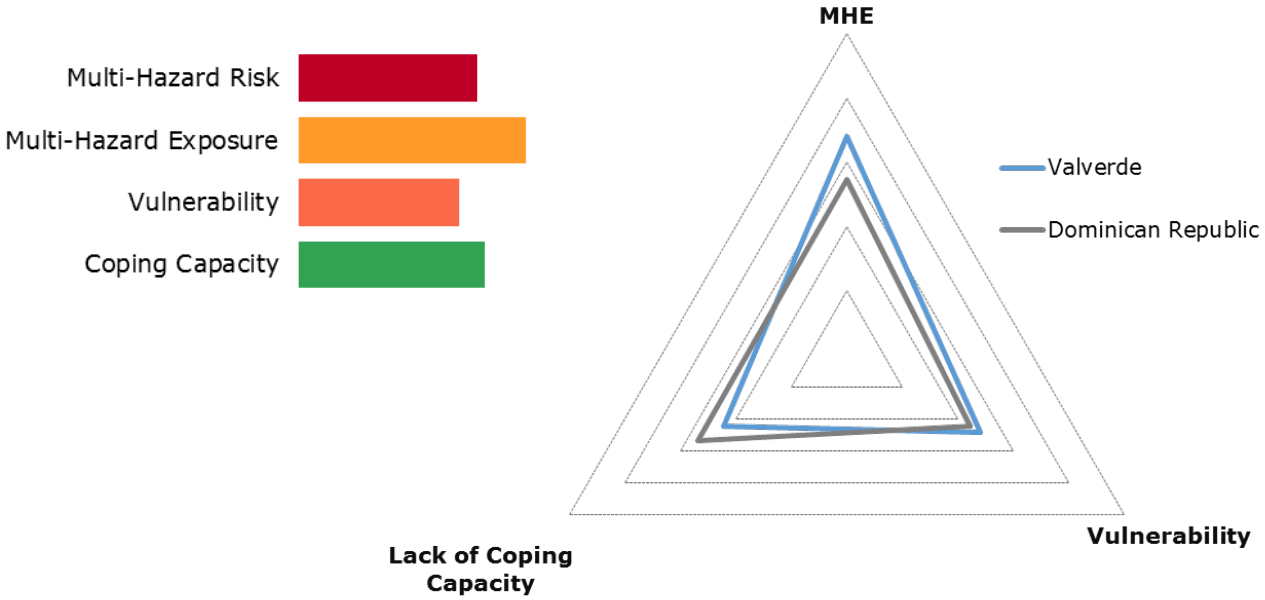


Figure 1. Province Multi-Hazard Risk Component Scores Compared to Overall Average Country Scores

[6] **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 socio-economic conditions.

[7] **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 overall governance
Ranked 2 of 32 provinces, high governance could facilitate the implementation of disaster management initiatives into provincial and municipal communities.

High overall coping capacity
Ranking 4 of 32 provinces, high coping capacity indicates the province's ability, using existing skills and resources, to face and manage adverse conditions, emergencies, or disasters.

Recommendations

01

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

02

Provide opportunities for women
Public education and awareness programs that focus on increasing the role of women in the workplace and the society will improve the resilience of women during disasters.

03

Increase health care availability
Increase clinics and medical personnel through incentivized programs and investments to increase the health resilience of the population.