EL SALVADOR

NATIONAL DISASTER PREPAREDNESS BASELINE ASSESSMENT

PACIFIC DISASTER CENTER

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- United Nations Office for the Coordination of Humanitarian Affairs
- United Nations World Food Programme
- United States Embassy
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- Universidad de El Salvador
- World Vision

Acronyms

CC	Coping Capacity
CCPC	Community Commission for Civil Protection Comisiónes Comunidades de Protección Civil
CEPREDENAC	Centro de Coordinación para la Prevención de los Desastres Naturales en América Central
CDM	Comprehensive Disaster Management
CDPC	Departmental Commission for Civil Protection Comisiónes Departmentales de Protección Civil
CMPC	Municipal Commission for Civil Protection Comisiónes Municipales de Protección Civil
CNPC	National Commission for Civil Protection Comisión Nacional de Protección Civil
COE-D	Departmental Emergency Operations Center
COE-M	Municipal Emergency Operations Center
COEN	National Emergency Committee Comité de Emergencia Nacional
COE-N	National Emergency Operations Center
COE-R	Regional Emergency Operations Center
DesInventar	Sistema de Inventario de Desastres
DG	Director General
DGPC	Dirección General de Protección Civil
DIGESTYC	Department of Statistics and Census Dirección General Estadistica y Censos de El Salvador
DRR	Disaster Risk Reduction
EOC	Emergency Operations Center
ICP	Protección Civil Incident Command Post
LMA	Environmental Law Ley de Medio Ambiente
MACOE	Management of Emergency Operations Centers Manejo de Centros de Operaciones de Emergencias
MARN	Ministry of Environment and Natural Resources Ministerio de Medio Ambiente y Recursos Naturales
MHE	Multi-Hazard Exposure
MHR	Multi-Hazard Risk
MIGOBDT	Ministry of Governance and Territorial Development Ministerio de Gobernación y Desarrollo Territorial
NDPBA	National Disaster Preparedness Baseline Assessment
NGO	Non-governmental Organization
PDC	Pacific Disaster Center
Redhum	Humanitarian Information Network for Latin America and the Caribbean Red de Información Humanitaria para América Latina y el Caribe
RVA	Risk and Vulnerability Assessment
SOP	Standard Operating Procedures
UHF	Ultra High Frequency
UNDAC	United Nations Disaster Assessment and Coordination
V	Vulnerability

Executive Summary

This report details the final results of the National Disaster Preparedness Baseline Assessment (NDPBA) in coordination with and in support of stakeholders in El Salvador. The goals of this project were to assess disaster risk at the subnational level and place it in the context of disaster risk reduction (DRR) efforts currently underway in El Salvador. The NDPBA provides a baseline for evidence-based DRR decision-making while supporting the enhancement of data holdings to establish trends in the drivers of disaster risk.

The NDPBA is a stakeholder-facilitated assessment with four key components:

1. Focused stakeholder engagements in the form of facilitated knowledge exchanges;
2. Risk and Vulnerability Assessment (RVA) at the department level;
3. Comprehensive Disaster Management (CDM) assessment at the national level; and
4. The creation and promotion of a common foundation for data gathering and sharing.

RVA Findings

The results of this analysis determined that Usulután, La Libertad, La Paz, Ahuachapán, and Cuscatlán have the highest risk. Risk is composed of Multi-Hazard Exposure (MHE), Vulnerability (V), and Coping Capacity (CC). Risk in Usulután and La Libertad is primarily driven by a high level of hazard exposure. High levels of vulnerability contribute to La Paz and Ahuachapán's risk. Risk in Cuscatlán is driven by low coping capacity.

Department	MHR		MHE		V		CC	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Usulután	0.573	1	0.757	3	0.458	10	0.495	5
La Libertad	0.565	2	0.846	1	0.450	12	0.603	2
La Paz	0.559	3	0.489	6	0.556	5	0.366	9
Ahuachapán	0.554	4	0.424	8	0.592	3	0.352	12
Cuscatlán	0.539	5	0.379	10	0.455	11	0.217	13

CDM Findings

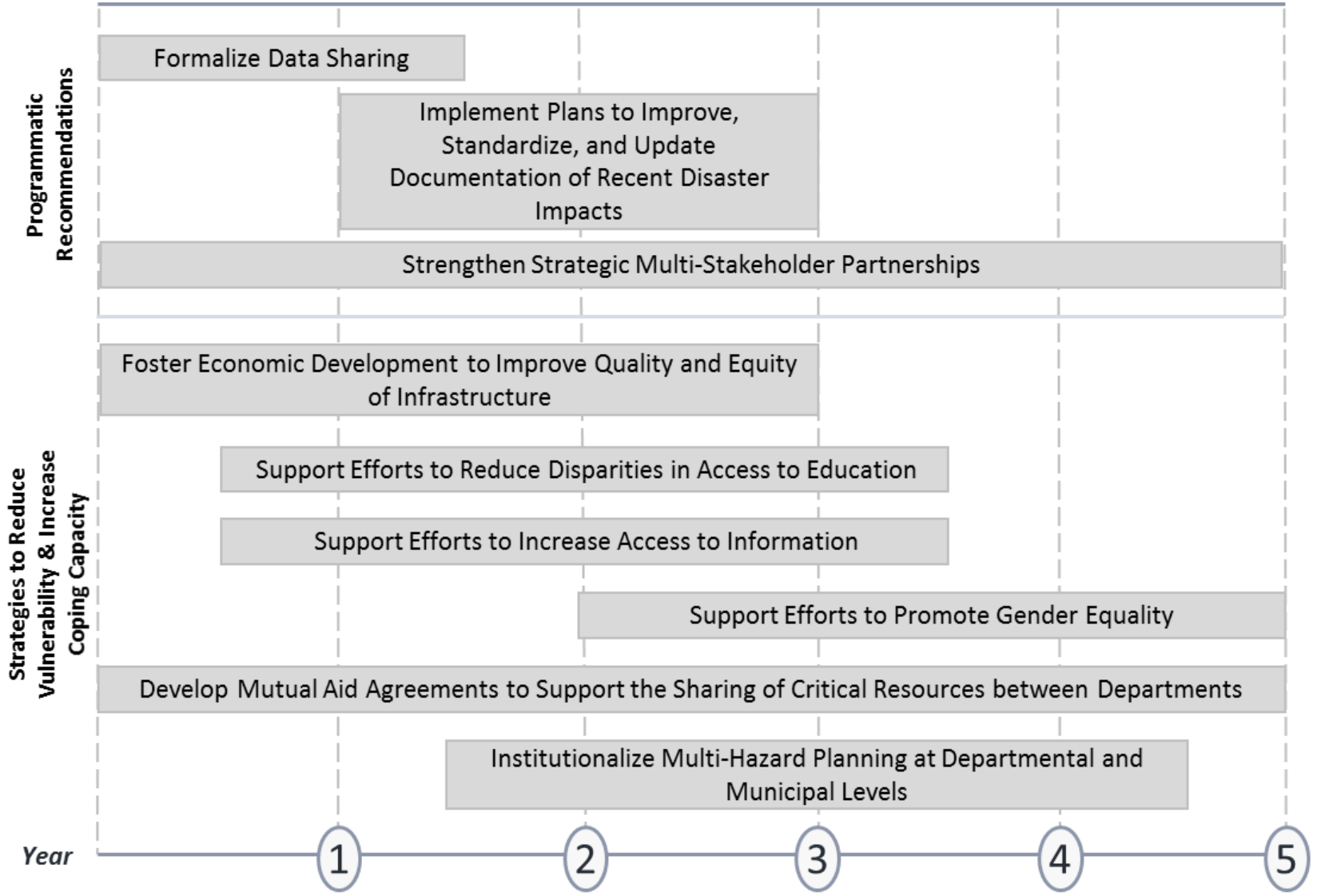
Results from the CDM analysis highlight key areas where disaster management capacity and capability could be strengthened:

1. A standardized training program for disaster managers at the national and departmental level has not been implemented. Training programs for disaster management professionals at the community level do not exist.
2. A centralized repository for disaster management training achievements does not exist, preventing the validation of credentials to ensure adequately trained staff.
3. Lack of a formalized exercise program including planning and execution guidelines at the national and subnational level. Standardized procedures, exercise evaluation, and after-action reporting does not occur.
    a. Budget constraints inhibit the formalization of an exercise program.

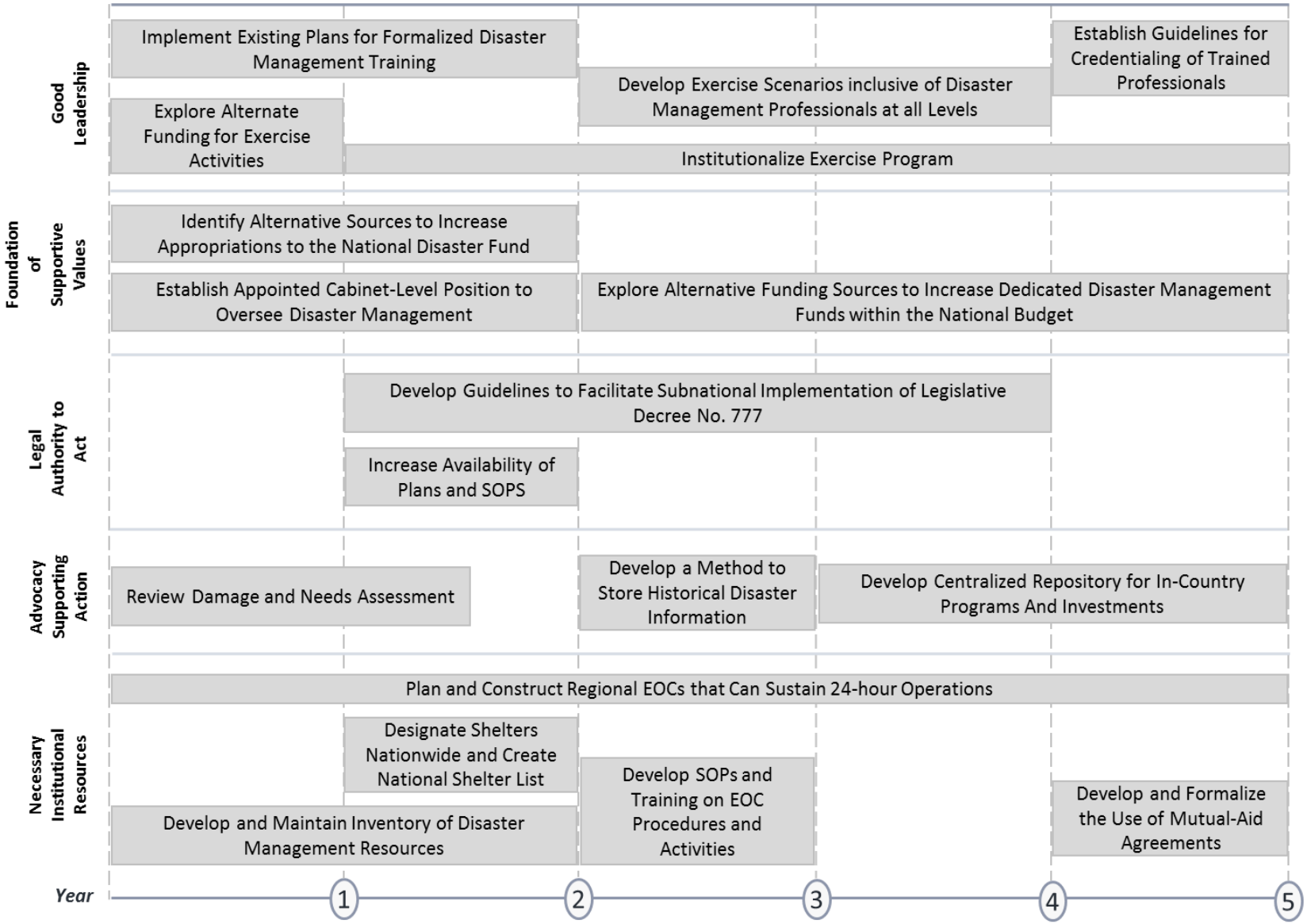
4. Exercises are not coordinated among the different administrative levels, limiting effectiveness.
5. El Salvador has a limited annual budget for disaster management activities.
6. National disaster reserve fund allocations focus primarily on response, and are not being used in a way that allows for comprehensive disaster management.
7. There is no direct cabinet-level position for disaster management in El Salvador.
8. Implementation of the legal framework for disaster management has not been fully realized at the subnational level due to a lack of clear guidelines.
9. Limited availability and integration of response plans and SOPs across all administrative levels.
10. A lack of historical information on disaster declarations inhibits planning efforts.
11. Damage and needs assessments lack accuracy and standardization, inhibiting the ability of emergency responders and disaster managers to effectively respond to the needs of the community post-event.
12. A centralized repository of NGOs and partner nations that have active disaster management or DRR projects in El Salvador does not exist, increasing potential overlap or duplication of efforts.
13. Shelter location information for nine departments does not exist or is not available.
14. No inventory of available resources for response was provided, indicating decision makers would not have access to the information.
15. Formalized mutual-aid agreements do not exist or are not available.
16. Regional EOCs lack adequate space, equipment, and supplies for sustainment during a major disaster.
    a. Regional EOCs lack robust communication requirements.
    b. Some regional EOCs do not have city water, support from fire department to fill 5000L water tanks periodically is required. Often the fire department is unable to support and the EOCs have no water.
17. EOCs do not have internal SOPs and staff have not received proper EOC training.

RVA and CDM Integration

Risk and Vulnerability Recommendations



Comprehensive Disaster Management Recommendations



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Contents

Introduction

This report describes the results of the National Disaster Preparedness Baseline Assessment (NDPBA) project conducted by the Pacific Disaster Center (PDC) in partnership with stakeholders in El Salvador.

The objective of the NDPBA project was to identify the conditions in El Salvador that influence the preparedness and capability to effectively respond to and recover from disasters. The findings from this project are designed to support evidence-based decision making to enhance disaster risk reduction (DRR). The NDPBA stakeholder-driven approach facilitated the integration of national DRR objectives into the Risk and Vulnerability and Comprehensive Disaster Management assessments.

The goal of the project was to enhance disaster resilience by:

- Summarizing disaster risk within the environmental, social, and economic context of El Salvador;
- Cataloguing and assessing disaster risk governance in order to provide actionable information that can be used to strengthen disaster management;
- Better understanding the disaster management capabilities in El Salvador to prepare for, respond to, and recover from any event;
- Analyzing multi-hazard risk to provide actionable information to guide DRR efforts to strengthen resilience; and
- Providing a forum for all vested stakeholders to share and communicate successes and challenges encountered in the understanding and management of disaster risk.

The NDPBA project provided a repeatable and measurable approach to examining key elements of DRR. The NDPBA approach consists of four distinct yet complimentary components. These components are: 1) focused stakeholder engagements in the form of facilitated knowledge exchanges; 2) risk and vulnerability assessment (RVA) at the department level; 3) a comprehensive disaster management (CDM) assessment at the national level; and 4) the creation and promotion of a common foundation for data gathering and sharing.

The NDPBA project was uniformly undertaken to support short- and long-term preparedness activities, to include:

- A detailed subnational risk and vulnerability assessment that included the following elements: multi-hazard exposure, vulnerability, coping capacity, lack of resilience, and multi-hazard risk;
- A review of national and subnational CDM capabilities to identify gaps and provide recommendations for strengthening preparedness and response;
- A proposed five-year plan to build capacity and capability; and
- Data integration and information sharing.

The data and final analysis provided in this report are integrated into the Pacific Disaster Center's (PDC) decision-support system known as DisasterAWARE™ allowing for open and free access to critical DRR data and information. Access to the data and system can be requested through ndpba@pdc.org.

Methods

This section of the report summarizes the NDPBA methodology implemented in El Salvador, to include data gathering procedures, data processing, and analysis.

Facilitated Knowledge Exchanges

Facilitated stakeholder engagements acknowledge the Guiding Principles of the Sendai Framework for Disaster Risk Reduction (DRR) and serve as a key component of the NDBPA. Over the duration of the El Salvador project, stakeholders were invited to attend three Knowledge Exchanges (*Initial, Midterm, and Final*) as well as participate in data reviews, archival research, detailed interviews, and standardized surveys. The Knowledge Exchanges provided a venue for stakeholders to present on disaster management topics of interest and highlight the important work each organization is undertaking to support DRR. Leveraging a participatory approach, a diverse group of traditional and non-traditional disaster management stakeholders were engaged. This encouraged active participation and promoted diversity among participants and partners.

In advance of the Knowledge Exchanges, in-depth archival research was conducted to identify disaster management stakeholders as well as their capacities. Once this was complete, stakeholders were invited to attend an Initial Knowledge Exchange. At the event, presentations outlined the NDPBA methodology. In-country stakeholders were invited to give presentations on disaster management topics of interest to them. Question and answer sessions identified data gaps, information availability, as well as identified other stakeholders in the disaster management community within El Salvador. Following the exchange, meetings with stakeholders were scheduled to conduct detailed interviews and share data and information.

This process was facilitated by key partners to include, Protección Civil; Ministerio de Medio Ambiente y Recursos Naturales, MARN; Dirección General de Estadistica y Censos de El Salvador, DIGESTYC; Director de Adaptación al Cambio Climático y Gestión Estratégica del Riesgo (DACGER); Red de Información Humanitaria para América Latina y el Caribe, Redhum; and national and international NGOs.

Risk and Vulnerability Assessment

The purpose of conducting a subnational baseline Risk and Vulnerability Assessment (RVA) was to characterize elements of multi-hazard risk. The subnational NDBPA RVA was adapted from PDC's established Global RVA framework to meet the specific needs of El Salvador. To capture the complex concept of risk, PDC's RVA leverages a composite index approach. Composite indices were constructed by combining data sets that represent general themes that contribute to risk (e.g., access to information, health status, or governance). The individual variables, or *indicators,* are uniform and quantifiable characteristics that reflect the overall concepts required for analysis. Appropriate subnational indicators were identified in partnership with stakeholders. The data were combined to represent the components of hazard exposure, vulnerability, and coping capacity.

The index created represents Multi-Hazard Risk (MHR) as a function of *component indices*, Multi-Hazard Exposure (MHE), Vulnerability (V), and Coping Capacity (CC).

- *Multi-Hazard Exposure* describes the population present in hazard zones that are thereby subject to potential losses.

- *Vulnerability* describes the characteristics and circumstances of a community, system, or asset that make it susceptible to the damaging effects of a hazard.
- *Coping Capacity* characterizes the ability of people, organizations, and systems, using available skills and resources, to face and manage adverse conditions, emergencies, or disasters.

The assessment considered exposure to the following hazards: flooding, landslides (mass movement), volcanic ash, low temperature, earthquakes, and tsunamis. The basic model for the Multi-Hazard Risk Index is:

$$\textit{Multi-Hazard Risk Index} = (MHE + V + (1 - CC)) / 3$$

The Lack of Resilience (LR) Index represents the combination of Vulnerability (V) and Coping Capacity (CC). This basic model for Lack of Resilience Index is:

$$\textit{Lack of Resilience Index} = (V + (1 - CC)) / 2$$

The methodological process for the NDPBA RVA is illustrated below in Figure 1.

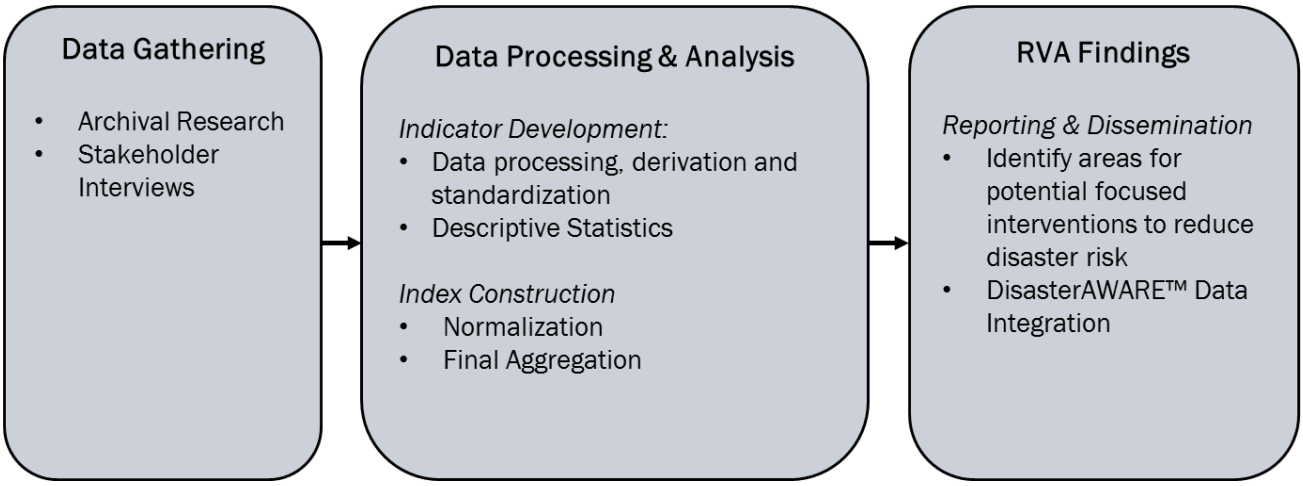

Figure 1. NDPBA Risk and Vulnerability Assessment (RVA) Methodological Process

Data Gathering

In partnership with stakeholders, a review of archival research and stakeholder interviews were conducted to identify potential data to be included in the study. Each indicator was gathered from vetted sources, and evaluated for potential use in the RVA model. Data were scrutinized to identify possible gaps, missing values, and to document any caveats regarding data quality or completeness. In certain cases, missing documentation or lack of data lineage precluded the use of datasets in the analysis. For details on the RVA datasets used in this analysis see *Appendix A: RVA Component Index Hierarchies & Thematic Rationale*.

Data Processing and Analysis

Datasets used in the analysis were standardized for use as indicators in order to make meaningful comparisons. For details on RVA index construction see *Appendix B: RVA Index Construction.*

RVA Findings

The results of the analysis helped to identify potential areas to focus limited resources in an effort to reduce disaster risk. As part of the final report, programmatic recommendations to support future RVAs and specific strategies to reduce vulnerabilities and increase coping capacities at the subnational level are provided. The analyzed data have been integrated into PDC's DisasterAWARE™.

Comprehensive Disaster Management (CDM) Assessment

Comprehensive Disaster Management (CDM) is the integrated approach of managing hazards through all phases of disaster management. Leveraging the latest academic research, the CDM analysis examines core elements of effective disaster management. The assessment is constructed to provide a systematic understanding of the challenges to operationalizing disaster management techniques in support of diverse community needs. The results of the assessment provide necessary information for policy makers to effectively direct investments in an effort to save lives and reduce losses. The CDM assessment can provide greater context to the RVA by placing the risk of each region into the larger DRR framework of El Salvador.

For the purposes of this assessment, CDM is conceptualized as the function of five components (see Figure 2).

- **Good Leadership by Professionally Trained Officials:** examines the professionalization of the disaster management field.
- **Foundation of Supportive Values for Government Action**: examining the backing, support, and sponsorship of CDM efforts.
- **Legal Authority to Act**: examines the legal framework that governs disaster management.
- **Advocacy Supporting Action**: examining stakeholder support and backing to include the general public, NGOs, and those providing assistance before, during, and after an event.
- **The Necessary Institutional Resources**: examines available resources (material and human) that are provided by the jurisdiction or through mutual-aid agreements and partnerships with neighboring jurisdictions.

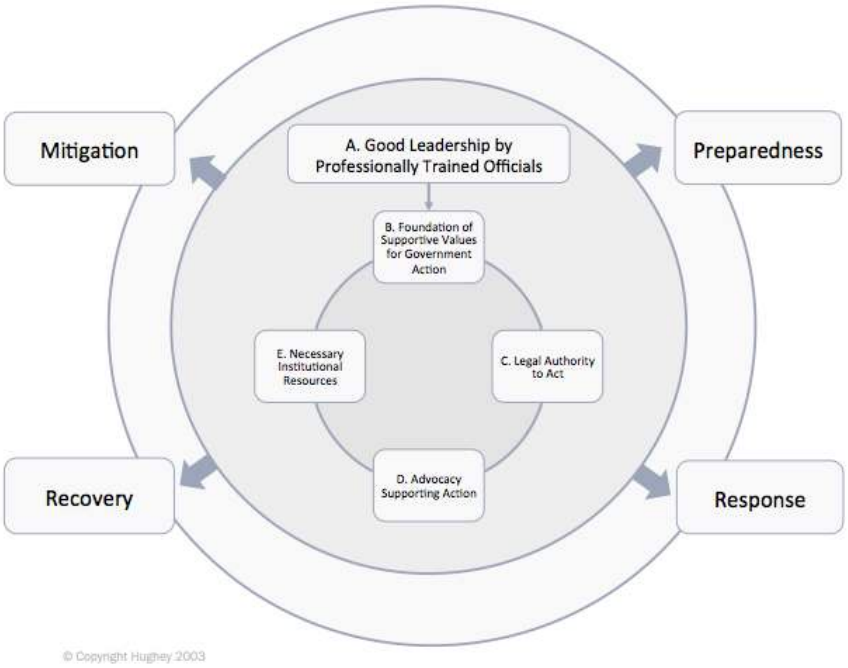

Figure 2. Comprehensive Disaster Management Model (Hughey, 2003)

The methodological process for the NDPBA CDM is illustrated below in Figure 3. The CDM data were analyzed using a mixed methods approach. The approach combines both qualitative and quantitative data and methods of analysis, allowing for a more complete assessment of the CDM theoretical framework.

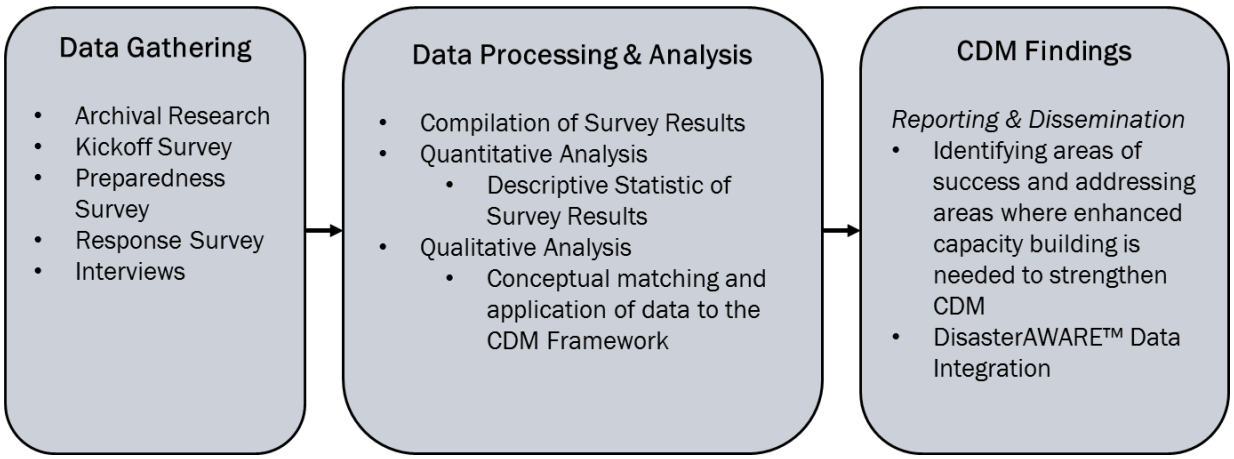

Figure 3. NDPBA Comprehensive Disaster Management (CDM) Methodological Process.

Data Gathering

Archival research, surveys, and interviews were conducted by PDC staff in partnership with stakeholders in El Salvador. Using the CDM framework as a guide, researchers sought documentation on the disaster management structure. The goal was to assess the presence of official documents outlining the components necessary to examine El Salvador's framework for disaster management. Data were compiled, sorted by CDM component (as shown in Figure 2), and appropriate information was abstracted for analysis.

Data Processing and Analysis

Surveys were administered during the Midterm Knowledge Exchange focusing on aspects of preparedness and response. Responses were compiled and prepared for analysis. Summary statistics and frequencies were generated for ranked-response questions. Open-ended questions were analyzed qualitatively to produce commonly occurring themes to guide further investigation and inform the perceived status of preparedness and response in El Salvador.

Figure 4, below, illustrates the type of data gathered and analyzed as part of the CDM analysis.

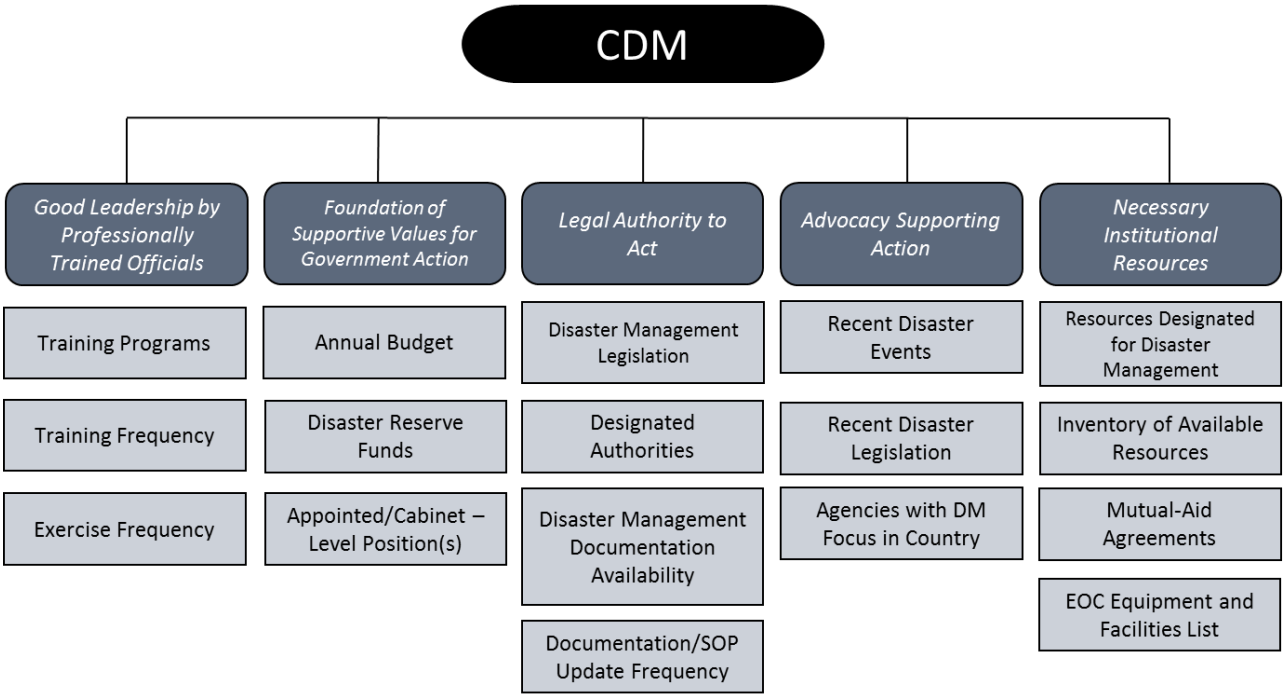

Figure 4. Datasets for CDM Analysis

CDM Findings

The results of the analysis helped to identify potential areas that may limit the full implementation of CDM. As part of this report, recommendations to support the implementation of a complete CDM are given with the goal of increasing DRR capacity in El Salvador.

Risk and Vulnerability Assessment (RVA) Findings

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Findings: Risk and Vulnerability Assessment (RVA)

The RVA results presented in this section represent the analysis of the 14 departments in El Salvador. An overview of the national results is provided, followed by a detailed review of each department.

Summary

Multi-Hazard Risk (MHR), Multi-Hazard Exposure (MHE), Vulnerability (V), and Coping Capacity (CC) scores and rank are summarized below in Table 1. A five-page detailed review of each department follows this section.

The RVA helps to:

- Identify the level of exposure of an area to multiple hazards;
- Assess the aspects of populations that make them susceptible to hazard impacts;
- Identify aspects of an area that can be improved to support coping strategies following hazard events; and
- Place resources in areas that may need additional support following disasters.

Table 1. Multi-Hazard Risk (MHR) Index Scores, Rankings, and Component indices for El Salvador

Department	MHR		MHE		V		CC	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Usulután	0.573	1	0.757	3	0.458	10	0.495	5
La Libertad	0.565	2	0.846	1	0.450	12	0.603	2
La Paz	0.559	3	0.489	6	0.556	5	0.366	9
Ahuachapán	0.554	4	0.424	8	0.592	3	0.352	12
Cuscatlán	0.539	5	0.379	10	0.455	11	0.217	13
San Miguel	0.537	6	0.649	4	0.527	6	0.566	3
Cabañas	0.531	7	0.177	13	0.616	1	0.200	14
Sonsonate	0.531	8	0.556	5	0.526	7	0.491	6
La Unión	0.501	9	0.399	9	0.582	4	0.478	7
Santa Ana	0.465	10	0.469	7	0.435	13	0.511	4
San Vicente	0.463	11	0.266	11	0.486	8	0.363	10
San Salvador	0.439	12	0.761	2	0.237	14	0.681	1
Chalatenango	0.417	13	0.188	12	0.458	9	0.395	8
Morazán	0.413	14	0.000	14	0.594	2	0.355	11

Multi-Hazard Exposure

Multi-Hazard Exposure describes the population present in hazard zones that are thereby subject to potential losses. For this assessment, exposure considers six hazard types: tropical cyclone winds (Categories 1-5), tsunami inundation, earthquakes (areas of historical earthquake intensity MMI VII and above), flood susceptibility (moderate, high, and very high), landslide susceptibility (high and very high), and volcanic ash (for the San Miguel and Santa Ana, and San Salvador volcanoes).

The Multi-Hazard Exposure Index is a function of both raw and relative population exposure. Raw population exposure provides an indication of how many people are exposed, which can assist in planning and provide an idea of the raw scale of potential response activities such as evacuation or sheltering. In contrast, relative population exposure is expressed as a proportion of base population. This provides an indication of how important a hazard is within a region, helping to facilitate prioritization in the decision-making process. Relative exposure helps highlight the relevance of hazards within regions that have relatively small populations.

Examining hazard exposure data for each hazard type provides a cross-section that can be used to identify the specific hazards contributing to exposure in each department. Understanding exposure to specific hazards is valuable for determining appropriate mitigation actions. Differences in the type of hazard inherently dictate which mitigation options could be most effective in reducing losses and casualties in El Salvador. For example, while levees my help to control flood water in La Paz, they would be ineffective in preventing losses from Volcanic Ash in San Miguel. This assessment demonstrates the importance of understanding hazard exposure not only in terms of the total number of people exposed, but also the hazards that threaten them.

Note that due to El Salvador's geographic location and size, 100% of the population is potentially exposed to tropical cyclone winds. This was considered during calculation of the RVA. However, to avoid redundancy, they are not displayed in any of the Multi-Hazard Exposure graphics in the following sections.

Vulnerability

Vulnerability refers to the characteristics and circumstances of a community, system, or asset that make it susceptible to the damaging effects of a hazard. Areas with higher Vulnerability Index scores are more susceptible to harm from hazards, often lacking the resources to adequately prepare for, respond to, and recover from disasters. Recognizing the sensitivities of vulnerable locales, the Vulnerability Index can be used for decision support in comparing and prioritizing disaster mitigation projects and allocating aid following hazard events.

An examination of the Vulnerability Index sub-components reveals the drivers of vulnerability within the departments. In El Salvador, Cabañas (ranked 1 of 14) not only represents the highest overall vulnerability, but also ranks highest in economic constraints and environmental stress, and exhibits high clean water access vulnerability, gender inequality, and information access vulnerability. Morazán (ranked 2 of 14) and Ahuachapán (ranked 3 of 14) show similar distributions, strongly influenced by information access vulnerability, gender inequality, and population pressures.

In context, these sensitivities translate to increased susceptibility to hazard impacts as a result of limited economic resources, inability to access and comprehend vital emergency information, compromised water and sanitation services, large shifts in population, and gender-based differences in access to resources, services, and opportunities. While many of these factors are inextricably linked, vulnerability is multifaceted and a single intervention may not acknowledge all components. In the case of Cabañas, emergency managers and policymakers may take action to target humanitarian aid and promote economic growth to reduce vulnerability. In Morazán and Ahuachapán education programs might be targeted to improve literacy and school enrollment, improving access to information and reducing vulnerability. Analysis of the vulnerability sub-components is important for understanding where sensitive

populations are located and how to design interventions to reduce their susceptibility to negative hazard impacts.

Coping Capacity

Coping capacity describes the ability of people, organizations, and systems, using available skills and resources, to face and manage adverse conditions, emergencies, or disasters. The Coping Capacity Index represent factors that influence the ability of a department to effectively absorb negative impacts associated with a hazard event. Where departments show high Coping Capacity, this indicates a combination of strong governance, economic capacity at the household level, environmental capacity and availability of infrastructure that supports the population, both in normal conditions and during an emergency. Low Coping Capacity Index scores represent limitations in a departments' ability to absorb, manage, and recover from hazard events. This information can be used to help decision makers focus on areas of lower capacity and identify areas for focused improvement.

The Coping Capacity Index was calculated using a *weighted average* of the four sub-components. This was done to address differences in data quality and availability. As a result, Governance was weighted at 30%, Infrastructure at 30%, Economic Capacity at 30% and Environmental Capacity at 10%, thereby placing less emphasis on the environmental dimension of coping capacity.

By analyzing the different sub-components of the Coping Capacity Index it becomes possible to identify distinct factors that drive a departments' ability to cope with hazards. For example, low Coping Capacity in Cabañas is attributable to very low scores across all of the sub-components (Governance, Infrastructure, Economic Capacity, and Environmental Capacity) ranking in the bottom five for each. In relative terms, Cabañas has less infrastructure and low economic and environmental capacity when compared to the other departments. Cuscatlán similarly exhibits low scores in each of the sub-components. Cuscatlán ranks lowest in the country in governance, and has less healthcare infrastructure. Ahuachapán ranks lowest in the country in economic strength and very low in infrastructure, while having higher scores in strength of governance and environmental strength.

Low economic capacity across the three departments (Cabañas, Cuscatlán, and Ahuachapán) suggests that households in these areas may not have the financial reserves to absorb or manage hazard losses. This can lead to greater dependence on external aid during response and recovery. Lower Infrastructure scores can indicate a reduction in the exchange of information, and reduced access to vital resources and health services. Weaker governance can lead to a range of problems in the management of hazards including reduced public safety and ineffective disaster planning. Example interventions could include fostering economic production and small business growth to raise incomes, and national campaigns to improve equity of infrastructure. Additional support for local police, firefighters, and emergency medical resources may improve public safety, both in normal conditions and during an emergency. Finally, adopting comprehensive plans for each phase of disaster management, and engaging the public to both understand and inform these plans could improve governance in the context of this assessment.

Examining the pattern of coping capacity across the country gives disaster managers and decision makers the opportunity to identify areas that may benefit from mutual-aid agreements. For example, the departments of San Salvador (ranked 1 of 14) and Cuscatlán (ranked 13 of 14) share a border in central El Salvador but exhibit scores on opposite sides of the Coping Capacity Index. In the context of a disaster, resource sharing could be beneficial to Cuscatlán, taking the form of mutual aid. San Salvador may provide

assistance to neighboring departments in disaster response and recovery. In this way, Cuscatlán could benefit from San Salvador's increased coping capacity despite not having the resources within its own borders.

Lack of Resilience

Lack of Resilience combines Vulnerability and Coping Capacity to represent the combination of susceptibility to impact and the relative inability to absorb, respond to, and recover from negative impacts that occur over the short term. Vulnerability and Coping Capacity are composed of closely related indicators. Because Vulnerability and Coping Capacity are measured independent of the hazard, disaster managers can overlay the Lack of Resilience Index with real-time hazard data to estimate risk on a per-event basis as new threats occur.

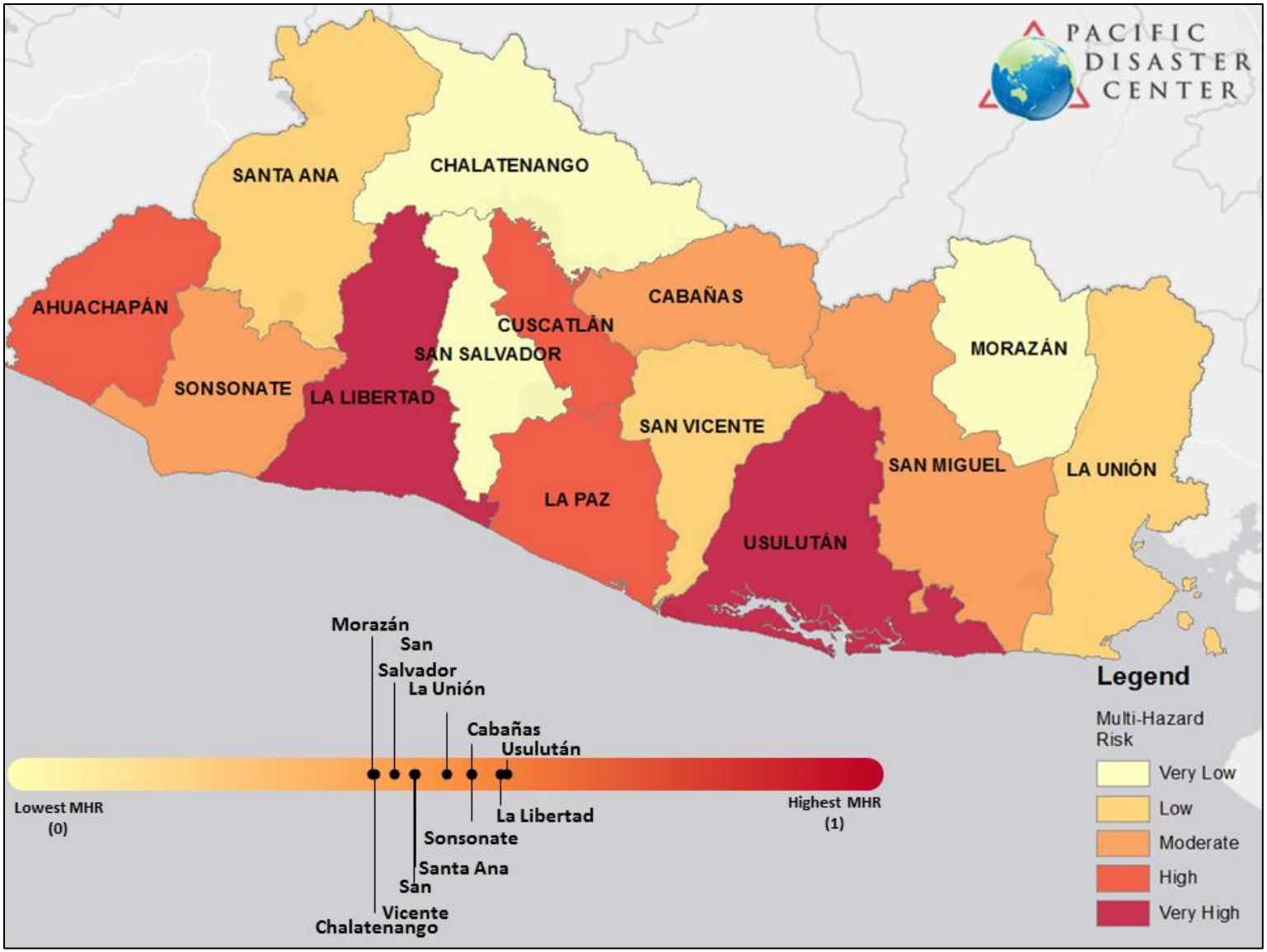


Figure 5. Distribution of Multi-Hazard Risk Index scores across departments and relative ranking of each department by MHR score.

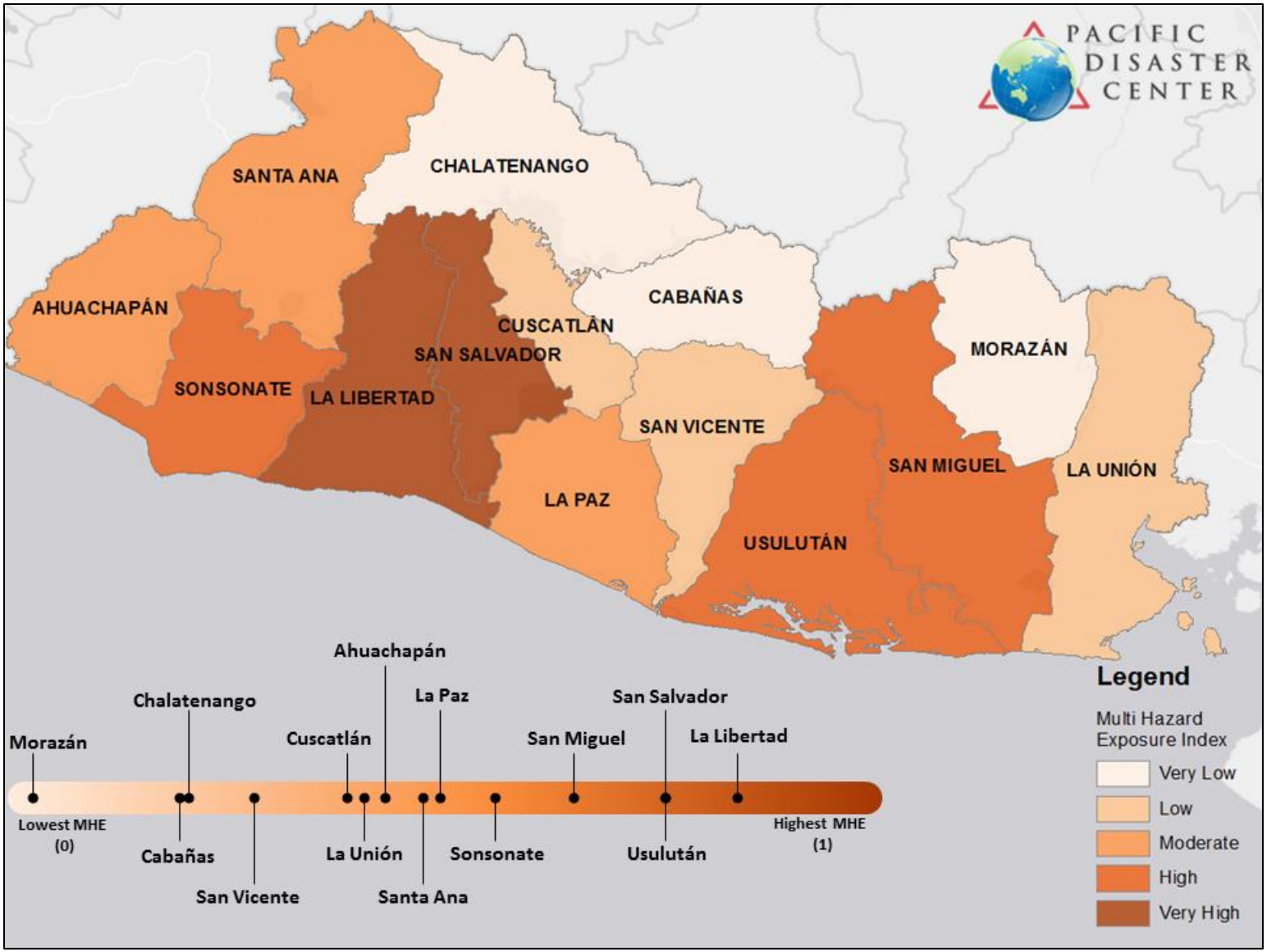


Figure 6 Distribution of Multi-Hazard index scores across departments with relative ranking of departments by Multi-Hazard Exposure score.

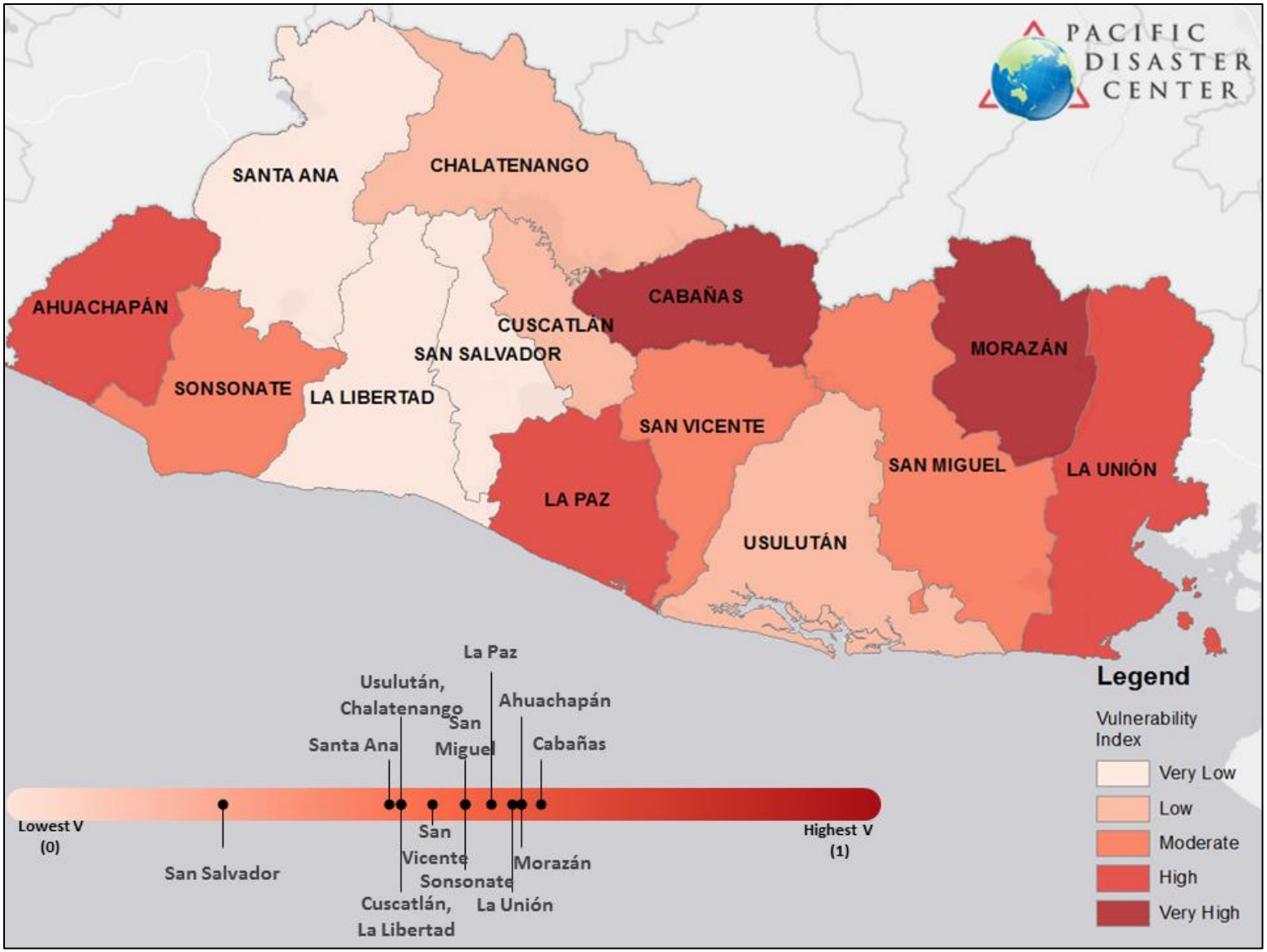


Figure 7. Distribution of Vulnerability Index scores across departments and relative ranking of departments by Vulnerability score.

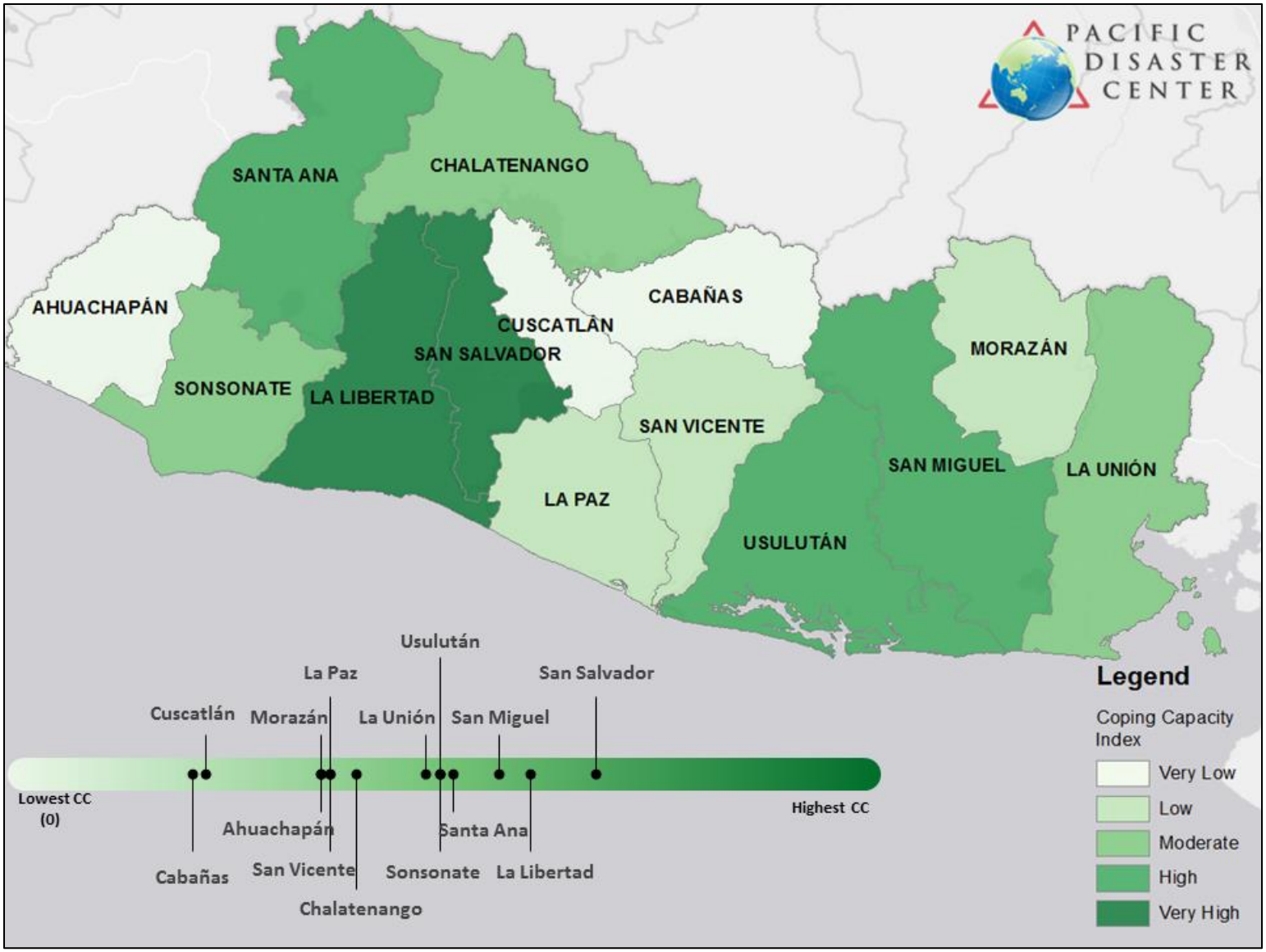


Figure 8. Distribution of Coping Capacity Index scores and relative ranking of each department by Coping Capacity score.

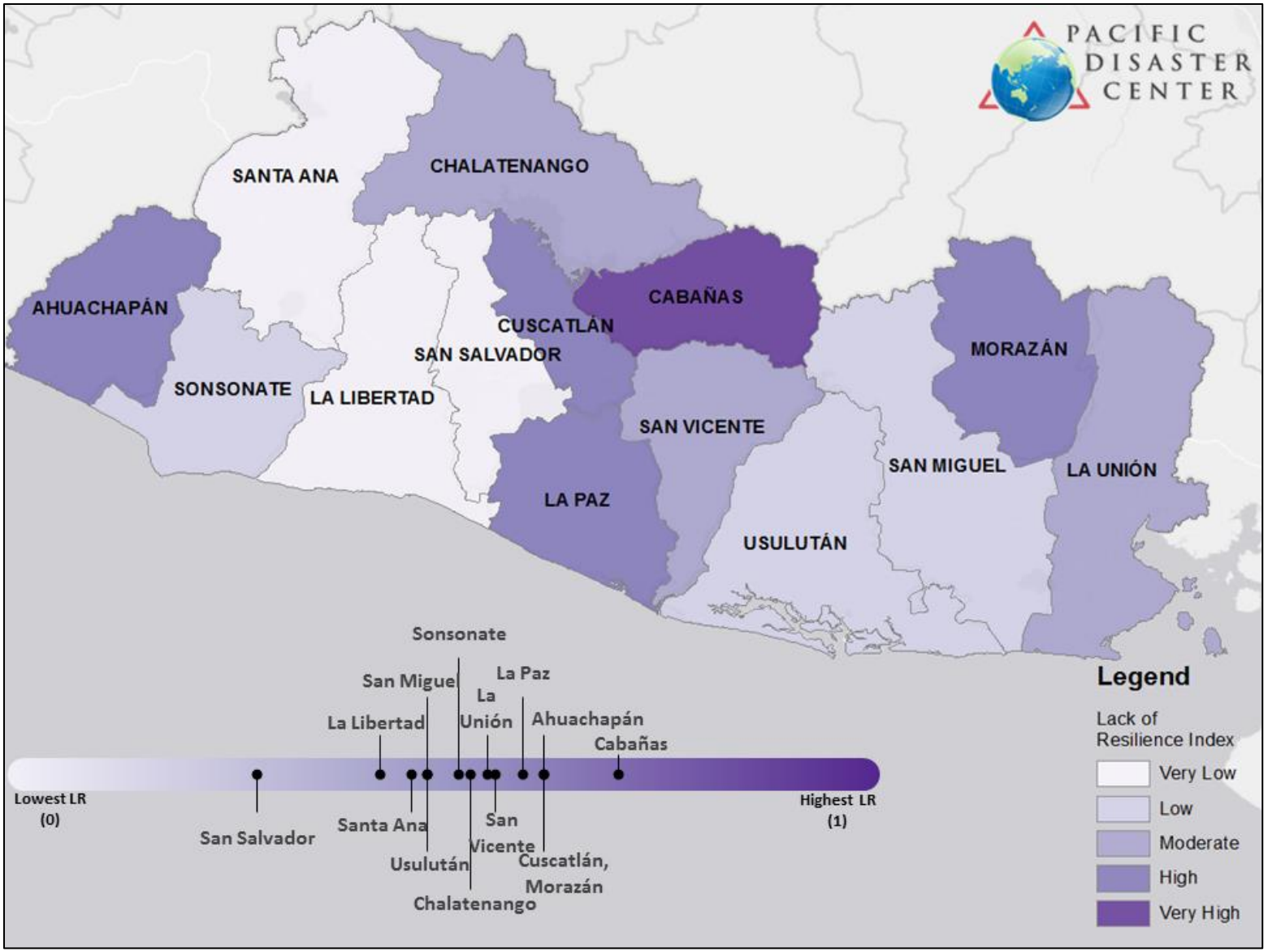
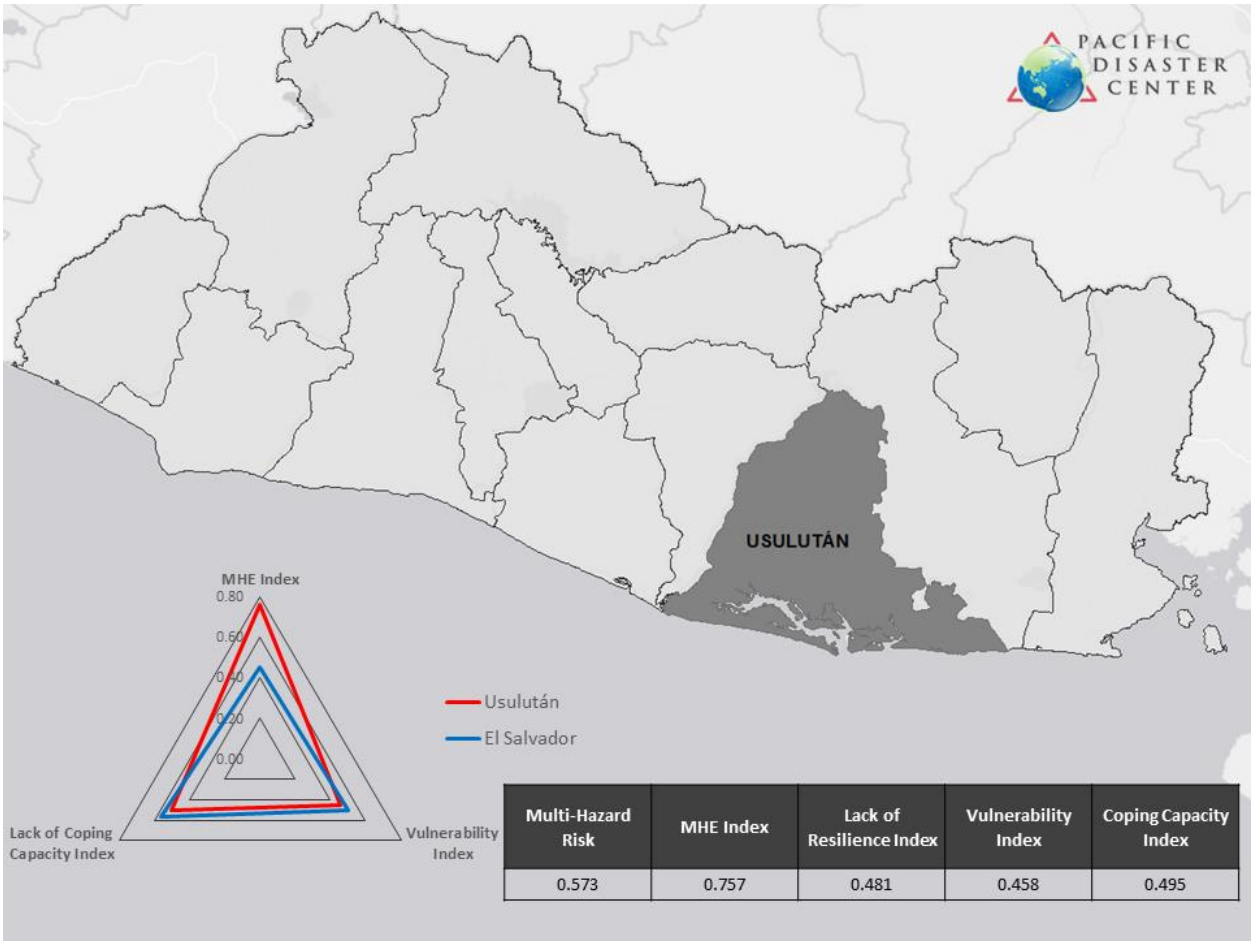


Figure 9. Distribution of Lack of Resilience Index scores across departments and relative ranking of each department by Lack of Resilience score.

Usulután: Risk

Usulután ranks **1st** of **14** on the Multi-Hazard Risk Index with a score of **0.573**. Usulután's score and ranking are due to high Multi-Hazard Exposure combined with moderate Coping Capacity and Vulnerability scores. Usulután has the 3rd highest Multi-Hazard Exposure in the country, the 10th highest Vulnerability and, the 5th highest Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.573	0.757	0.481	0.458	0.495

Usulután: Lack of Resilience

Usulután ranks **10th** of **14** on **Lack of Resilience Index** with a score of **0.481**. Usulután's score and ranking are due to moderate coping capacity combined with low vulnerability scores. Usulután has the 10th highest Vulnerability and, the 5th highest Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Usulután are: **Governance**, **Economic Capacity**, and **Economic Constraints.**

Table 2. Lack of Resilience Index and Component scores for Usulután

Index	Usulután	
	Score	**Rank**
Lack of Resilience	0.481	10
Components		
Vulnerability	0.458	10
Coping Capacity	0.495	5

Usulután: Coping Capacity

Usulután's coping capacity is **5th** out of **14** with a score of **0.495**. The thematic areas with the weakest relative scores are **Governance** and **Economic Capacity**. These two thematic areas appear to constrain coping capacity within this department.

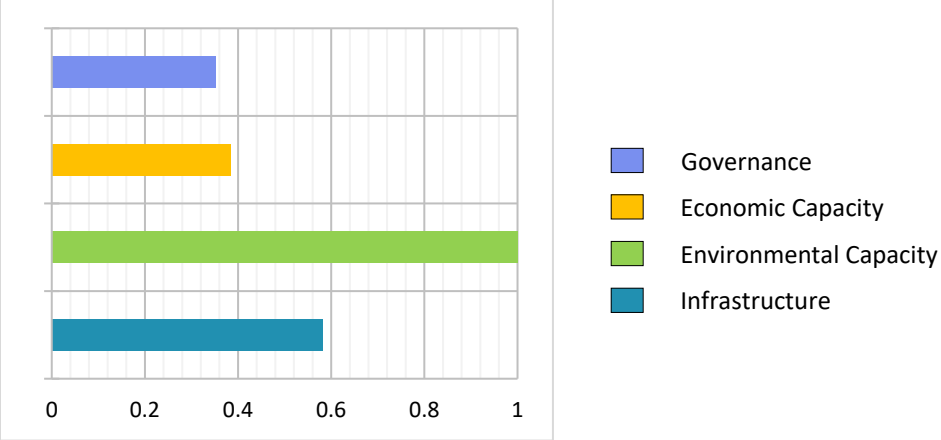


Figure 10. Coping Capacity sub-components for Usulután

Table 3 Coping Capacity Index, sub-component and sub-index scores for Usulután

Index	Usulután	
	Score	Rank
Coping Capacity	0.495	5
Sub-components		
Governance	0.352	10
Economic Capacity	0.385	7
Environmental Capacity	1.000	1
Infrastructure	0.581	4
Infrastructure Sub-indices		
Health Care	0.270	6
Transportation	0.903	2
Communications	0.570	4

Usulután: Vulnerability

Usulután ranks **10th** out of **14** on the Vulnerability Index with a score of **0.458**. Vulnerability in Usulután is strongly influenced by **Economic Constraints**, **Vulnerable Health Status**, and **Information Access Vulnerability** sub-component scores.

Table 4. Vulnerability Index and sub-component index scores for Usulután

Index	Usulután	
	Score	Rank
Vulnerability	0.458	10
Sub-Components		
Economic Constraints	0.602	4
Info Access Vulnerability	0.559	6
Vulnerable Health Status	0.536	6
Clean Water Vulnerability	0.484	7
Population Pressures	0.312	10
Environmental Stress	0.298	13
Gender Inequality	0.415	9

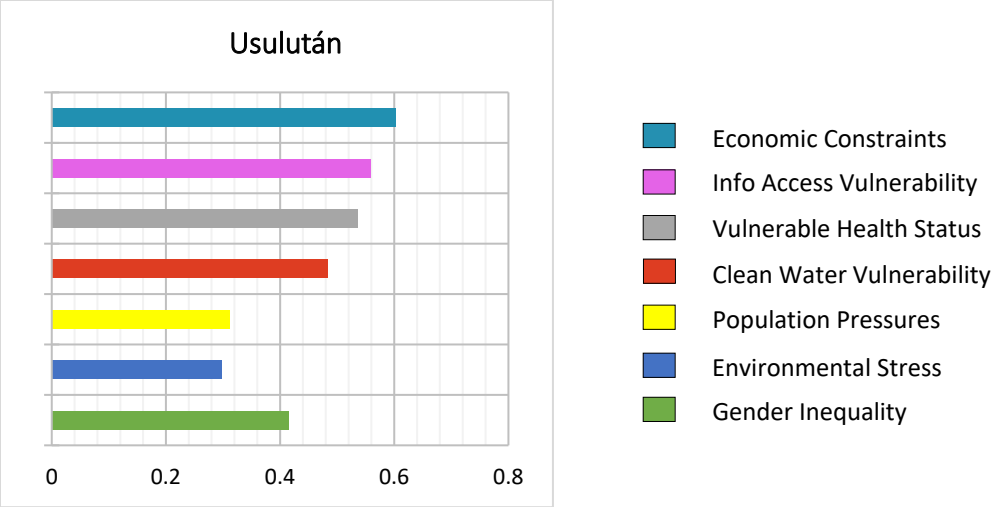


Figure 11. Vulnerability sub-components for Usulután

Usulután: Multi-Hazard Exposure

Usulután ranks **3rd** out of **14** on the Multi-Hazard Exposure index with a score of **0.757**. A large proportion of the population is exposed to **seismic activity**, **landslides** and **volcanic ash**. While Usulután is also exposed to tsunami, this hazard affects a smaller proportion of the population.

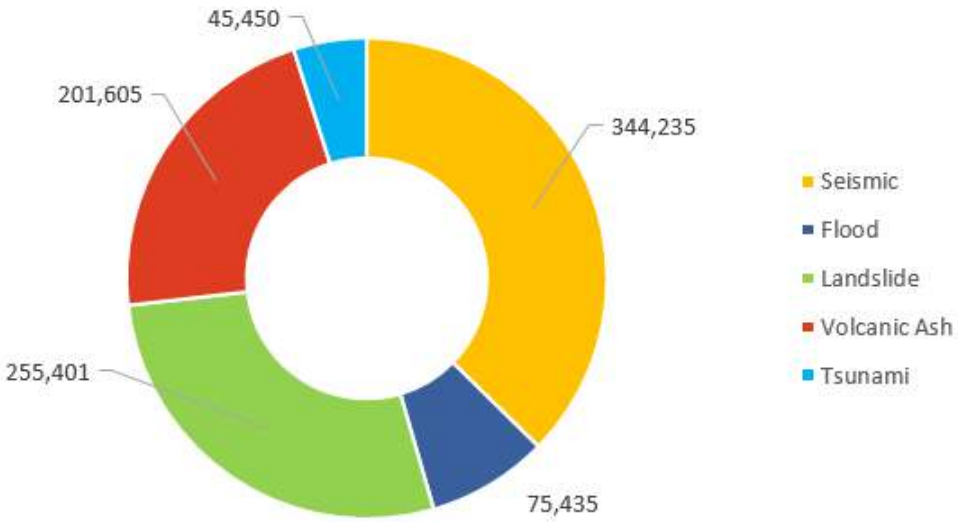


Figure 12 Raw population exposure by hazard type for Usulután

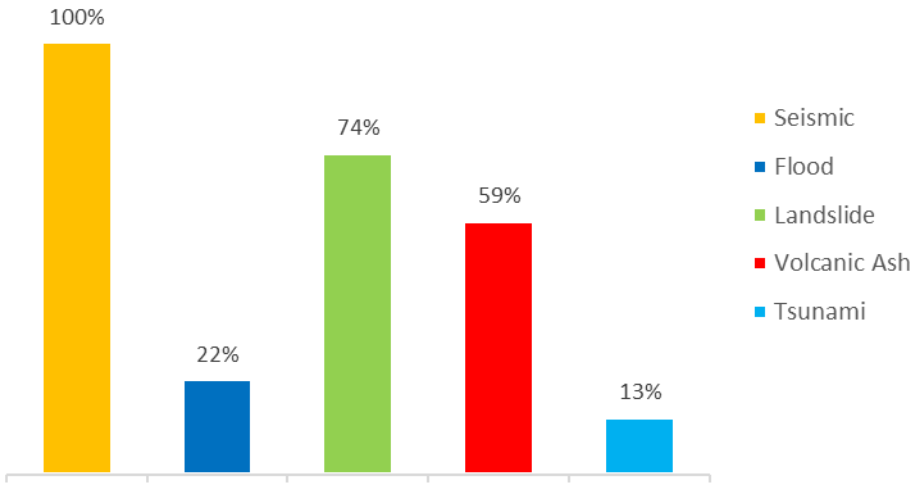


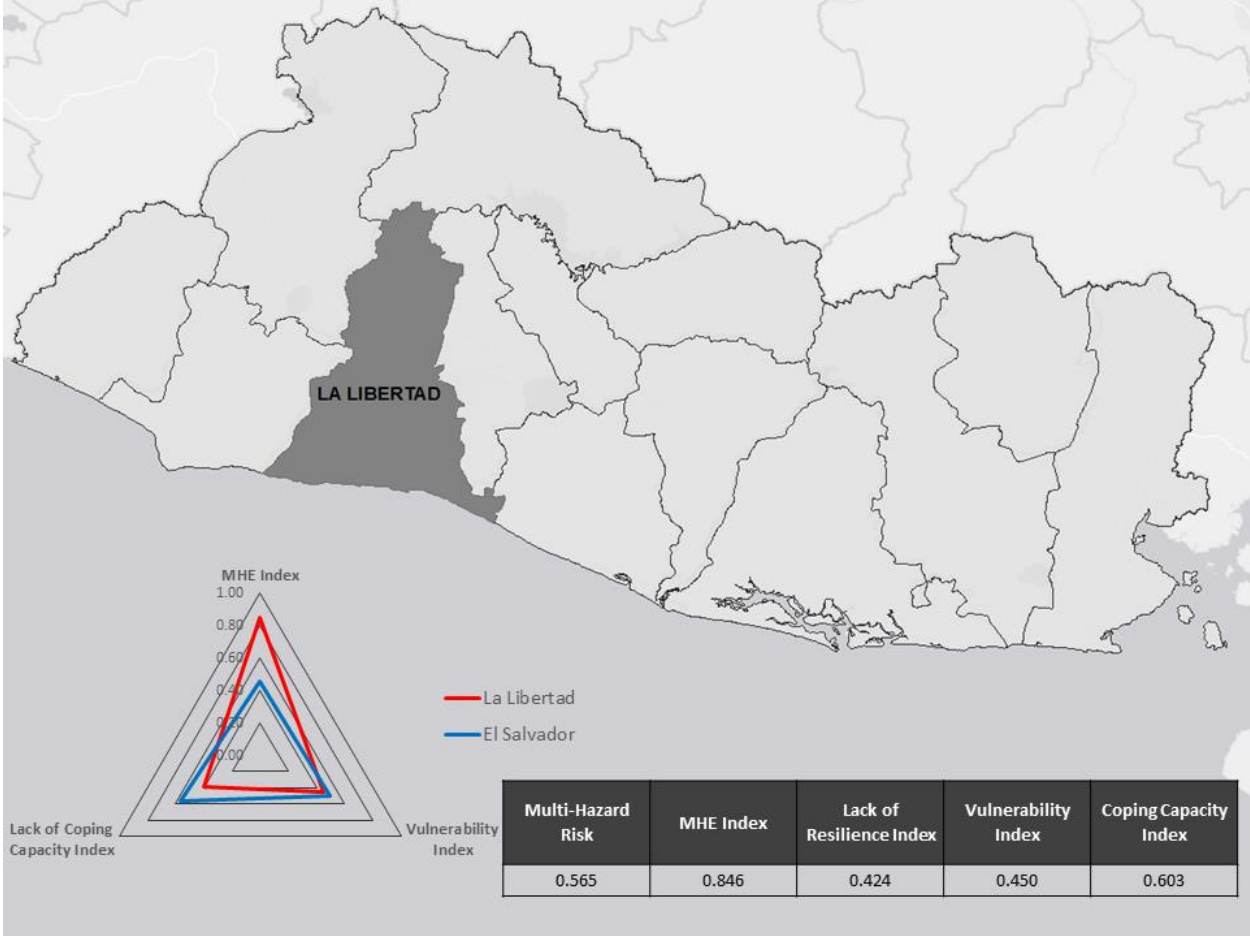
Figure 13. Percent population exposure to hazard type for Usulután

Table 5. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Usulután

Index	Usulután	
	Score	**Rank**
Multi-Hazard Exposure	0.757	3
Sub-Components		
Raw Exposure	0.514	6
Relative Exposure	1.000	1

La Libertad: Risk

La Libertad ranks **2nd** of **14** on the Multi-Hazard Risk Index with a score of **0.565**. La Libertad's score and ranking are driven primarily by very high Multi-Hazard Exposure. La Libertad has the highest Multi-Hazard Exposure in the country, the 12th highest Vulnerability and, the 2nd highest Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.565	0.846	0.424	0.450	0.603

La Libertad: Lack of Resilience

La Libertad ranks **13th** of **14** on the Lack of Resilience Index with a score of **0.424**. La Libertad's score and ranking are due to very low Vulnerability combined with very high Coping Capacity. La Libertad has the **12th** highest Vulnerability and the **2nd** highest Coping Capacity.

While La Libertad exhibits minimal Lack of Resilience overall, two thematic areas with weak relative scores for the department of La Libertad are: **Population Pressures, Gonvernance** and **Health Care Capacity.**

Table 6: Lack of Resilience Index and Component scores for La Libertad

Index	La Libertad	
	Score	**Rank**
Lack of Resilience	0.424	13
Components		
Vulnerability	0.450	12
Coping Capacity	0.603	2

La Libertad: Coping Capacity

La Libertad's Coping Capacity is **2nd** out of **14** with a score of **0.603**. The thematic areas with the weakest relative scores are **Environmental Capacity, Health Care Capacity** and **Governance**. In the Coping Capacity Index, Environmental Capacity is weighted lower than Governance. Therefore, it's, relative contribution is less than that of Governance. These two thematic areas appear to constrain Coping Capacity within this department.

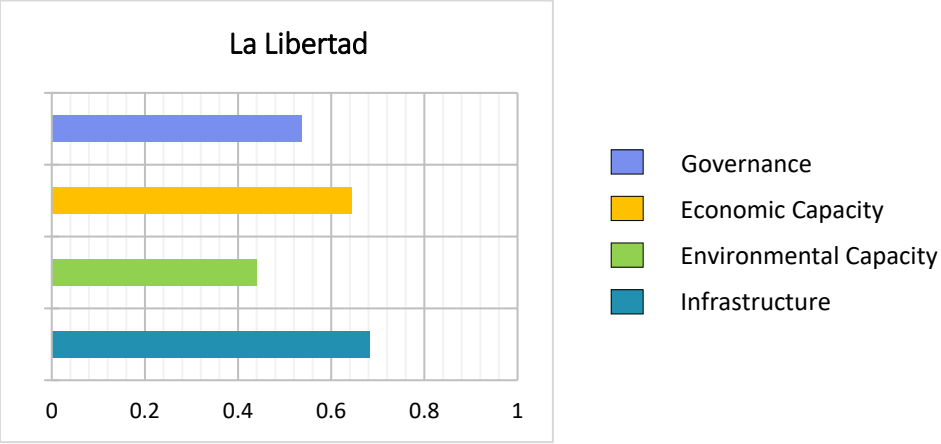


Figure 14: Coping Capacity sub-components for La Libertad

Table 7: Coping Capacity Index, sub-component and sub-index scores for La Libertad

Index	La Libertad	
	Score	Rank
Coping Capacity	0.603	2
Sub-components		
Governance	0.536	7
Economic Capacity	0.645	2
Environmental Capacity	0.441	7
Infrastructure	0.682	2
Infrastructure Sub-indices		
Health Care	0.089	10
Transportation	0.957	1
Communications	1.000	1

La Libertad: Vulnerability

La Libertad ranks **12th** out of **14** on the Vulnerability Index with a score of **0.450**. Though La Libertad exhibits relatively low vulnerability overall, the index is influenced by a high **Population Pressures** sub-component score.Table 8: Vulnerability Index and sub-component index scores for La Libertad

Index	La Libertad	
	Score	Rank
Vulnerability	0.450	12
Sub-Components		
Economic Constraints	0.474	10
Info Access Vulnerability	0.371	13
Vulnerable Health Status	0.318	12
Clean Water Vulnerability	0.184	13
Population Pressures	1.000	1
Environmental Stress	0.357	12
Gender Inequality	0.450	8

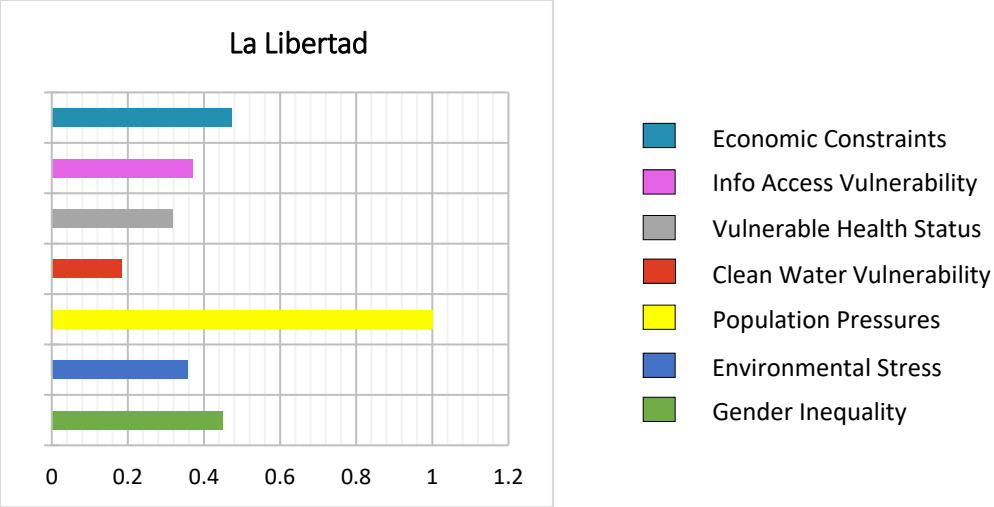


Figure 15: Vulnerability sub-components for La Libertad

La Libertad: Multi-Hazard Exposure

La Libertad ranks **1st** out of **14** on the Multi-Hazard Exposure index with a score of **0.846**. Both a large number of people and a significant proportion of the population are exposed to **seismic activity**, **landslides**, **volcanic ash,** and **flood**. While La Libertad is also exposed to tsunami, this hazard affects a smaller proportion of the population.

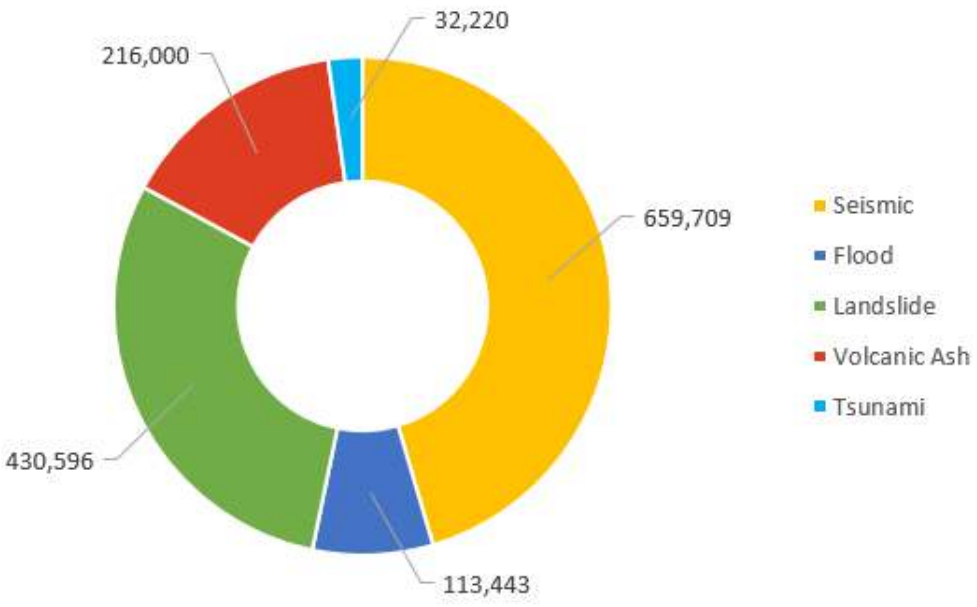


Figure 16: Raw population exposure by hazard type for La Libertad

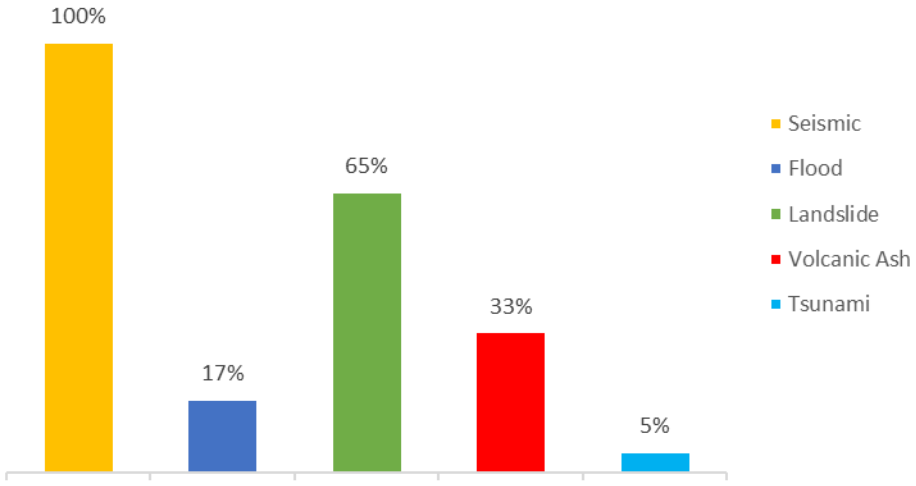
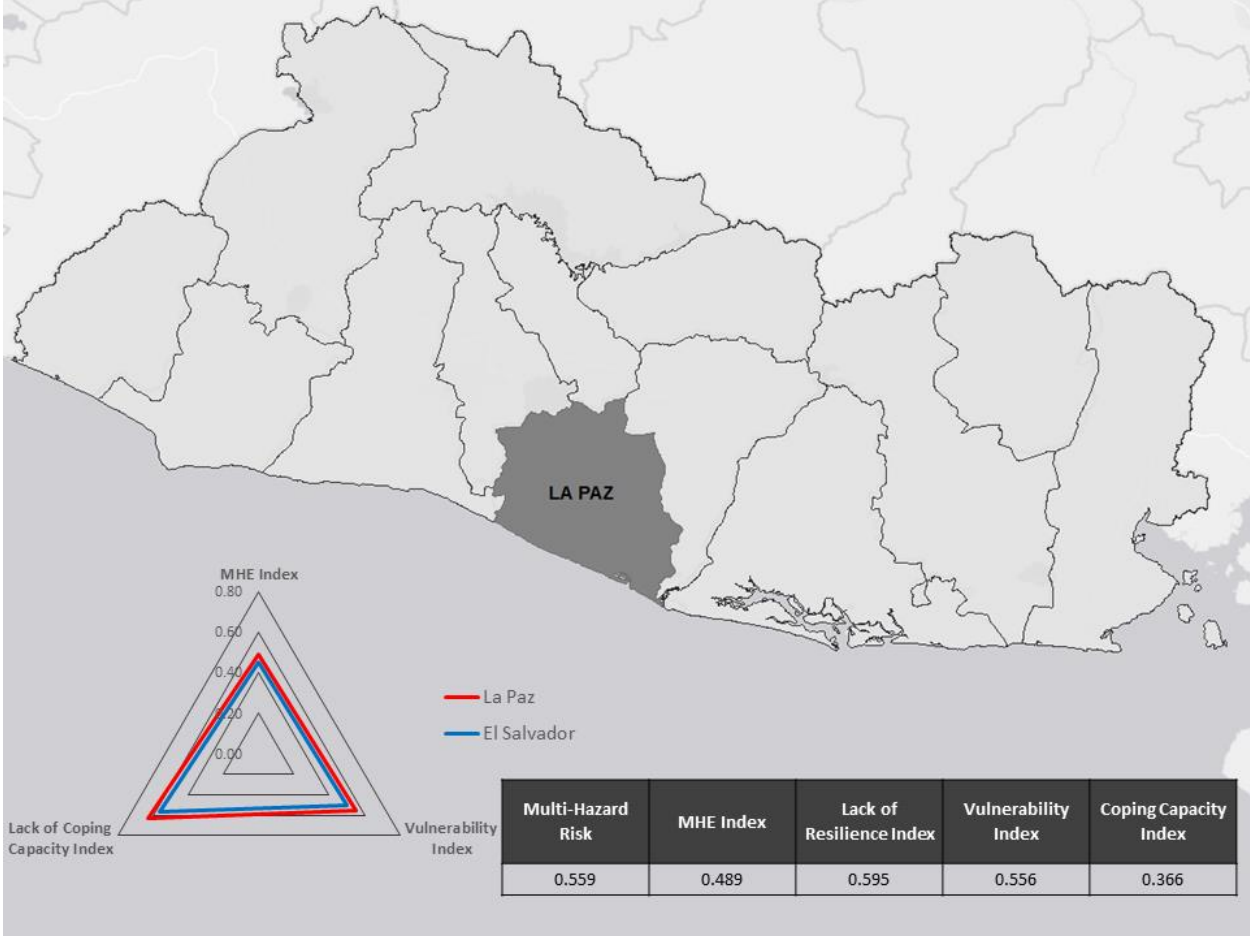


Figure 17: Percent population exposure to hazard type for La Libertad

Index	La Libertad	
	Score	**Rank**
Multi-Hazard Exposure	0.846	1
Sub-Components		
Raw Exposure	1.000	1
Relative Exposure	0.692	3

La Paz: Risk

La Paz ranks **3rd** out of **14** on the Multi-Hazard Risk Index with a score of **0.559**. The Multi-Hazard Risk in La Paz is due to low Multi-Hazard Exposure, high Vulnerability, and low Coping Capacity scores. The department has the 6th highest Multi-Hazard Exposure, the 5th highest Vulnerability, and 9th highest Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.559	0.489	0.595	0.556	0.366

La Paz: Lack of Resilience

La Paz ranks **5th** of **14** on the Lack of Resilience Index with a score of **0.595**. La Paz's score and ranking are due to high Vulnerability combined with low Coping Capacity scores. La Paz the 5th highest Vulnerability, and 9th highest Coping Capacity.

The three thematic areas with the weakest relative scores for the department of La Paz are: **Governance, Infrastructure** (specifically, **Health Care Capacity**), and **Population Pressures**

Table 9: Lack of Resilience Index and Component scores for La Paz

Index	La Paz	
	Score	**Rank**
Lack of Resilience	0.595	5
Components		
Vulnerability	0.556	5
Coping Capacity	0.366	9

La Paz: Coping Capacity

La Paz's Coping Capacity is **9th** out of **14** with a score of **0.366**. The thematic areas with the weakest relative scores are **Governance** and **Infrastructure (specifically, Health Care Capacity)**. These two thematic areas appear to constrain Coping Capacity within this department.

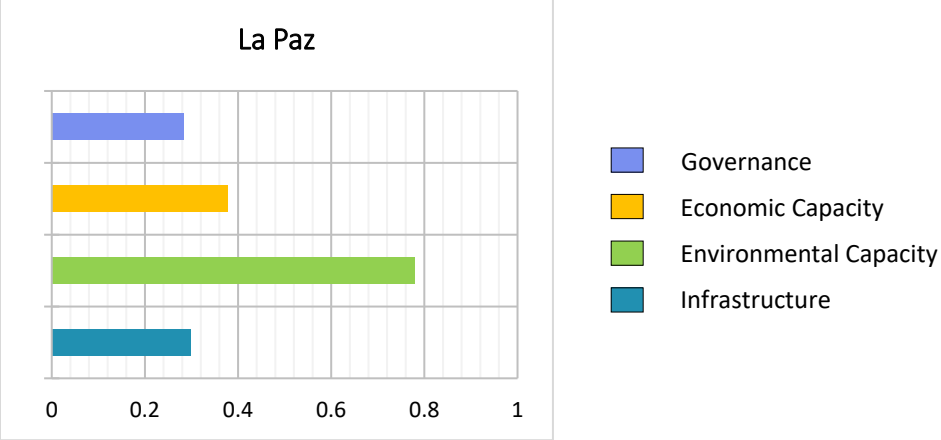


Figure 18: Coping Capacity sub-components for La Paz

Table 10: Coping Capacity Index, sub-component and sub-index scores for La Paz

Index	La Paz	
	Score	Rank
Coping Capacity	0.366	9
Sub-components		
Governance	0.284	13
Economic Capacity	0.378	8
Environmental Capacity	0.779	2
Infrastructure	0.299	10
Infrastructure Sub-indices		
Health Care	0.072	13
Transportation	0.711	4
Communications	0.115	13

La Paz: Vulnerability

La Paz ranks **5th** out of **14** on the Vulnerability Index with a score of **0.556**. Vulnerability in La Paz is strongly influenced by **Population Pressures**, **Information Access Vulnerability** and **Clean Water Vulnerability** sub-component scores.

Table 11. Vulnerability Index and sub-component index scores for La Paz

Index	La Paz	
	Score	Rank
Vulnerability	0.556	5
Sub-Components		
Economic Constraints	0.460	11
Info Access Vulnerability	0.658	4
Vulnerable Health Status	0.457	10
Clean Water Vulnerability	0.638	2
Population Pressures	0.855	3
Environmental Stress	0.500	7
Gender Inequality	0.320	11

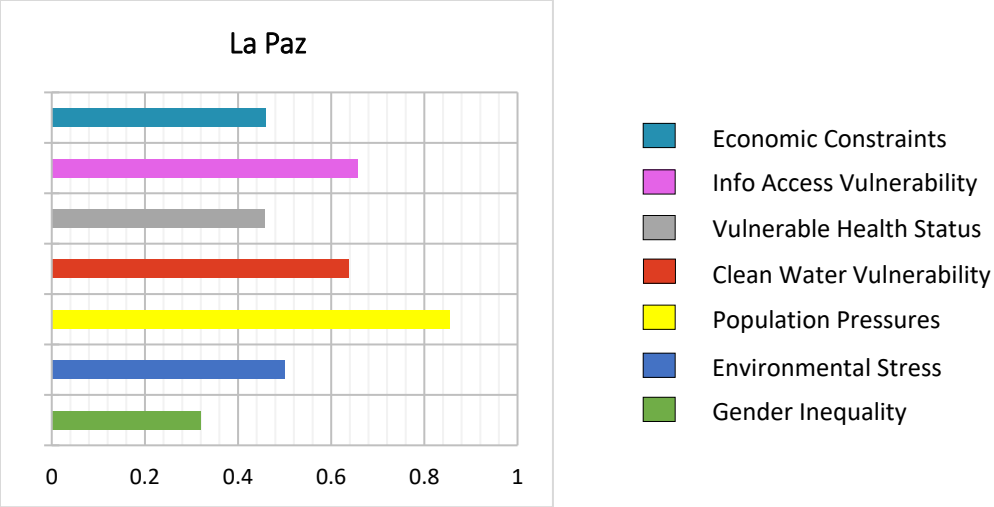


Figure 19: Vulnerability sub-components for La Paz

La Paz: Multi-Hazard Exposure

La Paz ranks **6th** out of **14** on the Multi-Hazard Exposure index with a score of **0.489**. A large proportion of the population is exposed to **seismic activity**, **landslides,** and **flood**. While La Paz is also exposed to tsunami, this hazard affects a smaller proportion of the population.

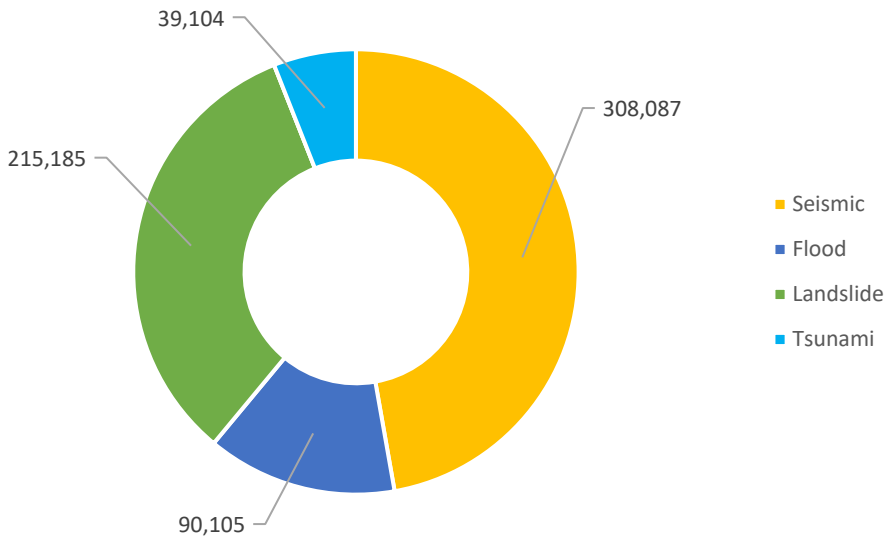


Figure 20: Raw population exposure by hazard type for La Paz

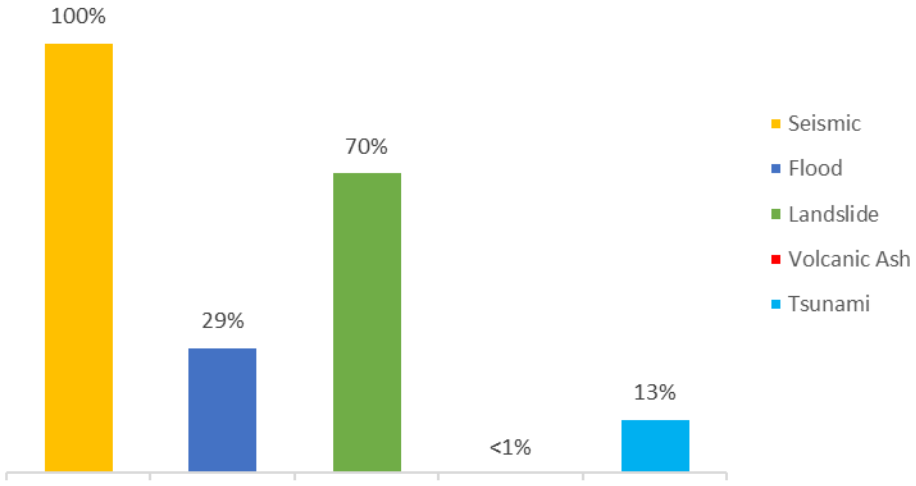


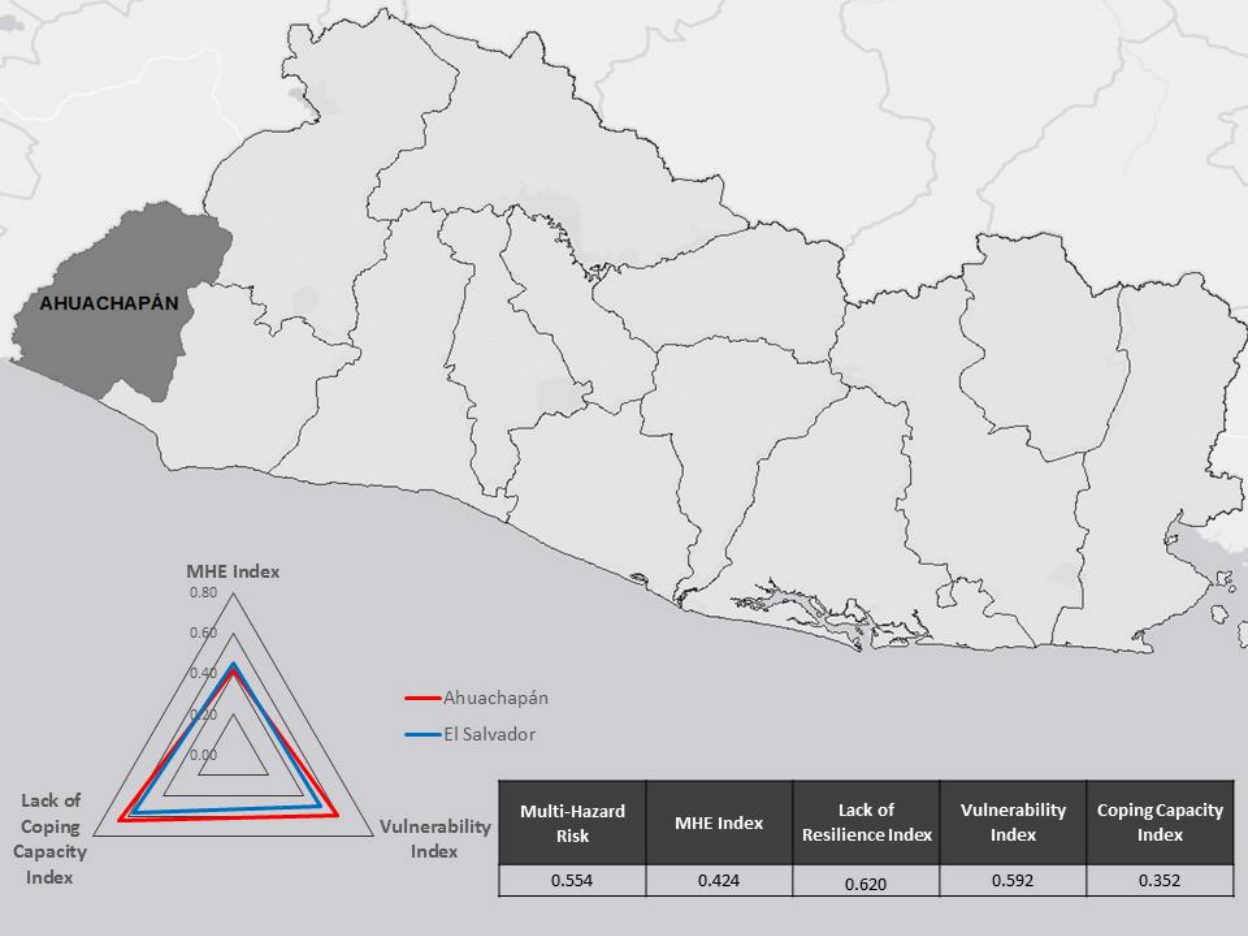
Figure 21: Percent population exposure to hazard type for La Paz

Table 12. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for La Paz

Index	La Paz	
	Score	**Rank**
Multi-Hazard Exposure	0.489	6
Sub-Components		
Raw Exposure	0.339	7
Relative Exposure	0.639	4

Ahuachapán: Risk

Ahuachapán ranks **4th** of **14** on the Multi-Hazard Risk Index with a score of **0.554**. Ahuachapán's score and ranking are due to moderate Multi-Hazard Exposure, high Vulnerability and low Coping Capacity. The department ranks 8th in Multi-Hazard Exposure, 3rd in Vulnerability, and 12th in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.554	0.424	0.620	0.592	0.352

Ahuachapán: Lack of Resilience

Ahuachapán ranks **2nd** of **14** on the Lack of Resilience Index with a score of **0.620**. Ahuachapán's score and ranking are due to high Vulnerability and low Coping Capacity. The department ranks **3rd** in Vulnerability, and **12th** in Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Ahuachapán are: **Economic Capacity, Infrastructure (especially Communications)** and **Information Access Vulnerability**.

Table 13. Lack of Resilience Index and Component scores for Ahuachapán

Index	Ahuachapán	
	Score	**Rank**
Lack of Resilience	0.620	2
Components		
Vulnerability	0.592	3
Coping Capacity	0.352	12

Ahuachapán: Coping Capacity

Ahuachapán's Coping Capacity is **12th** out of **14** with a score of **0.352**. The thematic areas with the weakest relative scores are **Economic Capacity** and **Infrastructure (Communications)**. These two thematic areas appear to constrain Coping Capacity within this department.

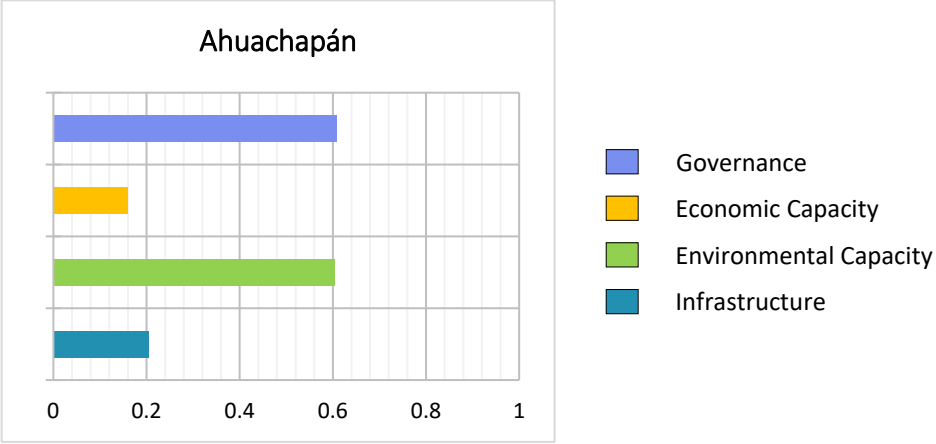


Figure 22. Coping Capacity sub-components for Ahuachapán

Table 14 Coping Capacity Index, sub-component and sub-index scores for Ahuachapán

Index	Ahuachapán	
	Score	Rank
Coping Capacity	0.352	12
Sub-components		
Governance	0.608	3
Economic Capacity	0.161	14
Environmental Capacity	0.604	4
Infrastructure	0.204	13
Infrastructure Sub-indices		
Health Care	0.142	9
Transportation	0.357	11
Communications	0.115	14

Ahuachapán: Vulnerability

Ahuachapán ranks **3rd** out of **14** on the Vulnerability Index with a score of **0.592**. Vulnerability in Ahuachapán is strongly influenced by **Information Access Vulnerability, Population Pressures,** and **Gender Inequality** sub-component scores.

Table 15. Vulnerability Index and sub-component index scores for Ahuachapán

Index	Ahuachapán	
	Score	Rank
Vulnerability	0.592	3
Sub-Components		
Economic Constraints	0.570	5
Info Access Vulnerability	0.725	3
Vulnerable Health Status	0.506	7
Clean Water Vulnerability	0.511	6
Population Pressures	0.690	4
Environmental Stress	0.545	4
Gender Inequality	0.593	5

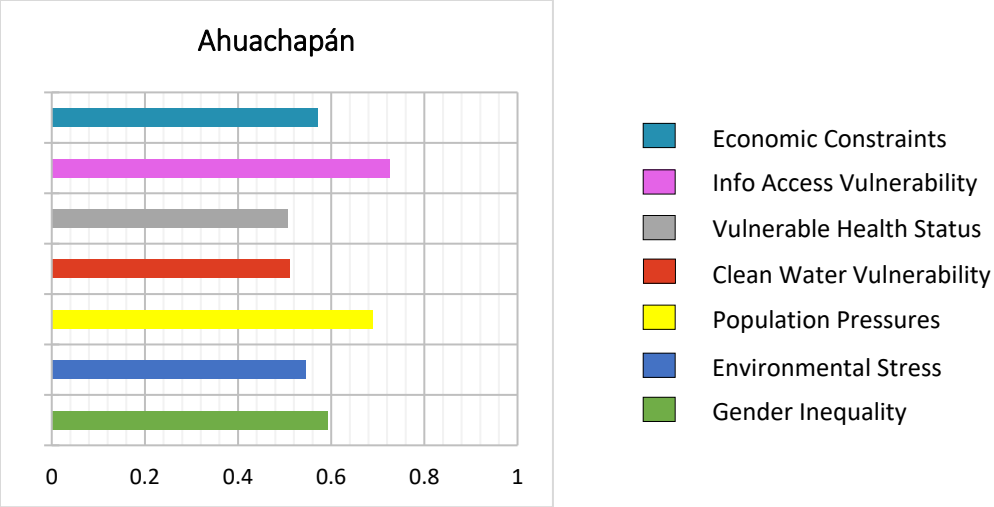


Figure 23: Vulnerability sub-components for Ahuachapán

Ahuachapán: Multi-Hazard Exposure

Ahuachapán ranks **8th** out of **14** on the Multi-Hazard Exposure index with a score of **0.424**. A large proportion of the population is exposed to **seismic activity**, and **landslides**. A small proportion of Ahuachapán's population is also exposed to tsunami.

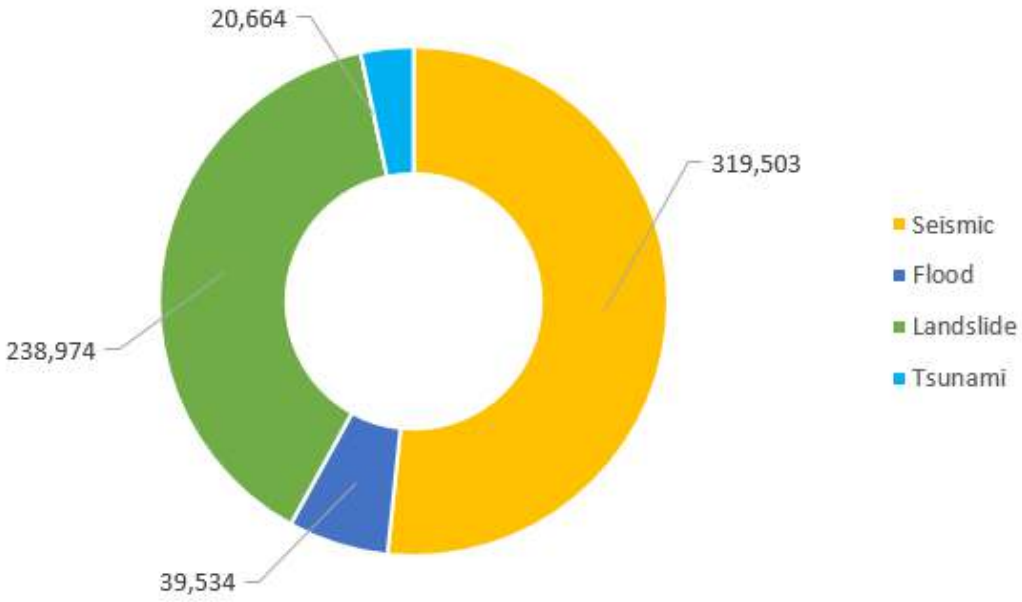


Figure 24: Raw population exposure by hazard type for Ahuachapán

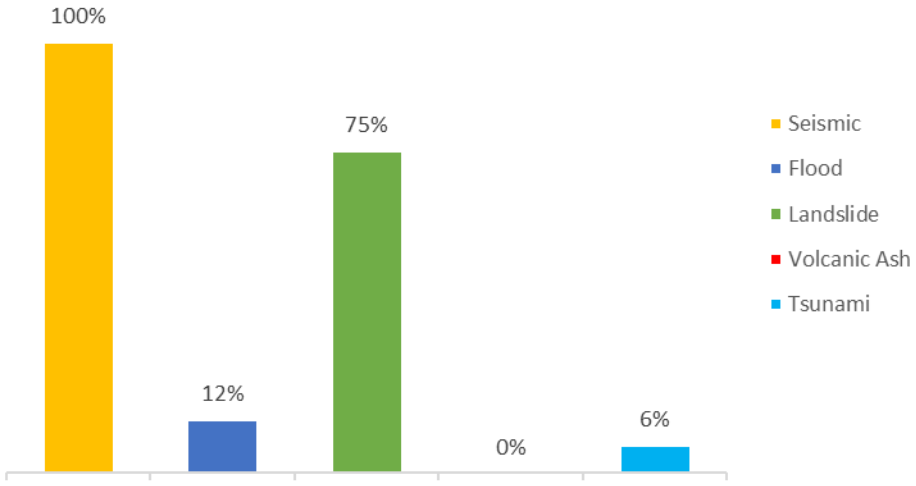


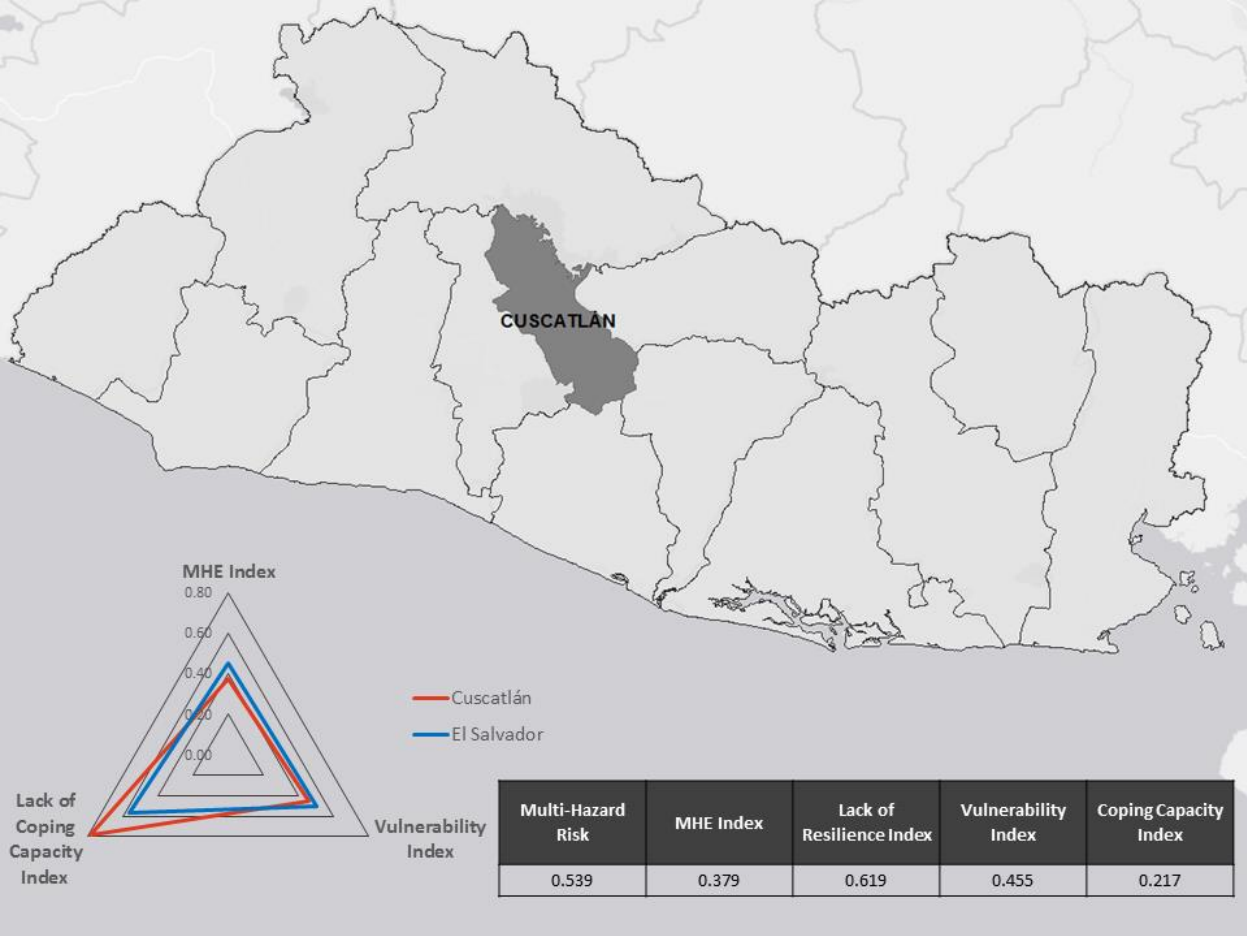
Figure 25: Percent population exposure to hazard type for Ahuachapán

Table 16. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Ahuachapán

Index	Ahuachapán	
	Score	**Rank**
Multi-Hazard Exposure	0.424	8
Sub-Components		
Raw Exposure	0.326	8
Relative Exposure	0.522	8

Cuscatlán: Risk

Cuscatlán ranks **5th** out of **14** on the Multi-Hazard Risk Index with a score of **0.539**. Cuscatlán's score and ranking are primarily driven by very low Coping Capacity. The department ranks 10th for Multi-Hazard Exposure, 11th in Vulnerability, and 13th in Coping capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.539	0.379	0.619	0.455	0.217

Lack of Resilience: Cuscatlán

Cuscatlán ranks **4th** of **14** on the Lack or Resilience Index with a score of **0.619**. Cuscatlán's score and ranking are due to its very low Coping Capacity. The department ranks **11th** in Vulnerability and **13th** in Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Cuscatlán are: **Governance, Economic Capacity** and **Population Pressures**.

Table 17. Lack of Resilience Index and Component scores for Cuscatlán

Index	Cuscatlán	
	Score	**Rank**
Lack of Resilience	0.619	4
Components		
Vulnerability	0.455	11
Coping Capacity	0.217	13

Cuscatlán: Coping Capacity

Cuscatlán's Coping Capacity is **13th** out of **14** with a score of **0.217**. While Cuscatlán exhibits low scores across all sub-components of Coping Capacity, the thematic areas with the weakest relative scores are **Governance** and **Economic Capacity**. These weaknesses appear to constrain Coping Capacity within this department.

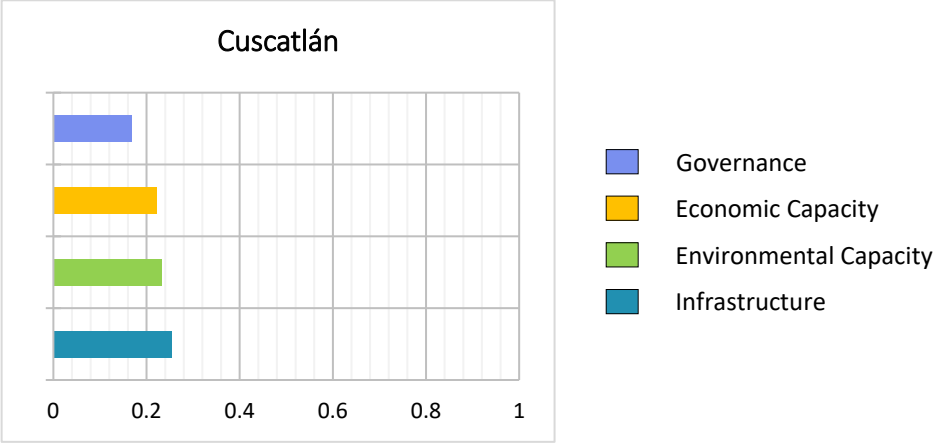


Figure 26. Coping Capacity sub-components for Cuscatlán

Table 18 Coping Capacity Index, sub-component and sub-index scores for Cuscatlán

Index	Cuscatlán	
	Score	Rank
Coping Capacity	0.217	13
Sub-components		
Governance	0.168	14
Economic Capacity	0.223	12
Environmental Capacity	0.234	10
Infrastructure	0.255	11
Infrastructure Sub-indices		
Health Care	0.082	11
Transportation	0.312	12
Communications	0.370	9

Cuscatlán: Vulnerability

Cuscatlán ranks **11th** out of **14** on the Vulnerability Index with a score of **0.455**. While Vulnerability in Cuscatlán is relatively low, the Index is strongly influenced by **Population Pressures** and **Environmental Stress** sub-component scores.

Table 19. Vulnerability Index and sub-component index scores for Cuscatlán

Index	Cuscatlán	
	Score	Rank
Vulnerability	0.455	11
Sub-Components		
Economic Constraints	0.385	13
Info Access Vulnerability	0.543	9
Vulnerable Health Status	0.233	14
Clean Water Vulnerability	0.257	11
Population Pressures	0.907	2
Environmental Stress	0.661	2
Gender Inequality	0.199	14

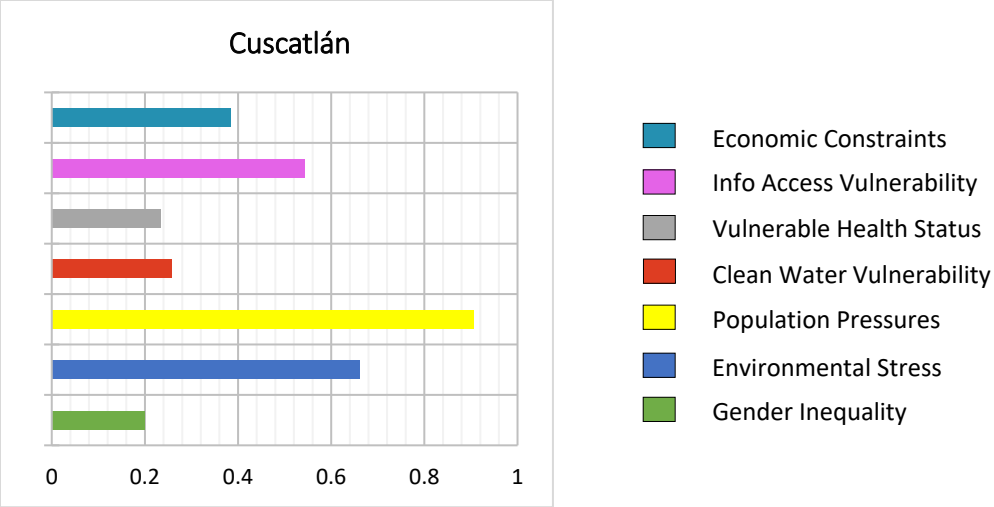


Figure 27: Vulnerability sub-components for Cuscatlán

Cuscatlán: Multi-Hazard Exposure

Cuscatlán ranks **10th** out of **14** on the Multi-Hazard Exposure index with a score of **0.379**. A large proportion of the population is exposed to **seismic activity** and **landslides**.

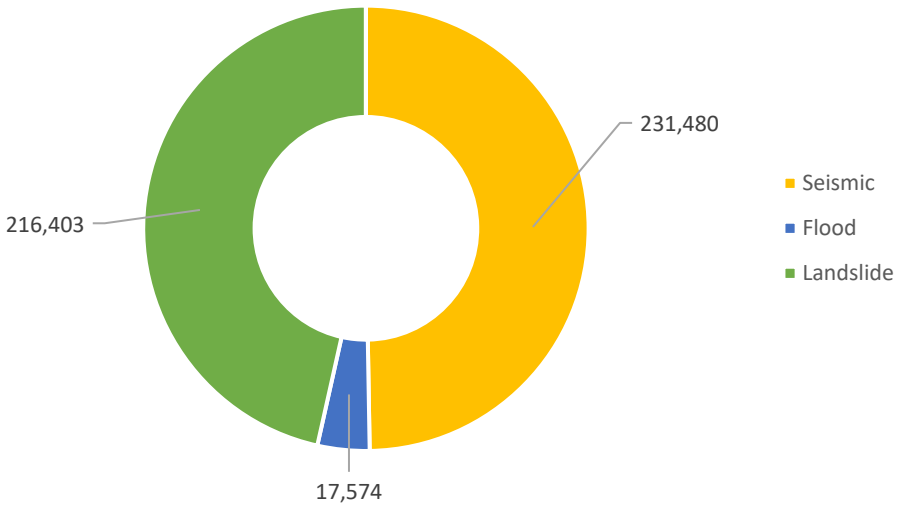


Figure 28: Raw population exposure by hazard type for Cuscatlán

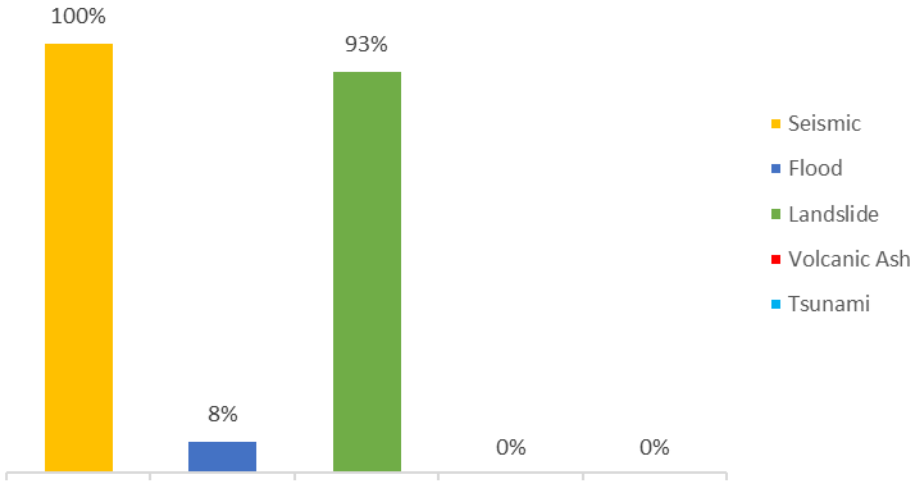


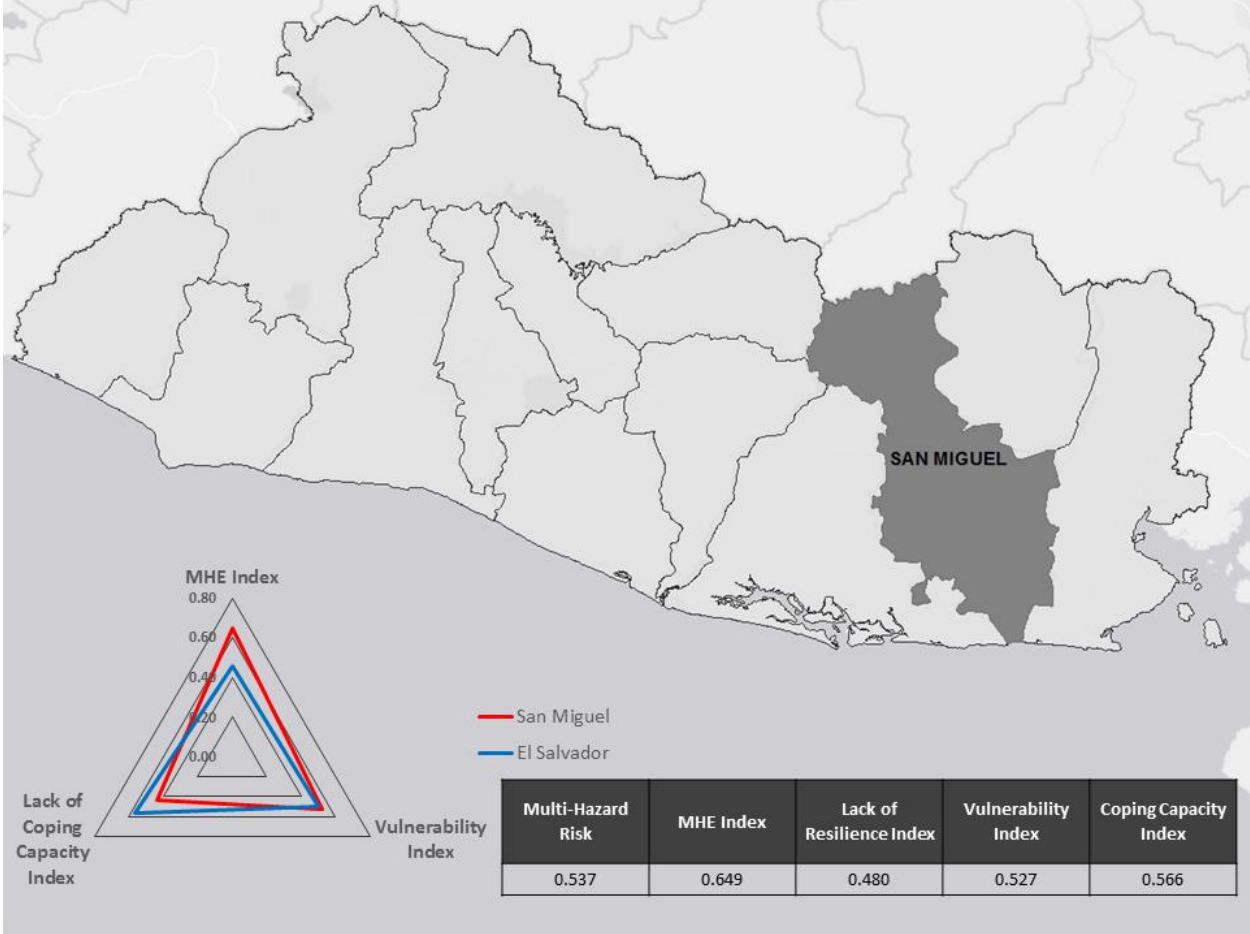
Figure 29: Percent population exposure to hazard type for Cuscatlán

Table 20. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Cuscatlán

Index	Cuscatlán	
	Score	**Rank**
Multi-Hazard Exposure	0.379	10
Sub-Components		
Raw Exposure	0.187	10
Relative Exposure	0.570	6

San Miguel: Risk

San Miguel ranks **6th** of **14** on the Multi-Hazard Risk Index with a score of **0.537**. San Miguel's score and ranking are due to high Multi-Hazard Exposure, moderate Vulnerability, and high Coping Capacity. San Miguel has the 4th highest Multi-Hazard Exposure in the country, the 6th highest Vulnerability and, the 3rd highest Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.537	0.649	0.480	0.527	0.566

San Miguel: Lack of Resilience

San Miguel ranks **11th** of **14** on the Lack of Resilience Index with a score of **0.480.** San Miguel's score and ranking are due to its moderate Vulnerability, and high coping capacity. The department ranks 6th in Vulnerability and 3rd in Coping Capacity.

The three thematic areas with the weakest relative scores for the department of San Miguel are: **Governance, Economic Constraints** and **Gender Inequality**.

Table 21. Lack of Resilience Index and Component scores for San Miguel

Index	San Miguel	
	Score	**Rank**
Lack of Resilience	0.480	11
Components		
Vulnerability	0.527	6
Coping Capacity	0.566	3

San Miguel: Coping Capacity

San Miguel's Coping Capacity is **3rd** out of **14** with a score of **0.566**. The thematic areas with the weakest relative scores are **Economic Capacity** and **Governance**. These two thematic areas appear to constrain Coping Capacity within this department.

Table 22: Coping Capacity sub-components for San Miguel

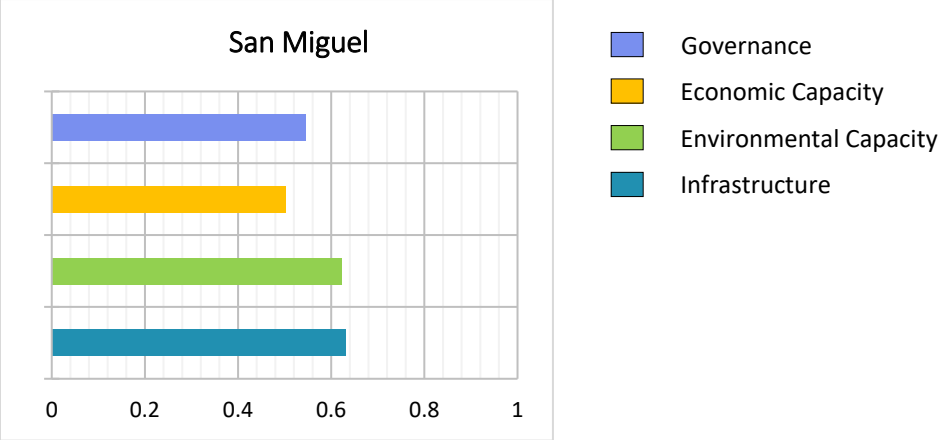


Table 23 Coping Capacity Index, sub-component and sub-index scores for San Miguel

Index	San Miguel	
	Score	Rank
Coping Capacity	0.566	3
Sub-components		
Governance	0.545	6
Economic Capacity	0.502	4
Environmental Capacity	0.622	3
Infrastructure	0.632	3
Infrastructure Sub-indices		
Health Care	0.887	2
Transportation	0.528	8
Communications	0.481	7

San Miguel: Vulnerability

San Miguel ranks **6th** out of **14** on the Vulnerability Index with a score of **0.527**. Vulnerability in San Miguel is strongly influenced by **Economic Constraint**s, **Gender Inequality**, and **Information Access Vulnerability.**

Table 24. Vulnerability Index and sub-component index scores for San Miguel

Index	San Miguel	
	Score	Rank
Vulnerability	0.527	6
Sub-Components		
Economic Constraints	0.643	2
Info Access Vulnerability	0.555	8
Vulnerable Health Status	0.479	9
Clean Water Vulnerability	0.529	5
Population Pressures	0.484	8
Environmental Stress	0.438	11
Gender Inequality	0.559	6

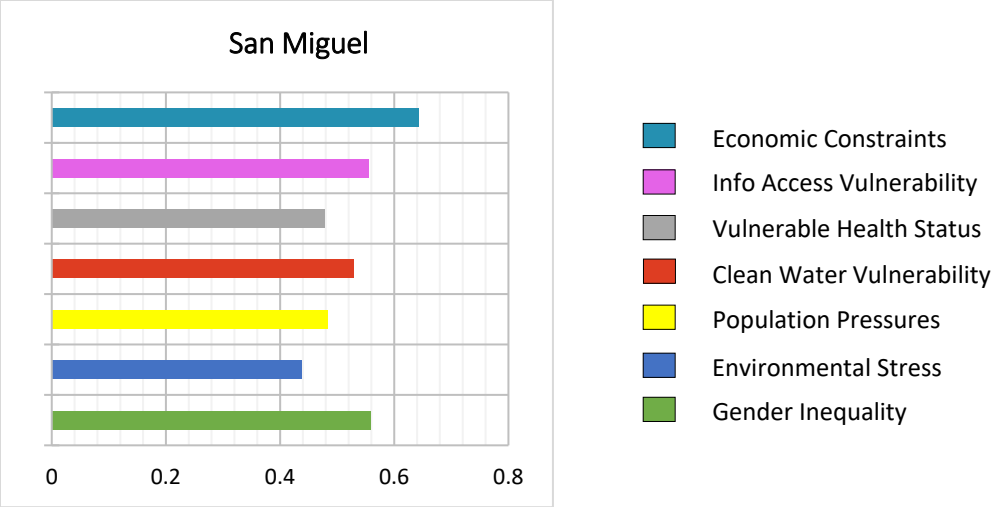


Figure 30: Vulnerability sub-components for San Miguel

San Miguel: Vulnerability

San Miguel ranks **4th** out of **14** on the Multi-Hazard Exposure index with a score of **0.649**. A large proportion of the population is exposed to **seismic activity**, **landslides** and **volcanic ash**. A small proportion of San Miguel's population is also exposed to flood.

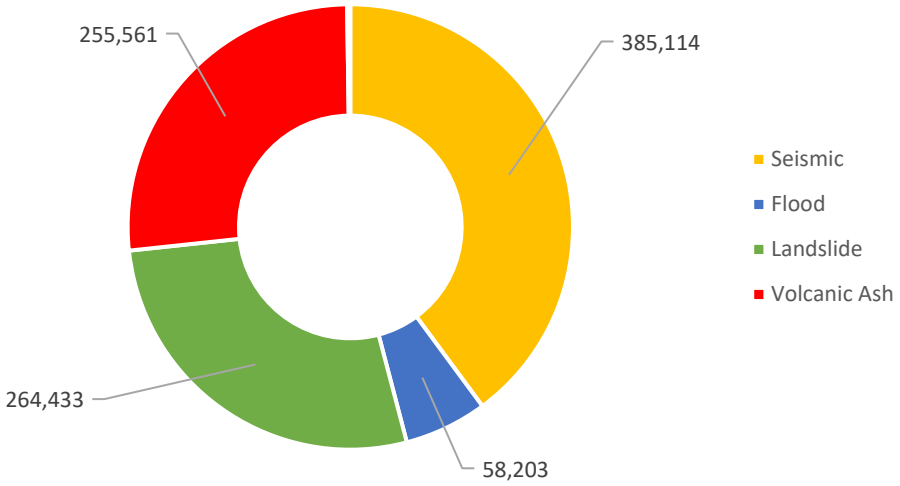


Figure 31 : Raw population exposure by hazard type for San Miguel

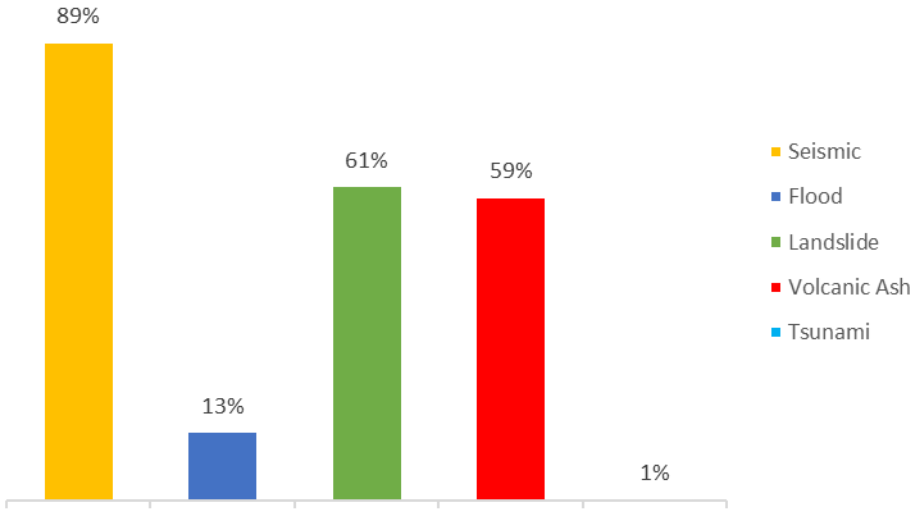


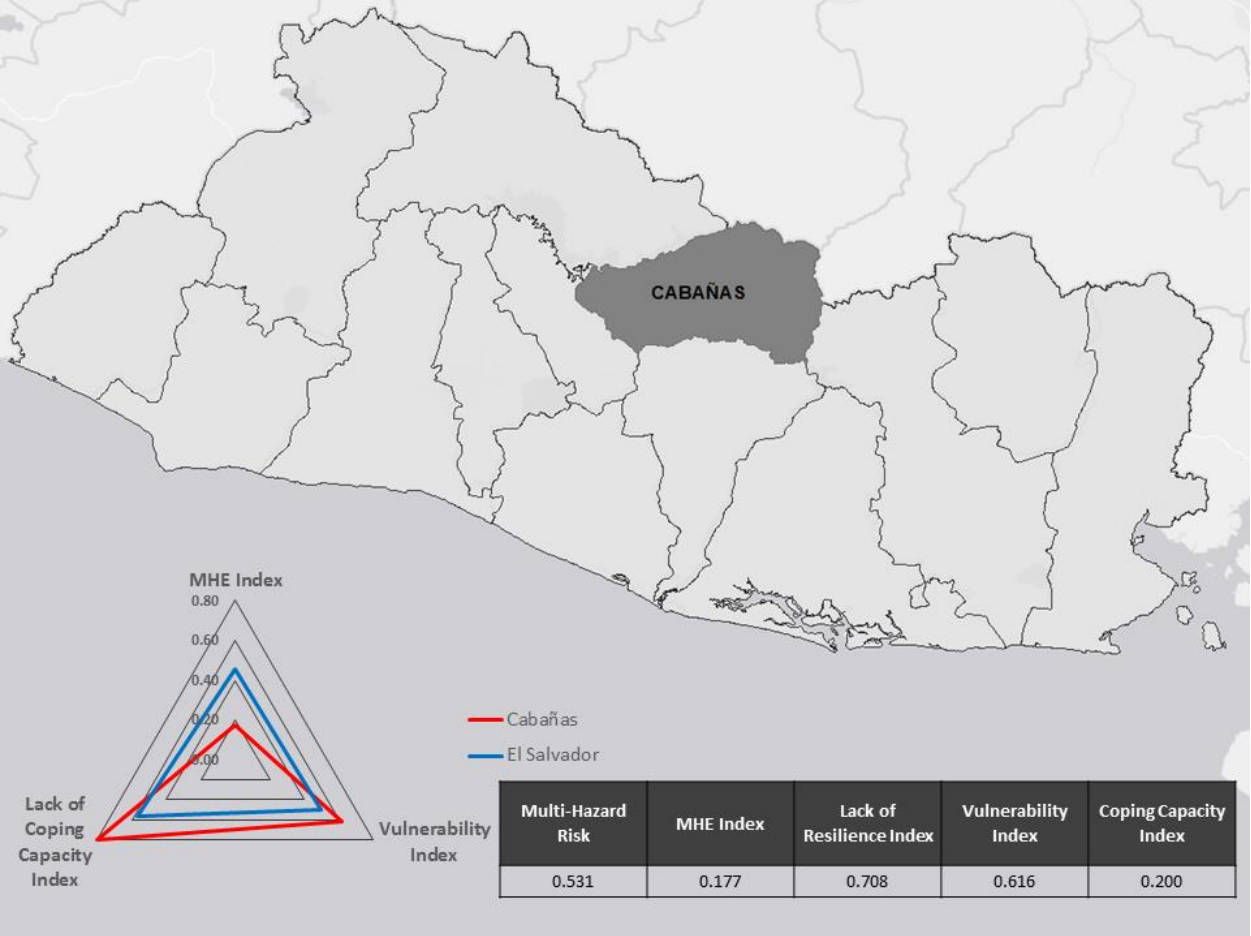
Figure 32: Percent population exposure to hazard type for San Miguel

Table 25. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for San Miguel

Index	San Miguel	
	Score	**Rank**
Multi-Hazard Exposure	0.649	4
Sub-Components		
Raw Exposure	0.591	3
Relative Exposure	0.708	2

Cabañas: Risk

Cabañas ranks **7th** out of **14** on the Multi-Hazard Risk Index with a score of **0.531**. Cabañas has moderate Multi-Hazard Exposure, very high Vulnerability and very low Coping Capacity. Though Cabañas ranks just 13th for Multi-Hazard Exposure, it ranks 1st in Vulnerability, and 14th in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.531	0.177	0.708	0.616	0.200

Cabañas: Vulnerability

Cabañas ranks 1st of 14 on the Lack of Resilience Index with a sore of 0.708. Cabañas's score and ranking are due to its very high Vulnerability and very low Coping Capacity. The department ranks 1st in Vulnerability and 14th in Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Cabañas are: **Economic Capacity**, **Infrastructure**, and **Economic Constraints**.

Table 26. Lack of Resilience Index and Component scores for Cabañas

Index	Cabañas	
	Score	**Rank**
Lack of Resilience	0.708	1
Components		
Vulnerability	0.616	1
Coping Capacity	0.200	14

Cabañas: Coping Capacity

Cabañas's Coping Capacity is **14th** out of **14** with a score of **0.200**. While Cabañas exhibits low scores across all sub-components of Coping Capacity, the thematic areas with the weakest relative scores are **Economic Capacity**, **Environmental Capacity**, and **Infrastructure**. These weaknesses appear to constrain Coping Capacity within this department.

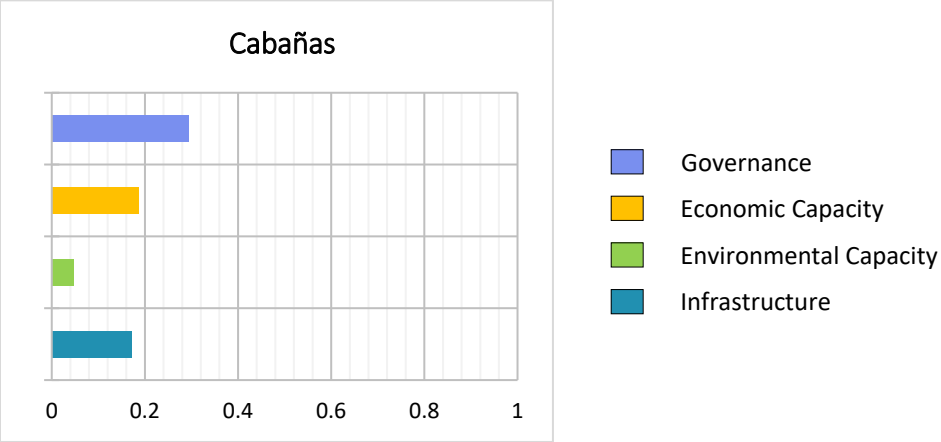


Figure 33. Coping Capacity sub-components for Cabañas

Table 27 Coping Capacity Index, sub-component and sub-index scores for Cabañas

Index	Cabañas	
	Score	Rank
Coping Capacity	0.200	14
Sub-components		
Governance	0.294	11
Economic Capacity	0.187	13
Environmental Capacity	0.048	13
Infrastructure	0.171	14
Infrastructure Sub-indices		
Health Care	0.194	8
Transportation	0.034	13
Communications	0.284	11

Cabañas: Vulnerability

Cabañas ranks **1st** out of **14** on the Vulnerability Index with a score of **0.616**. Vulnerability in Cabañas is strongly influenced by **Economic Constraints**, **Environmental Stress, Gender Inequality, Clean Water Vulnerability,** and **Information Access Vulnerability** sub-component scores.

Table 28. Vulnerability Index and sub-component index scores for Cabañas

Index	Cabañas	
	Score	Rank
Vulnerability	0.616	1
Sub-Components		
Economic Constraints	0.815	1
Info Access Vulnerability	0.627	5
Vulnerable Health Status	0.278	13
Clean Water Vulnerability	0.636	3
Population Pressures	0.462	9
Environmental Stress	0.754	1
Gender Inequality	0.742	3

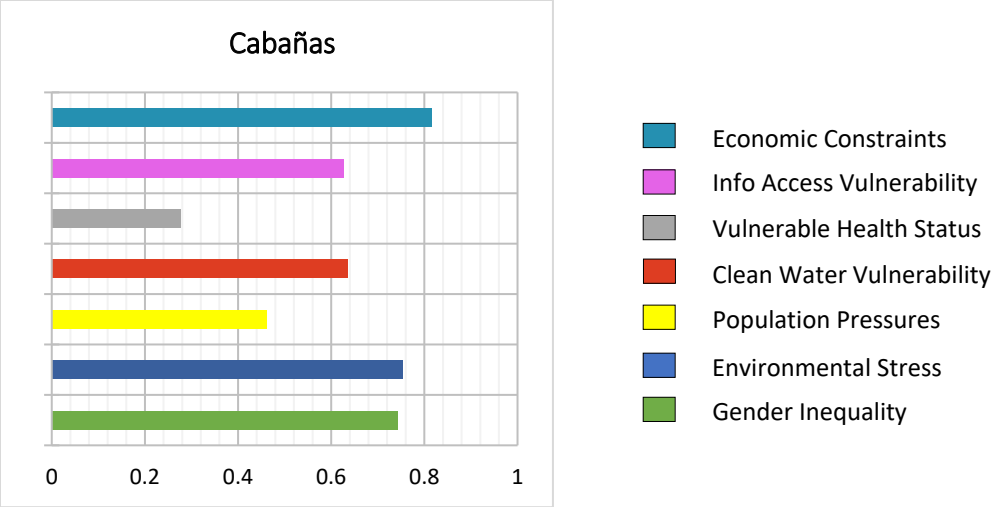


Figure 34: Vulnerability sub-components for Cabañas

Cabañas: Multi-Hazard Exposure

Cabañas ranks **13th** out of **14** on the Multi-Hazard Exposure Index with a score of **0.177**. Despite this low rank, a large proportion of Cabañas's population is exposed to **seismic activity** and **landslides**. A smaller proportion of Cabañas's population is also exposed flood.

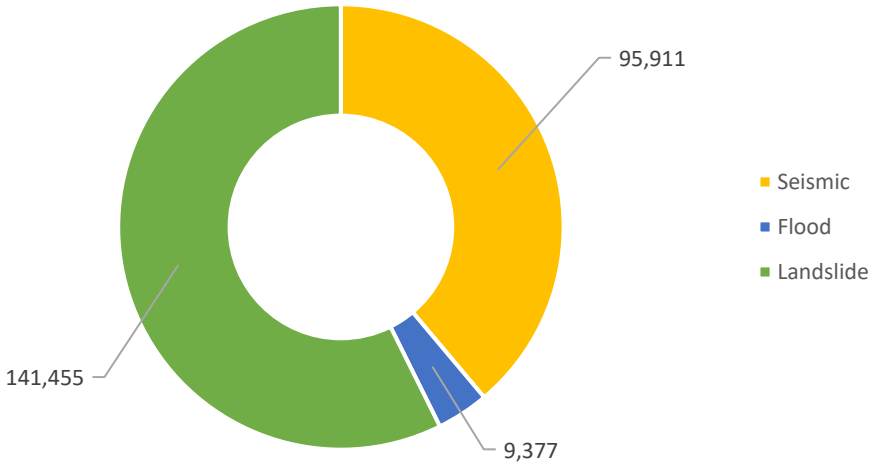


Figure 35: Raw population exposure by hazard type for Cabañas

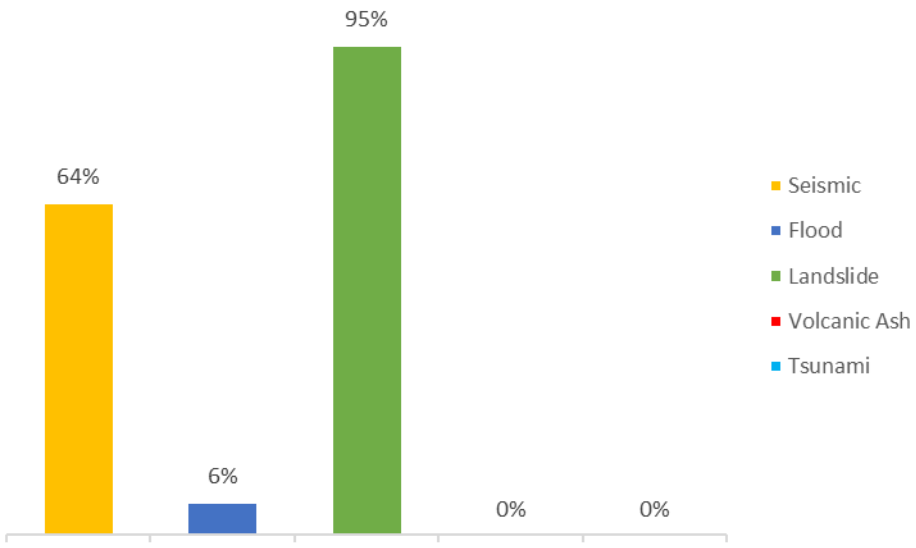


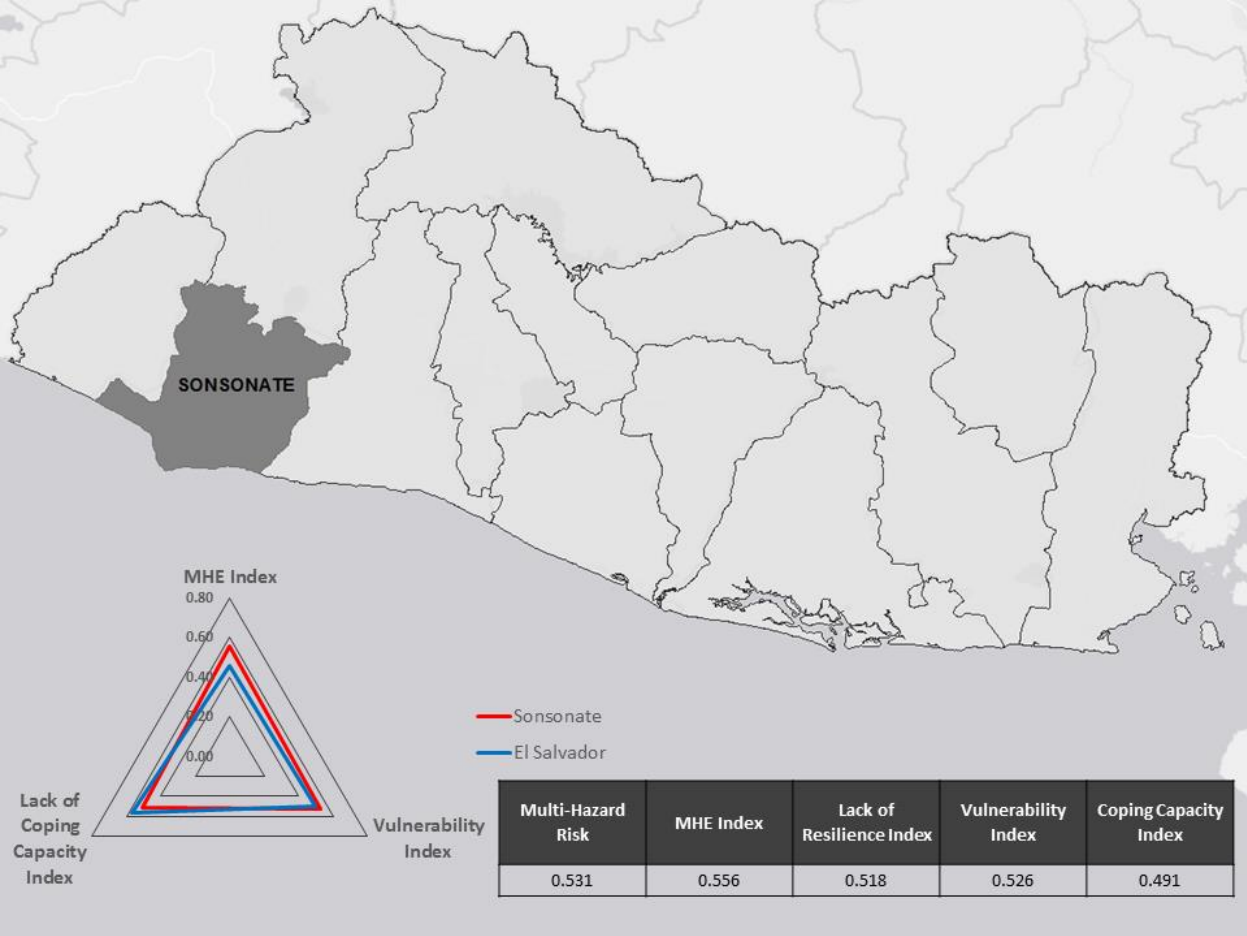
Figure 36: Percent population exposure to hazard type for Cabañas

Table 29. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Cabañas

Index	Cabañas	
	Score	**Rank**
Multi-Hazard Exposure	0.177	13
Sub-Components		
Raw Exposure	0.015	13
Relative Exposure	0.339	12

Sonsonate: Risk

Sonsonate ranks **8th** out of **14** on the Multi-Hazard Risk Index with a score of **0.531**. Sonsonate has high Multi-Hazard Exposure, moderate Vulnerability, and moderate Coping Capacity. The department ranks 5th for Multi-Hazard Exposure, 7th in Vulnerability, and 6th in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.531	0.556	0.518	0.526	0.491

Sonsonate: Lack of Resilience

Sonsonate ranks **9th** of **14** on the Lack of Resilience Index with a score of **0.518**. Sonsonate's score and ranking are due to its moderate Vulnerability and Coping Capacity. The department ranks 7th in Vulnerability and 6th in Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Sonsonate are: **Economic Capacity, Vulnerable Health Status**, and **Health Care Capacity**.

Table 30. Lack of Resilience Index and Component scores for Sonsonate

Index	Sonsonate	
	Score	**Rank**
Lack of Resilience	0.518	9
Components		
Vulnerability	0.526	7
Coping Capacity	0.491	6

Sonsonate: Coping Capacity

Sonsonate's Coping Capacity is **6th** out of **14** with a score of **0.491**. The thematic areas with the weakest relative scores are **Economic Capacity** and **Infrastructure (Health Care Capacity)**. These two thematic areas appear to constrain Coping Capacity within this department.

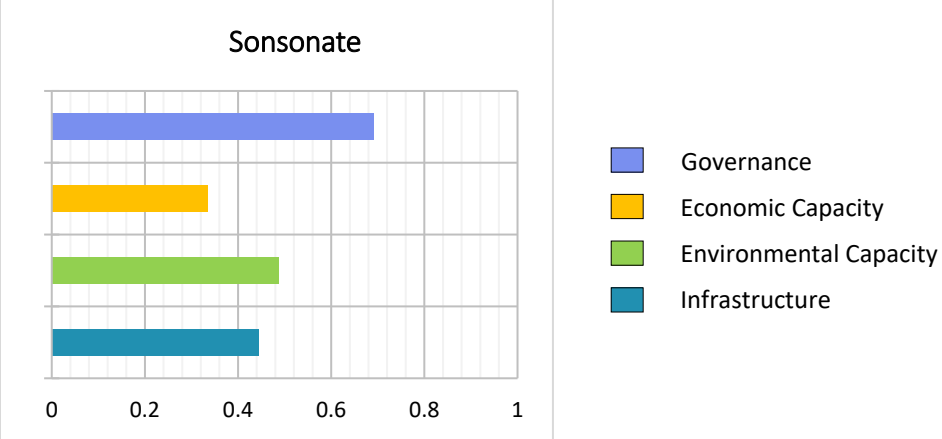


Figure 37: Coping Capacity sub-components for Sonsonate

Table 31 Coping Capacity Index, sub-component and sub-index scores for Sonsonate

Index	Sonsonate	
	Score	Rank
Coping Capacity	0.491	6
Sub-components		
Governance	0.692	1
Economic Capacity	0.335	10
Environmental Capacity	0.488	6
Infrastructure	0.445	7
Infrastructure Sub-indices		
Health Care	0.215	7
Transportation	0.599	5
Communications	0.520	5

Sonsonate: Vulnerability

Sonsonate ranks **7th** out of **14** on the Vulnerability Index with a score of **0.526**. Vulnerability in Sonsonate is influenced by **Vulnerable Health Status**, **Environmental Stress**, and **Information Access Vulnerability** sub-component scores.

Table 32. Vulnerability Index and sub-component index scores for Sonsonate

Index	Sonsonate	
	Score	Rank
Vulnerability	0.526	7
Sub-Components		
Economic Constraints	0.453	12
Info Access Vulnerability	0.556	7
Vulnerable Health Status	0.643	1
Clean Water Vulnerability	0.471	9
Population Pressures	0.502	7
Environmental Stress	0.582	3
Gender Inequality	0.474	7

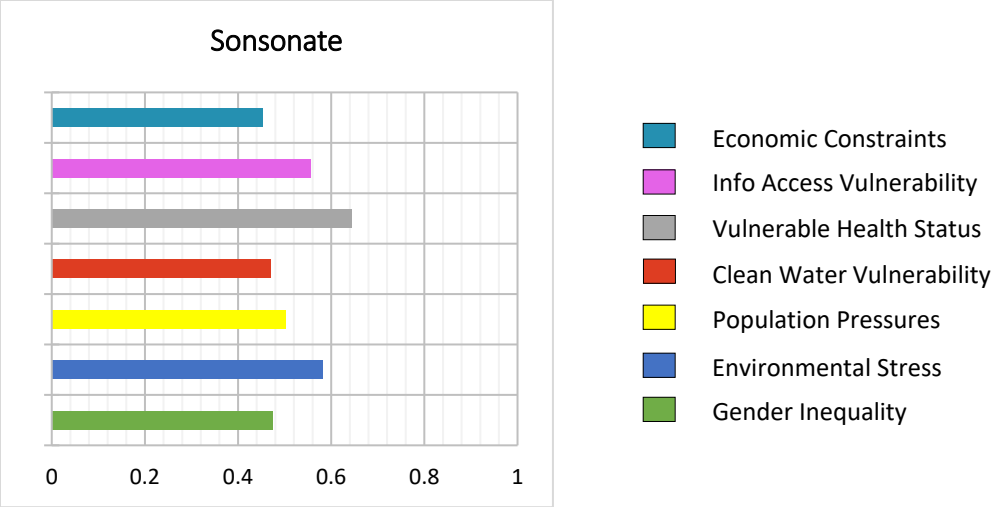


Figure 38: Vulnerability sub-components for Sonsonate

Sonsonate: Multi-Hazard Exposure

Sonsonate ranks **5th** out of **14** on the Multi-Hazard Exposure index with a score of **0.556**. A large proportion of the population is exposed to **seismic activity** and **landslides**. Smaller proportions of Sonsonate's population are also exposed to flood and tsunami.

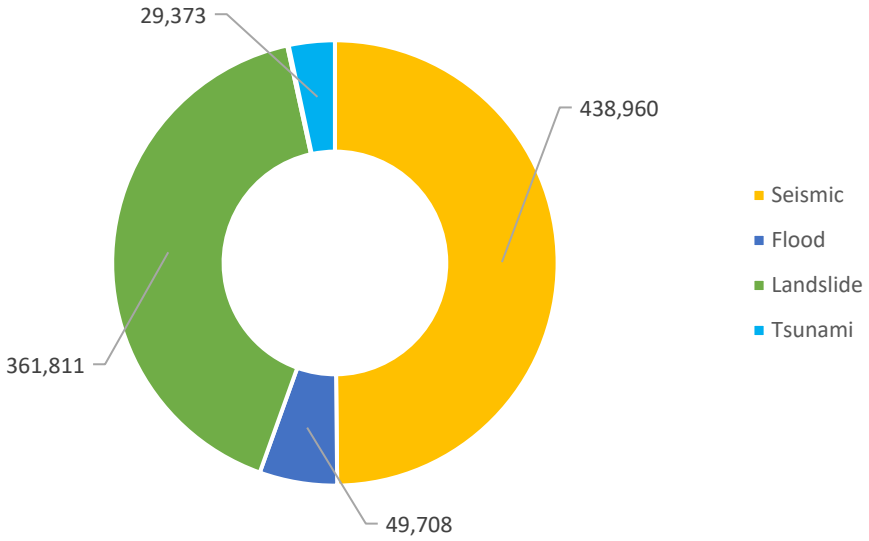


Figure 39: Raw population exposure by hazard type for Sonsonate

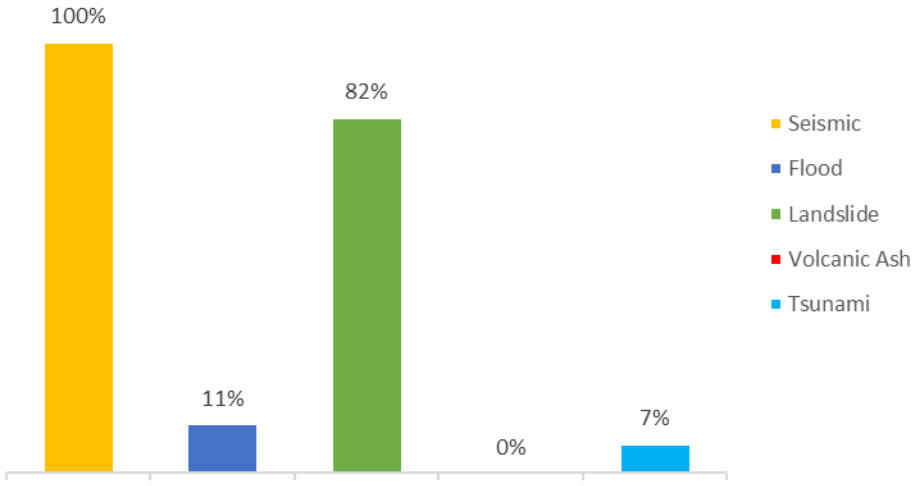


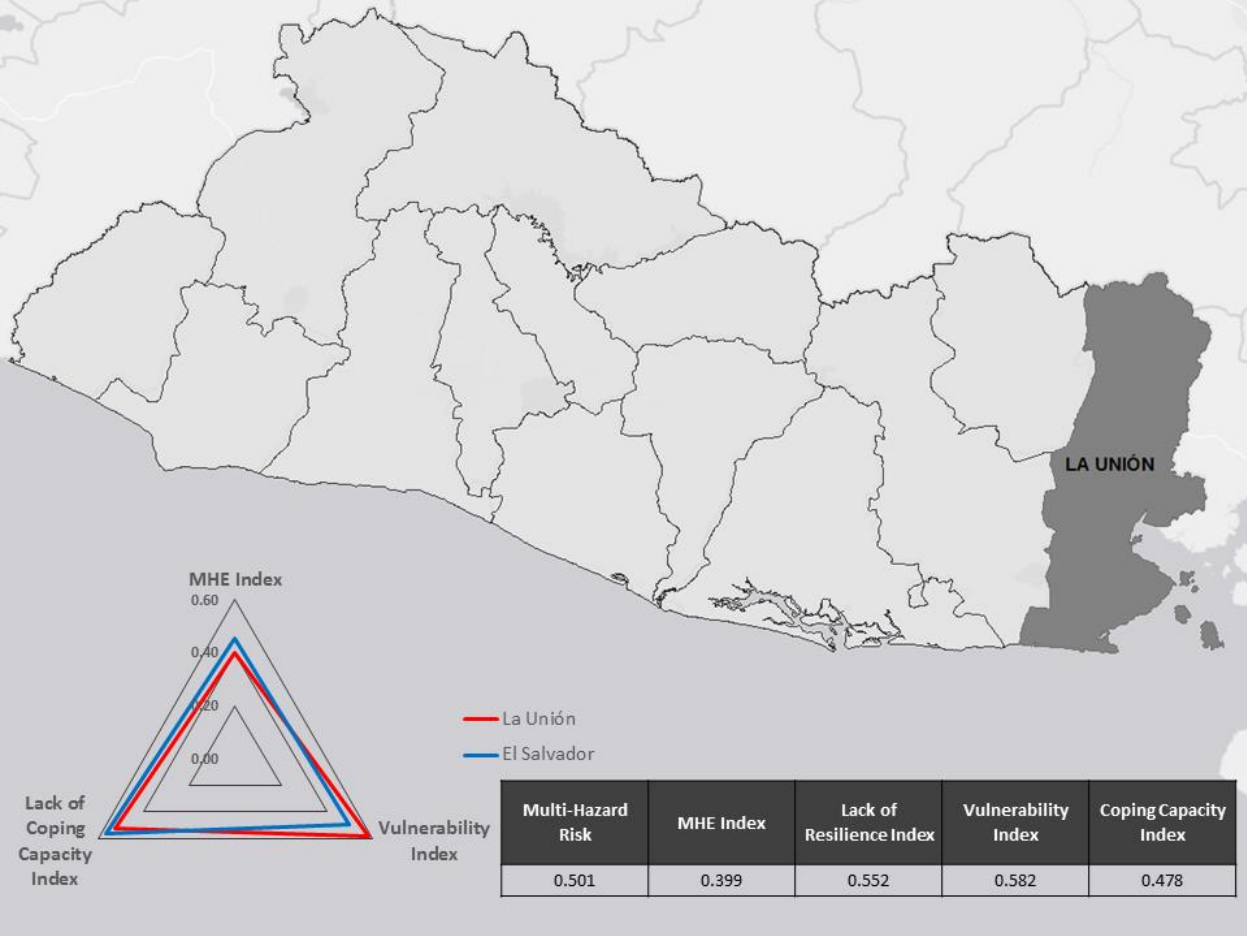
Figure 40: Percent population exposure to hazard type for Sonsonate

Table 33. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Sonsonate

Index	Sonsonate	
	Score	**Rank**
Multi-Hazard Exposure	0.556	5
Sub-Components		
Raw Exposure	0.545	5
Relative Exposure	0.567	7

La Unión: Risk

La Unión ranks **9th** out of **14** on the Multi-Hazard Risk index with a score of **0.501**. La Unión has low Multi-Hazard Exposure, high Vulnerability, and moderate Coping Capacity. The department ranks 9th for Multi-Hazard Exposure, 4th in Vulnerability, and 7th in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.501	0.399	0.552	0.582	0.478

La Unión: Lack of Resilience

La Unión ranks **7th** of **14** on **Lack of Resilience Index** with a score of **0.552**. La Unión's score and ranking are due to the department's high Vulnerability combined with moderate Coping Capacity. The department ranks 4th in Vulnerability, and 7th in Coping Capacity.

The three thematic areas with the weakest relative scores for the department of La Unión are: **Infrastructure (Health Care Capacity)**, **Clean Water Vulnerability**, and **Information Access Vulnerability**

Table 34. Lack of Resilience Index and Component scores for La Unión

Index	La Unión	
	Score	**Rank**
Lack of Resilience	0.552	7
Components		
Vulnerability	0.582	4
Coping Capacity	0.478	7

La Unión: Coping Capacity

La Unión's Coping Capacity is **7th** out of **14** with a score of **0.478**. The thematic areas with the weakest relative scores are **Infrastructure (Health Care Capacity)** and **Governance**. These two thematic areas appear to constrain Coping Capacity within this department.

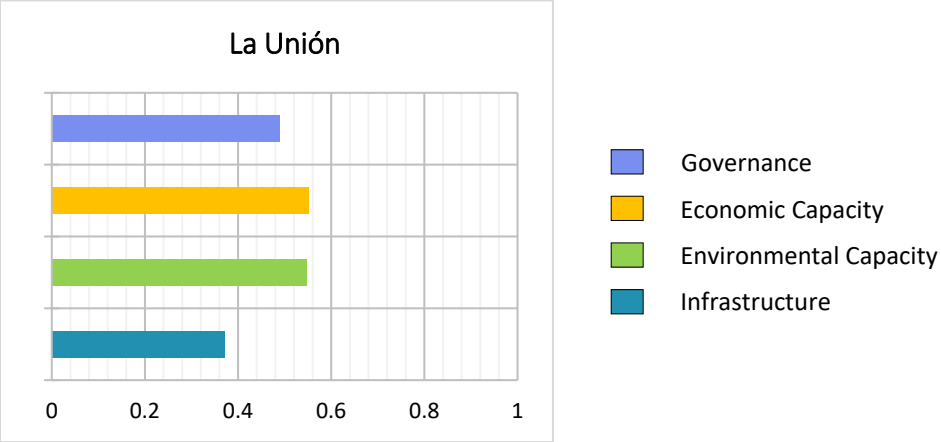


Figure 41: Coping Capacity sub-components for La Unión

Table 35 Coping Capacity Index, sub-component and sub-index scores for La Unión

Index	La Unión	
	Score	Rank
Coping Capacity	0.478	7
Sub-components		
Governance	0.489	9
Economic Capacity	0.552	3
Environmental Capacity	0.547	5
Infrastructure	0.371	8
Infrastructure Sub-indices		
Health Care	0.079	12
Transportation	0.538	7
Communications	0.496	6

La Unión: Vulnerability

La Unión ranks **4th** out of **14** on the Vulnerability Index with a score of **0.582**. Vulnerability in La Unión is strongly influenced by **Clean Water Vulnerability**, **Information Access Vulnerability, Gender Inequality,** and **Economic Constraints.** sub-component scores.

Table 36. Vulnerability Index and sub-component index scores for La Unión

Index	La Unión	
	Score	Rank
Vulnerability	0.582	4
Sub-Components		
Economic Constraints	0.634	3
Info Access Vulnerability	0.820	1
Vulnerable Health Status	0.494	8
Clean Water Vulnerability	0.980	1
Population Pressures	0.205	11
Environmental Stress	0.196	14
Gender Inequality	0.748	2

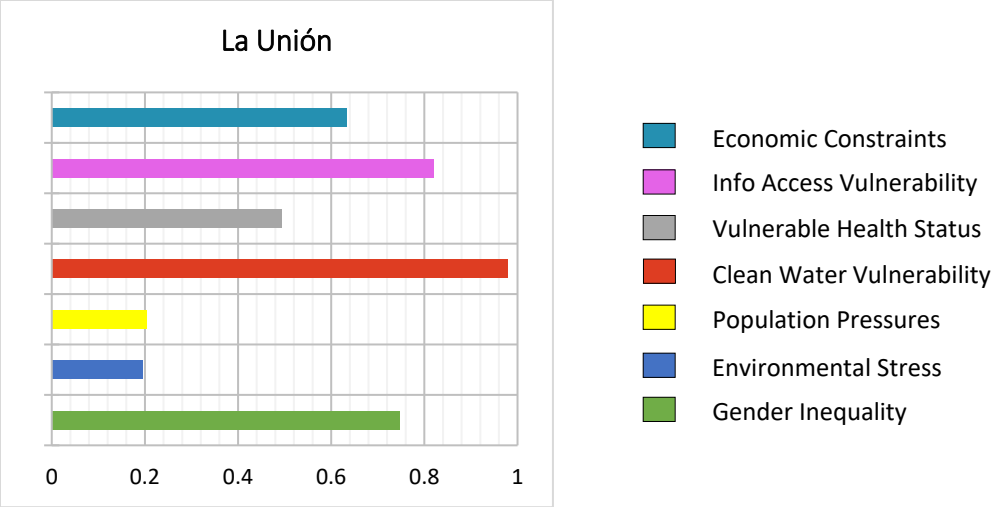


Figure 42: Vulnerability sub-components for La Unión

La Unión: Multi-Hazard Exposure

La Unión ranks **9th** out of **14** on the Multi-Hazard Exposure index with a score of **0.399**. Despite this low rank, a large proportion of the population is exposed to **seismic activity**, **landslides** and **flood**. Though La Unión is also exposed to tsunami, this hazard affects a smaller proportion of the population.

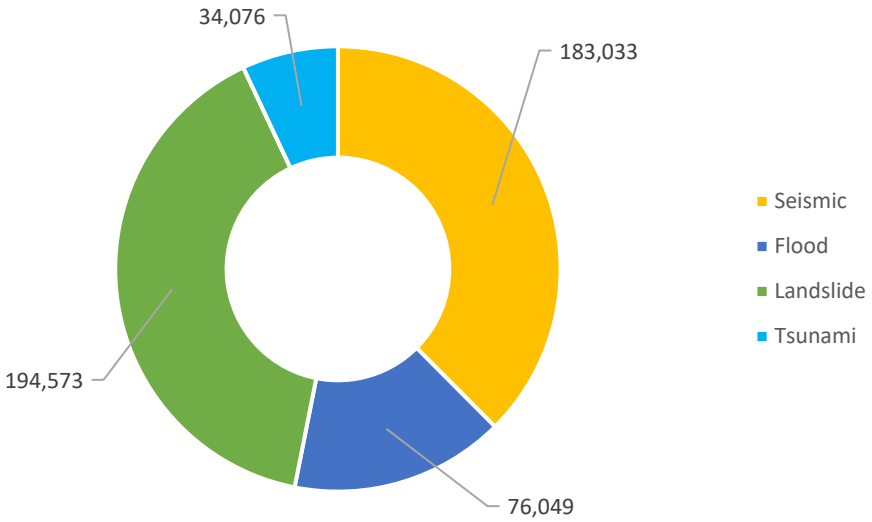


Figure 43: Raw population exposure by hazard type for La Unión

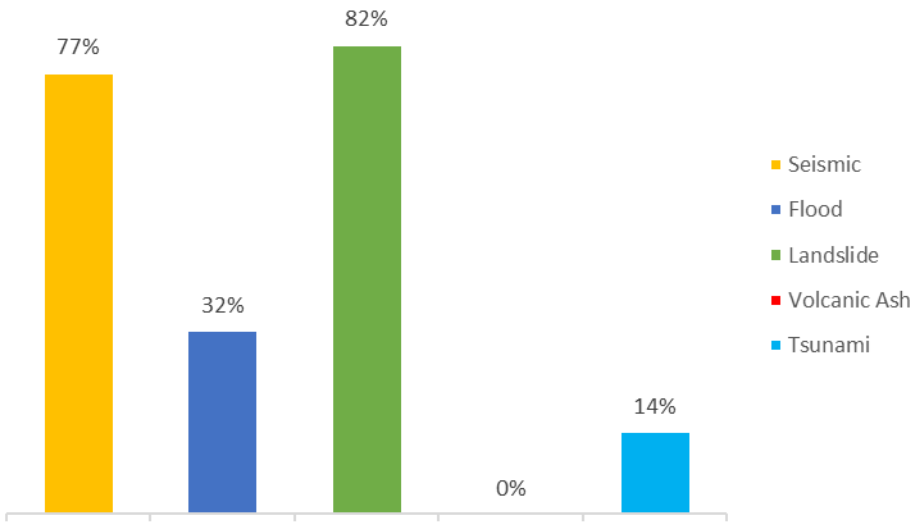


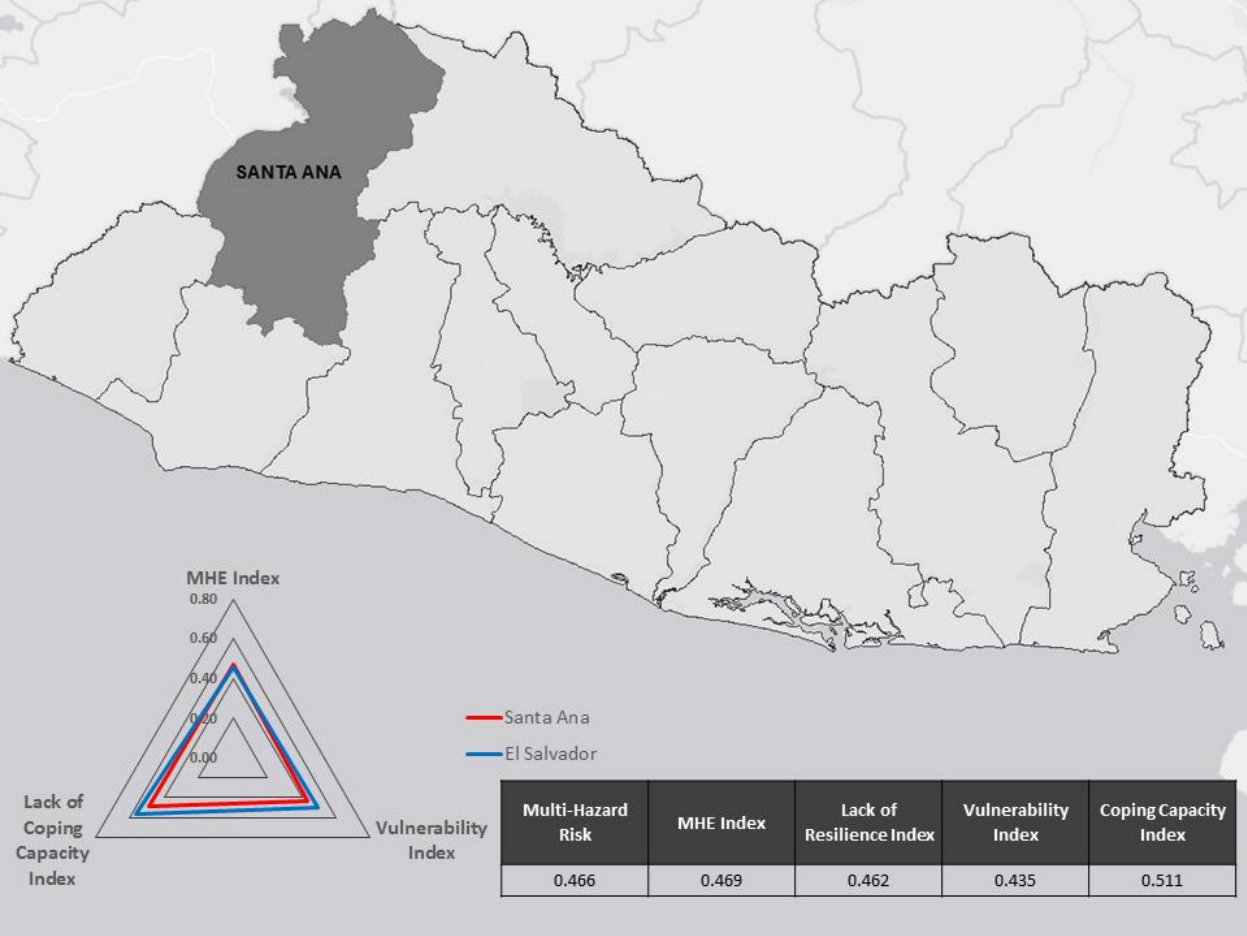
Figure 44: Percent population exposure to hazard type for La Unión

Table 37. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for La Unión

Index	La Unión	
	Score	**Rank**
Multi-Hazard Exposure	0.399	9
Sub-Components		
Raw Exposure	0.204	9
Relative Exposure	0.594	5

Santa Ana: Risk

Santa Ana ranks **10th** out of **14** on the Multi-Hazard Risk index with a score of **0.465**. Santa Ana has moderate Multi-Hazard Exposure, very low Vulnerability and high Coping Capacity. The department ranks 7th for Multi-Hazard Exposure, 13th in Vulnerability, and 4th in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.466	0.469	0.462	0.435	0.511

Santa Ana: Lack of Resilience

Santa Ana ranks **12th** of 14 on **Lack of Resilience Index** with a score of **0.462**. Santa Ana's score and ranking are due to very low Vulnerability and high Coping Capacity. The department ranks 13th in Vulnerability, and 4th in Coping Capacity. Santa Ana has the 13th highest Vulnerability, and the 4th highest Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Santa Ana are: **Economic Capacity**, **Vulnerable Health Status**, and **Environmental Capacity.**

Table 38. Lack of Resilience Index and Component scores for Santa Ana

Index	Santa Ana	
	Score	**Rank**
Lack of Resilience	0.462	12
Components		
Vulnerability	0.435	13
Coping Capacity	0.511	4

Santa Ana: Coping Capacity

Santa Ana's Coping Capacity is **4th** out of **14** with a score of **0.511**. The thematic areas with the weakest relative scores are **Environmental Capacity** and **Economic Capacity**. These two thematic areas appear to constrain Coping Capacity within this department.

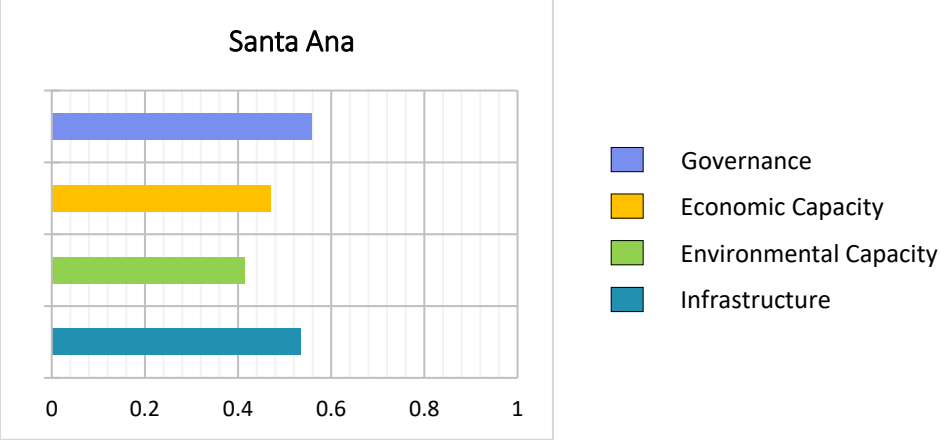


Figure 45: Coping Capacity sub-components for Santa Ana

Table 39 Coping Capacity Index, sub-component and sub-index scores for Santa Ana

Index	Santa Ana	
	Score	Rank
Coping Capacity	0.511	4
Sub-components		
Governance	0.558	5
Economic Capacity	0.471	5
Environmental Capacity	0.415	8
Infrastructure	0.535	5
Infrastructure Sub-indices		
Health Care	0.602	4
Transportation	0.360	10
Communications	0.643	3

Santa Ana: Vulnerability

Santa Ana ranks **13th** out of **14** on the Vulnerability Index with a score of **0.435**. Though Vulnerability in Santa Ana is relatively low, the Index is influenced by **Vulnerable Health Status** and **Economic Constraints** sub-component scores**.**

Table 40. Vulnerability Index and sub-component index scores for Santa Ana

Index	Santa Ana	
	Score	Rank
Vulnerability	0.435	13
Sub-Components		
Economic Constraints	0.566	7
Info Access Vulnerability	0.483	10
Vulnerable Health Status	0.610	2
Clean Water Vulnerability	0.473	8
Population Pressures	0.132	12
Environmental Stress	0.465	9
Gender Inequality	0.315	12

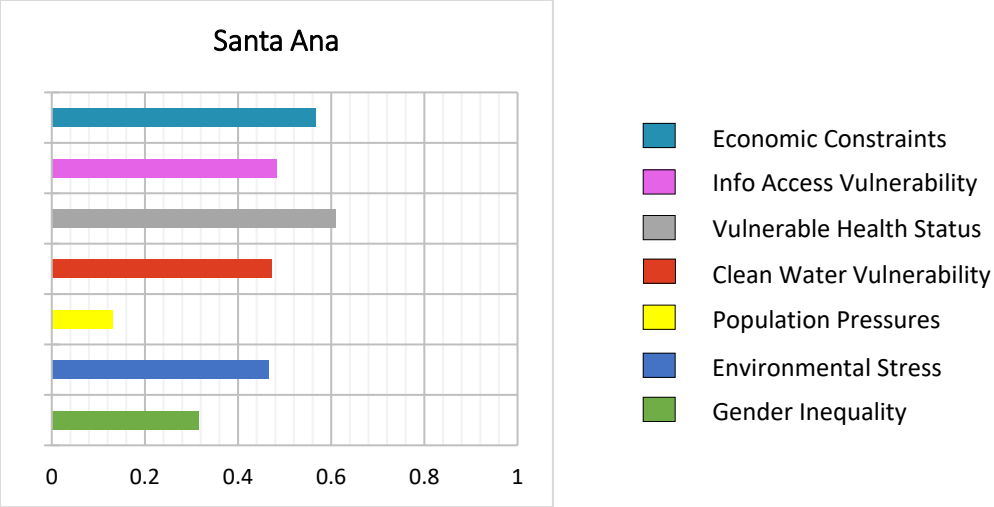


Figure 46: Vulnerability sub-components for Santa Ana

Santa Ana: Multi-Hazard Exposure

Santa Ana ranks **7th** out of **14** on the Multi-Hazard Exposure index with a score of **0.469**. A large proportion of the population is exposed to **seismic activity** and **landslides**. While Santa Ana is also exposed to flood and volcanic ash, these hazards affect a smaller proportion of the department's population.

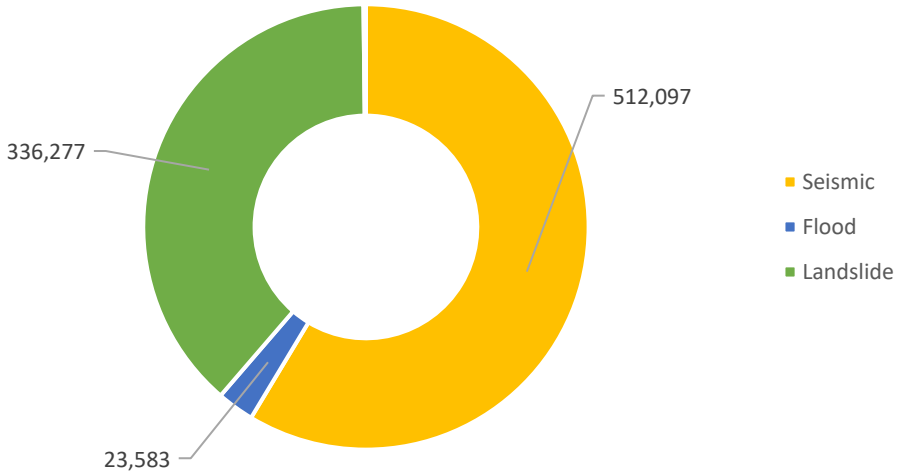


*Figure 47: Raw population exposure by hazard type for Santa Ana. *1,567 people are potentially exposed to volcanic ash.*

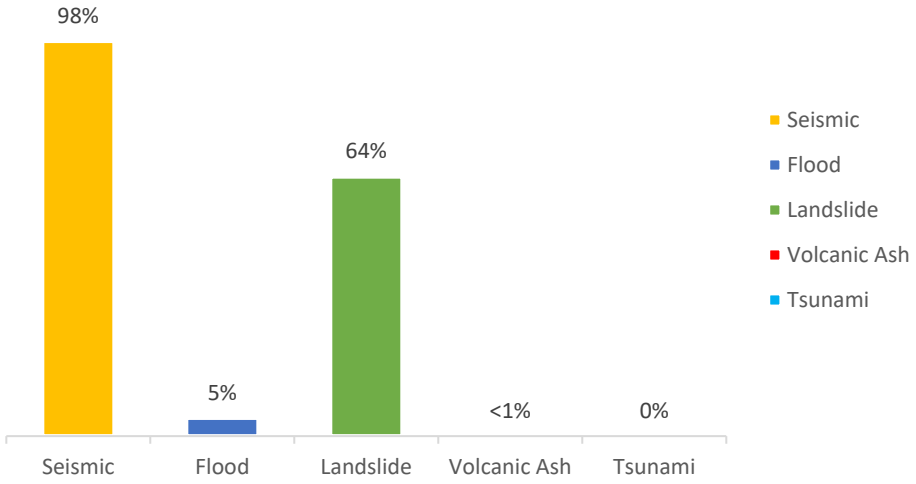


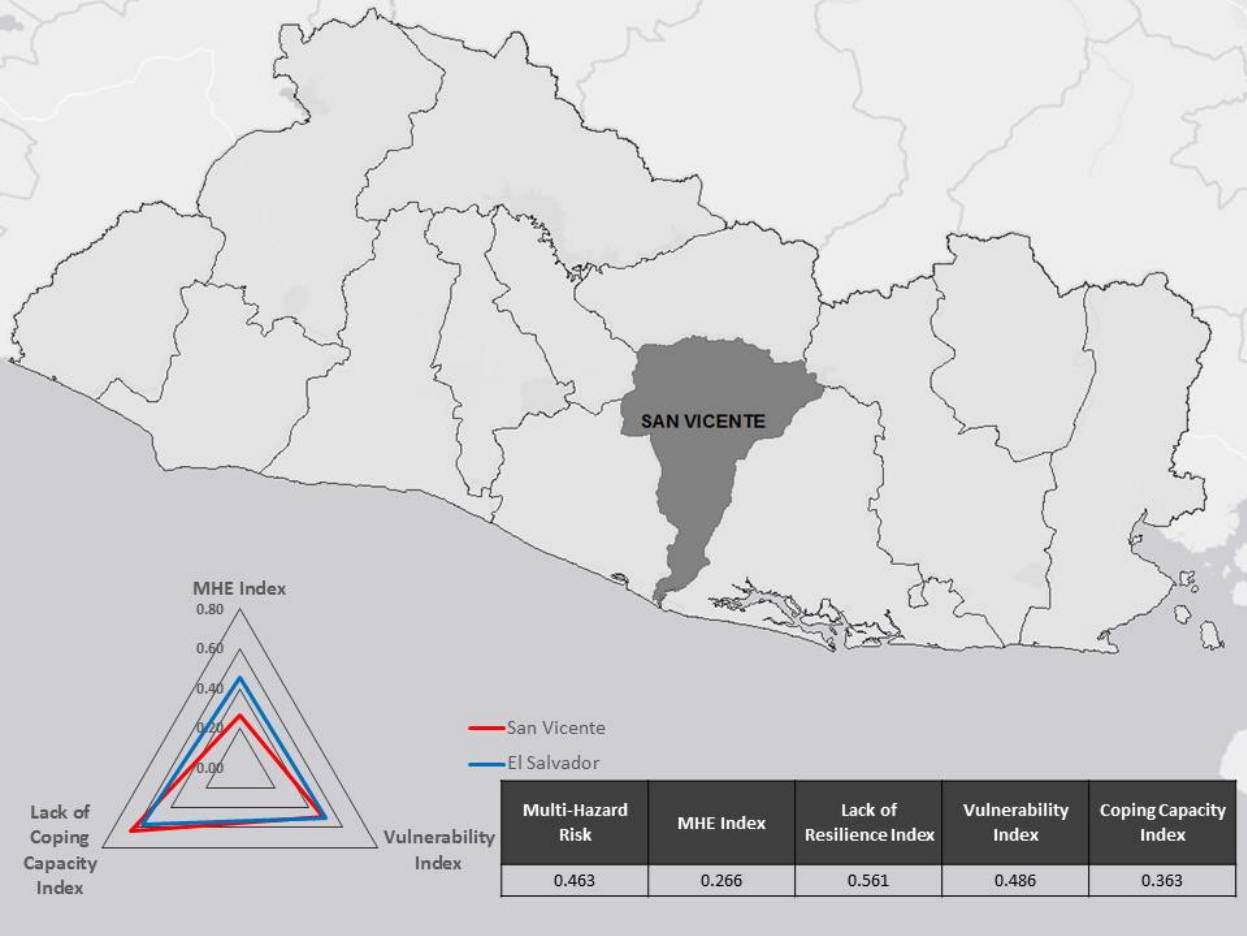
Figure 48: Percent population exposure to hazard type for Santa Ana.

Table 41. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Santa Ana

Index	Santa Ana	
	Score	**Rank**
Multi-Hazard Exposure	0.469	7
Sub-Components		
Raw Exposure	0.590	4
Relative Exposure	0.349	11

San Vincente: Risk

San Vincente ranks **11th** out of **14** on the Multi-Hazard Risk index with a score of **0.463**. San Vincente has low Multi-Hazard Exposure, moderate Vulnerability and low Coping Capacity. The department ranks 11th in Multi-Hazard Exposure, 8th in Vulnerability and 10th in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.463	0.266	0.561	0.486	0.363

San Vincente: Lack of Resilience

San Vincente ranks **6th** of **14** on **Lack of Resilience Index** with a score of **0.561**. San Vincente's score and ranking are due to moderate Vulnerability and low Coping Capacity. The department ranks 8th in Vulnerability and 10th in Coping Capacity.

The three thematic areas with the weakest relative scores for the department of San Vincente are: **Governance**, **Environmental Capacity**, and **Economic Capacity.**

Table 42. Lack of Resilience Index and Component scores for San Vincente

Index	San Vincente	
	Score	**Rank**
Lack of Resilience	0.561	6
Components		
Vulnerability	0.486	8
Coping Capacity	0.363	10

San Vincente: Coping Capacity

San Vincente's Coping Capacity is **10th** out of **14** with a score of **0.363**. The thematic areas with the weakest relative scores are **Environmental Capacity** and **Governance**. These two thematic areas appear to constrain Coping Capacity within this department.

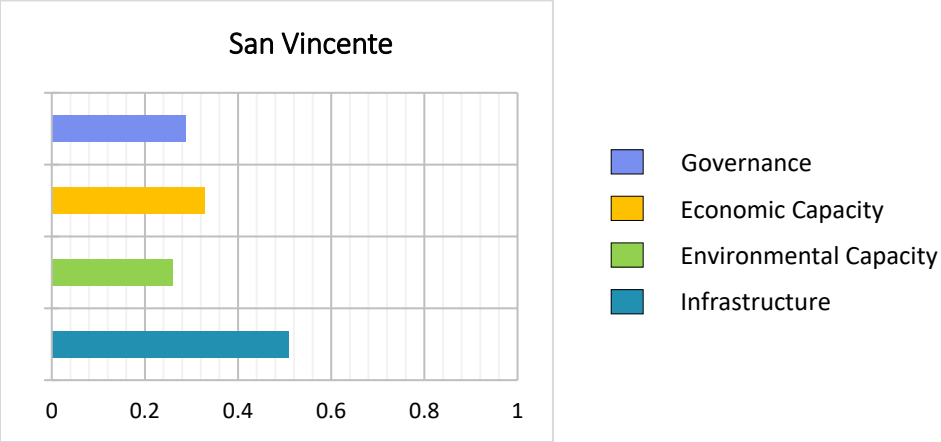


Figure 49: Coping Capacity sub-components for San Vincente

Table 43 Coping Capacity Index, sub-component and sub-index scores for San Vincente

Index	San Vincente	
	Score	Rank
Coping Capacity	0.363	10
Sub-components		
Governance	0.288	12
Economic Capacity	0.328	11
Environmental Capacity	0.260	9
Infrastructure	0.508	6
Infrastructure Sub-indices		
Health Care	0.719	3
Transportation	0.472	9
Communications	0.332	10

San Vincente: Vulnerability

San Vincente ranks **8th** out of **14** on the Vulnerability Index with a score of **0.486**. Vulnerability in San Vincente is influenced by **Vulnerable Health Status**, **Population Pressures**, and **Environmental Stress** sub-component scores.

Table 44. Vulnerability Index and sub-component index scores for San Vincente

Index	San Vincente	
	Score	Rank
Vulnerability	0.486	8
Sub-Components		
Economic Constraints	0.507	9
Info Access Vulnerability	0.457	12
Vulnerable Health Status	0.605	4
Clean Water Vulnerability	0.366	10
Population Pressures	0.531	6
Environmental Stress	0.523	6
Gender Inequality	0.411	10

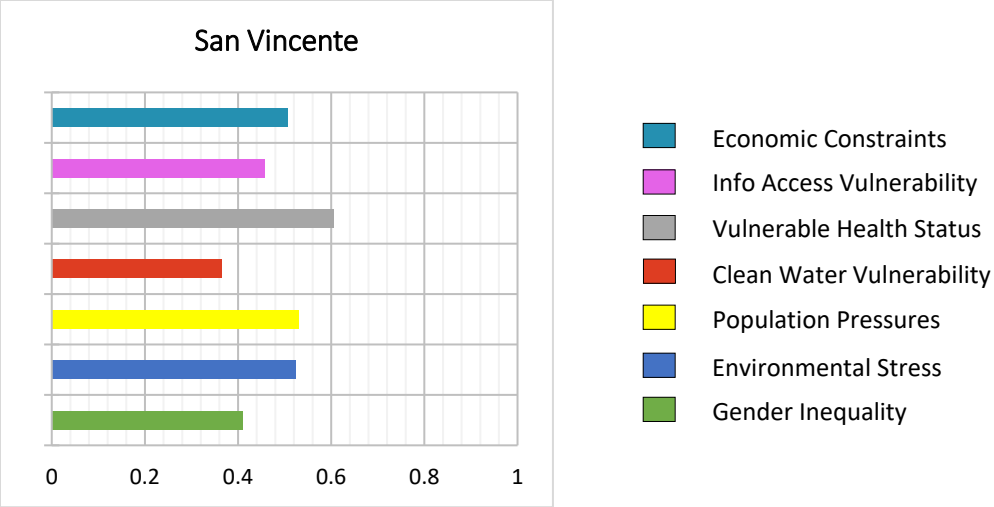


Figure 50: Vulnerability sub-components for San Vincente

San Vincente: Multi-Hazard Exposure

San Vincente ranks **11th** out of **14** on the Multi-Hazard Exposure index with a score of **0.266**. Despite this low rank, large proportion of the population is exposed to **seismic activity** and **landslides**. Smaller proportions of the population are also exposed to flood and tsunami.

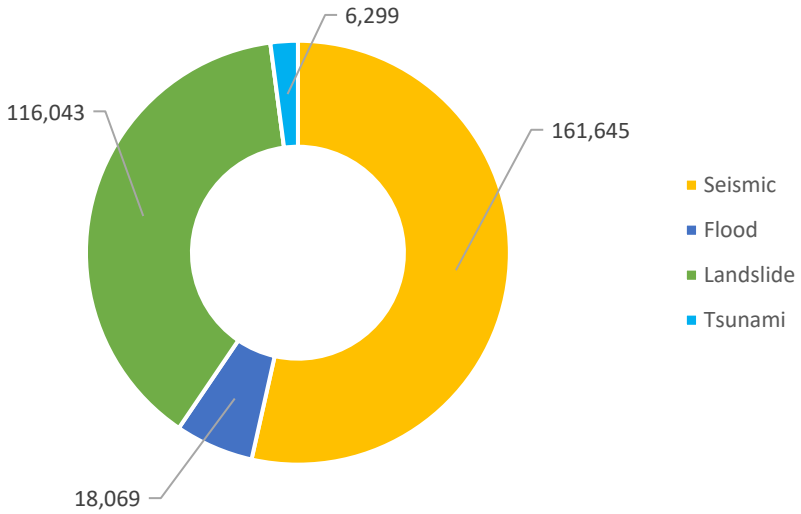


Figure 51: Raw population exposure by hazard type for San Vincente

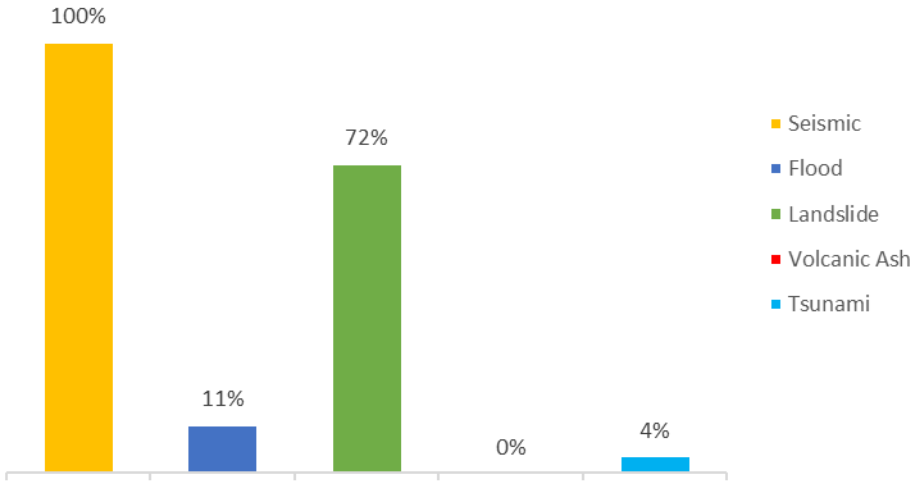


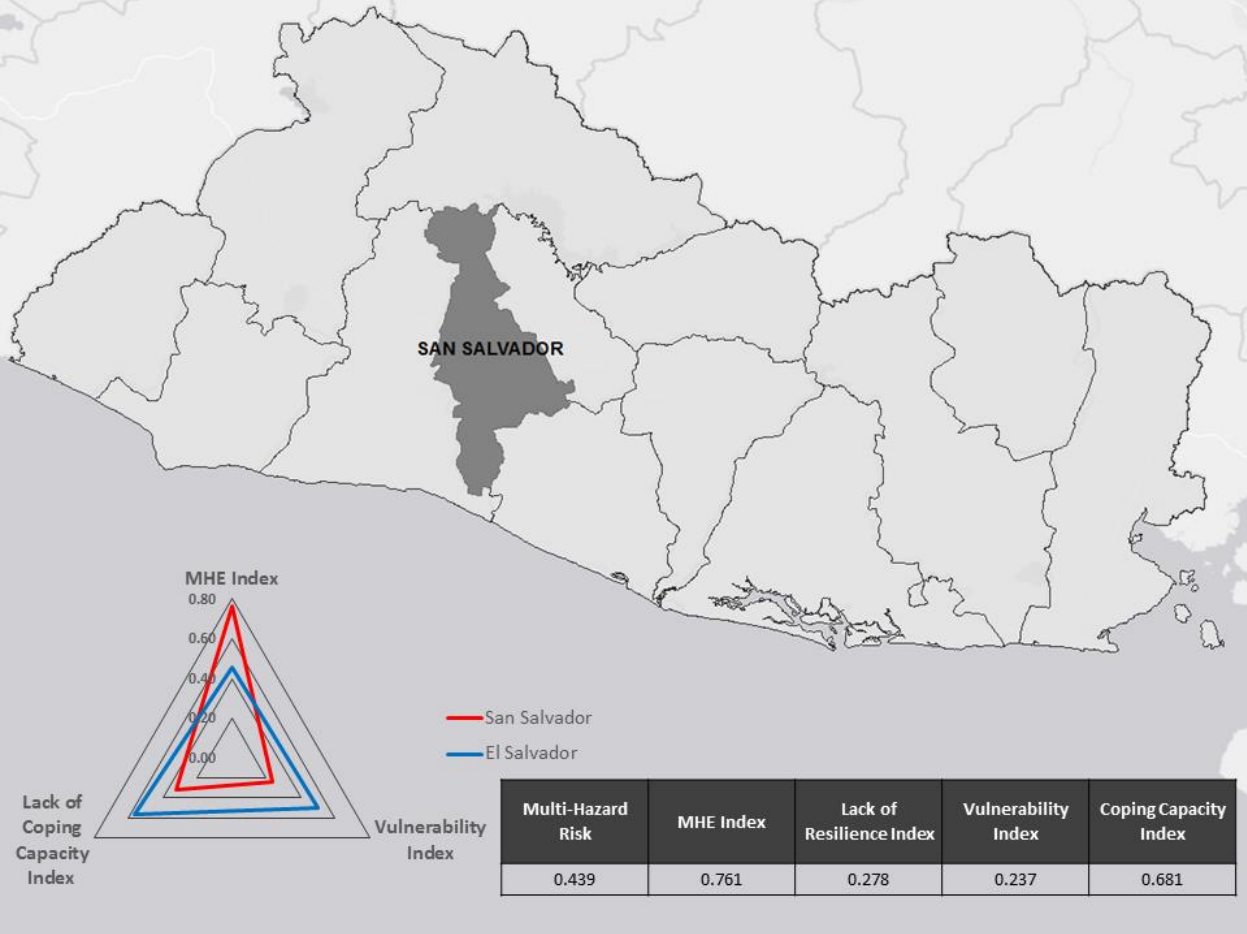
Figure 52: Percent population exposure to hazard type for San Vincente

Table 45. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for San Vincente

Index	San Vincente	
	Score	**Rank**
Multi-Hazard Exposure	0.266	11
Sub-Components		
Raw Exposure	0.053	12
Relative Exposure	0.478	10

San Salvador: Risk

San Salvador ranks **12th** out of **14** on the Multi-Hazard Risk index with a score of **0.439**. Though San Salvador has very high Multi-Hazard Exposure, this is combined with very low Vulnerability, and very high Coping Capacity for lower relative Risk. The department ranks 2nd for Multi-Hazard Exposure, 14th in Vulnerability, and 1st in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.439	0.761	0.278	0.237	0.681

San Salvador: Lack of Resilience

San Salvador ranks **14th** of **14** on **Lack of Resilience Index** with a score of **0.278**. San Salvador's score and ranking are due to very low Vulnerability and very high Coping Capacity. San Salvador has the lowest Vulnerability and highest Coping Capacity in the country, indicating high resilience overall. Overall, San Salvador exhibits relatively few thematic weaknesses in Vulnerability and Coping Capacity with one exception: **Environmental Capacity**.

Table 46. Lack of Resilience Index and Component scores for San Salvador

Index	San Salvador	
	Score	**Rank**
Lack of Resilience	0.278	14
Components		
Vulnerability	0.237	14
Coping Capacity	0.681	1

San Salvador: Coping Capacity

San Salvador's Coping Capacity is **1st** out of **14** with a score of **0.681**. Consequently, San Salvador exhibits only one area of thematic weakness in Coping Capacity: **Environmental Capacity**. This thematic area may constrain Coping Capacity within this department.

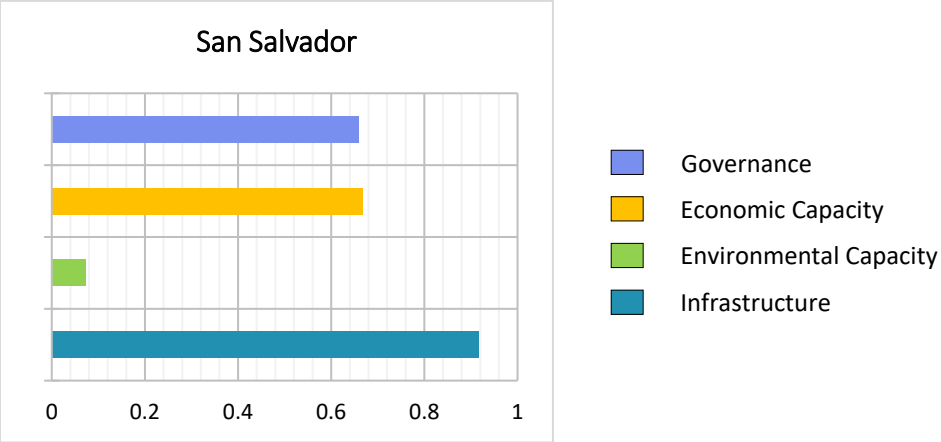


Figure 53: Coping Capacity sub-components for San Salvador

Table 47 Coping Capacity Index, sub-component and sub-index scores for San Salvador

Index	San Salvador	
	Score	Rank
Coping Capacity	0.681	1
Sub-components		
Governance	0.660	2
Economic Capacity	0.667	1
Environmental Capacity	0.072	12
Infrastructure	0.917	1
Infrastructure Sub-indices		
Health Care	0.999	1
Transportation	0.791	3
Communications	0.962	2

San Salvador: Vulnerability

San Salvador ranks **14th** out of **14** on the Vulnerability Index with a score of **0.237**. Though San Salvador exhibits the lowest Vulnerability in the country, the Index is influenced by **Environmental Stress** and **Vulnerable Health Status** sub-component scores.

Table 48. Vulnerability Index and sub-component index scores for San Salvador

Index	San Salvador	
	Score	Rank
Vulnerability	0.237	14
Sub-Components		
Economic Constraints	0.295	14
Info Access Vulnerability	0.076	14
Vulnerable Health Status	0.395	11
Clean Water Vulnerability	0	14
Population Pressures	0.129	13
Environmental Stress	0.458	10
Gender Inequality	0.305	13

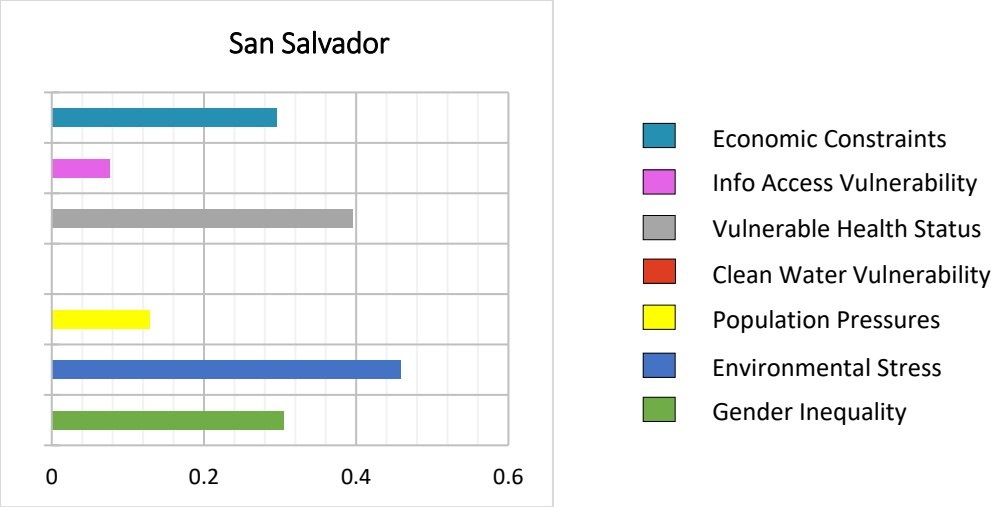


Figure 54: Vulnerability sub-components for San Salvador

San Salvador: Multi-Hazard Exposure

San Salvador ranks **2nd** out of **14** on the Multi-Hazard Exposure index with a score of **0.761**. The department has a very large population exposed to multiple hazards including **seismic activity**, **landslides** and **flood**. A smaller proportion of San Salvador's population is also exposed to volcanic ash.

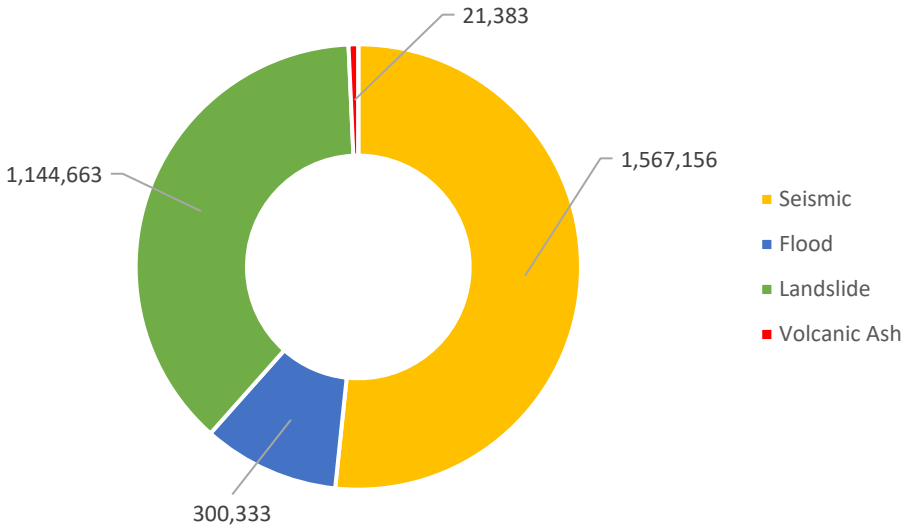


Figure 55: Raw population exposure by hazard type for San Salvador

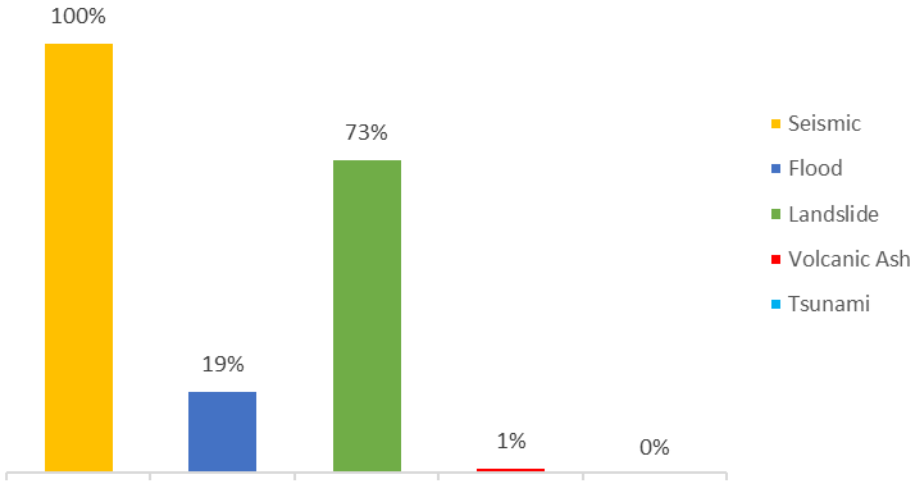


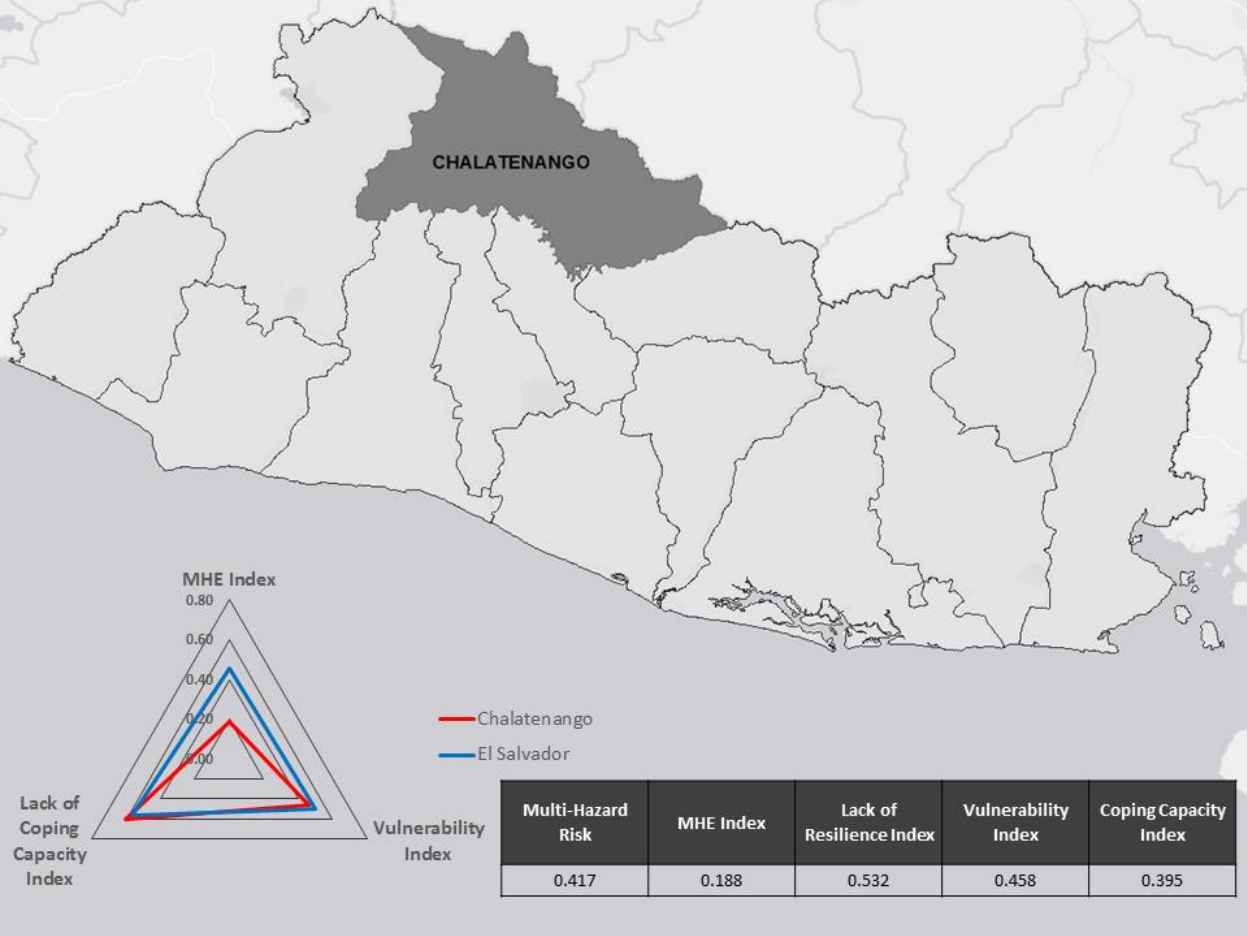
Figure 56: Percent population exposure to hazard type for San Salvador

Table 49. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for San Salvador

Index	San Salvador	
	Score	**Rank**
Multi-Hazard Exposure	0.761	2
Sub-Components		
Raw Exposure	1.000	1
Relative Exposure	0.522	9

Chalatenango: Risk

Chalatenango ranks **13th** out of **14** on the Multi-Hazard Risk index with a score of **0.417**. Chalatenango has very low Multi-Hazard Exposure, low Vulnerability and moderate Coping Capacity. The department ranks 12th in Multi-Hazard Exposure, 9th in Vulnerability and 8th in Coping Capacity



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.417	0.188	0.532	0.458	0.395

Chalatenango: Lack of Resilience

Chalatenango ranks **8th** of **14** on **Lack of Resilience Index** with a score of **0.532**. Chalatenango's score and ranking are due to low Vulnerability and moderate Coping Capacity. Chalatenango has the 12th highest Multi-Hazard Exposure in the country, the 9th highest Vulnerability, and the 8th highest Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Chalatenango are: **Environmental Capacity**, **Gender Inequality**, and **Vulnerable Health Status.**

Table 50. Lack of Resilience Index and Component scores for Chalatenango

Index	Chalatenango	
	Score	**Rank**
Lack of Resilience	0.532	8
Components		
Vulnerability	0.458	9
Coping Capacity	0.395	8

Chalatenango: Coping Capacity

Chalatenango's Coping Capacity is **8th** out of **14** with a score of **0.395**. The thematic areas with the weakest relative scores are **Environmental Capacity** and **Infrastructure (Transportation)**. These two thematic areas appear to constrain Coping Capacity within this department.

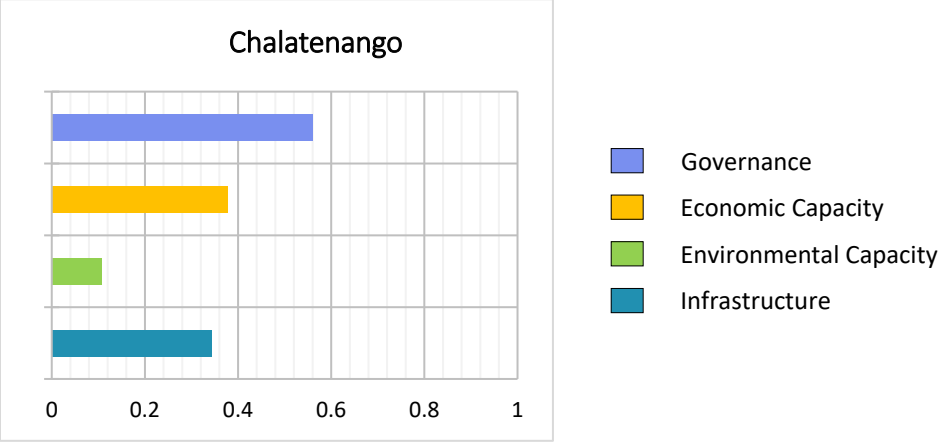


Figure 57: Coping Capacity sub-components for Chalatenango

Table 51 Coping Capacity Index, sub-component and sub-index scores for Chalatenango

Index	Chalatenango	
	Score	Rank
Coping Capacity	0.395	8
Sub-components		
Governance	0.561	4
Economic Capacity	0.377	9
Environmental Capacity	0.107	11
Infrastructure	0.344	9
Infrastructure Sub-indices		
Health Care	0.581	5
Transportation	0.000	14
Communications	0.451	8

Chalatenango: Vulnerability

Chalatenango ranks **9th** out of **14** on the Vulnerability Index with a score of **0.458**. Despite this low rank, Vulnerability in Chalatenango is strongly influenced by high sub-component scores in the thematic areas of **Gender Inequality, Vulnerable Health Status,** and **Economic Constraints.**

Table 52. Vulnerability Index and sub-component index scores for Chalatenango

Index	Chalatenango	
	Score	Rank
Vulnerability	0.458	9
Sub-Components		
Economic Constraints	0.566	6
Info Access Vulnerability	0.471	11
Vulnerable Health Status	0.609	3
Clean Water Vulnerability	0.212	12
Population Pressures	0.000	14
Environmental Stress	0.544	5
Gender Inequality	0.806	1

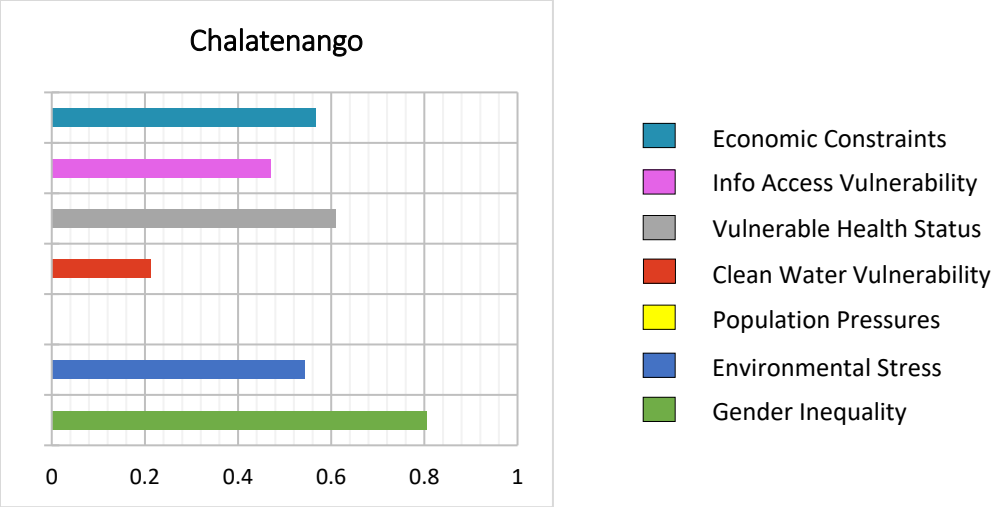


Figure 58: Vulnerability sub-components for Chalatenango

Chalatenango: Multi-Hazard Exposure

Chalatenango ranks **12th** out of **14** on the Multi-Hazard Exposure index with a score of **0.188**. Despite this low rank, a large proportion of Chalatenango 'population is exposed to **landslides**, **seismic activity,** and **flood**.

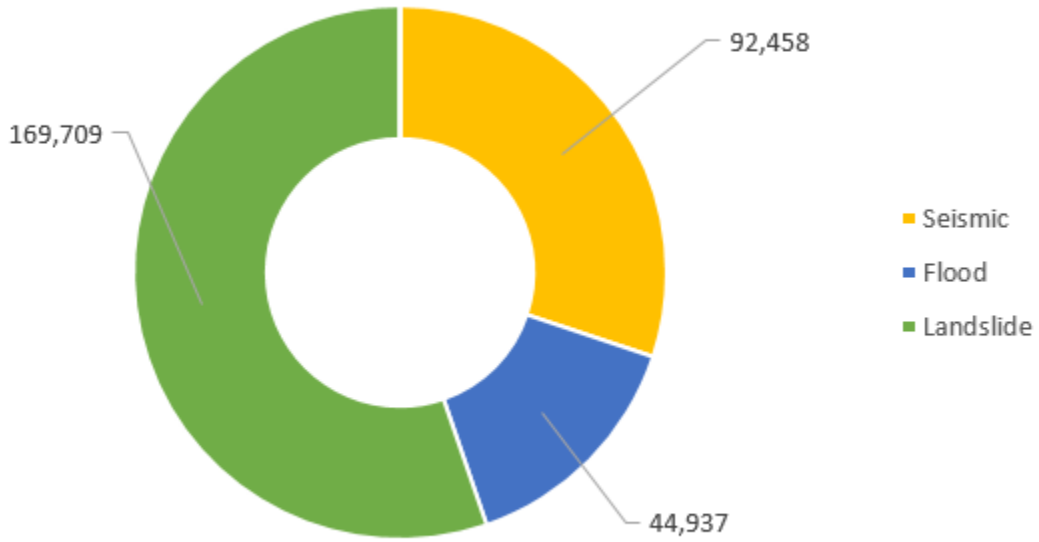


Figure 59: Raw population exposure by hazard type for Chalatenango

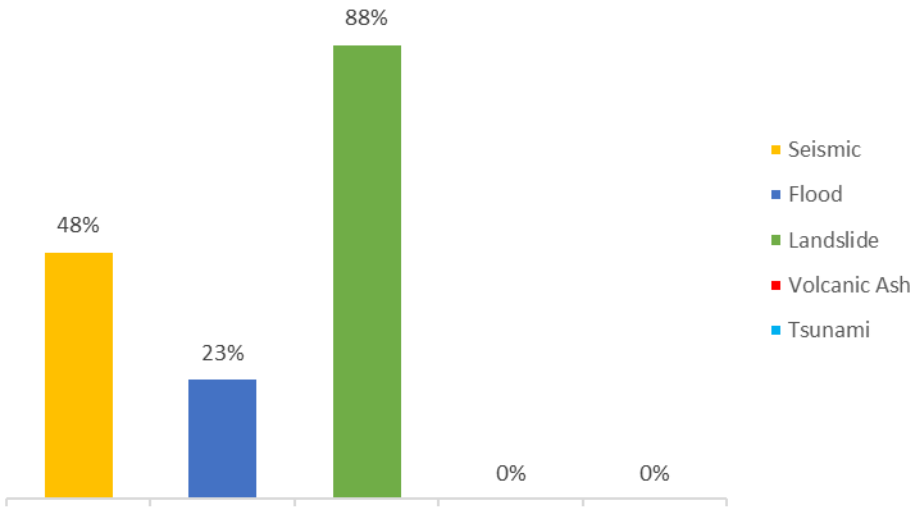


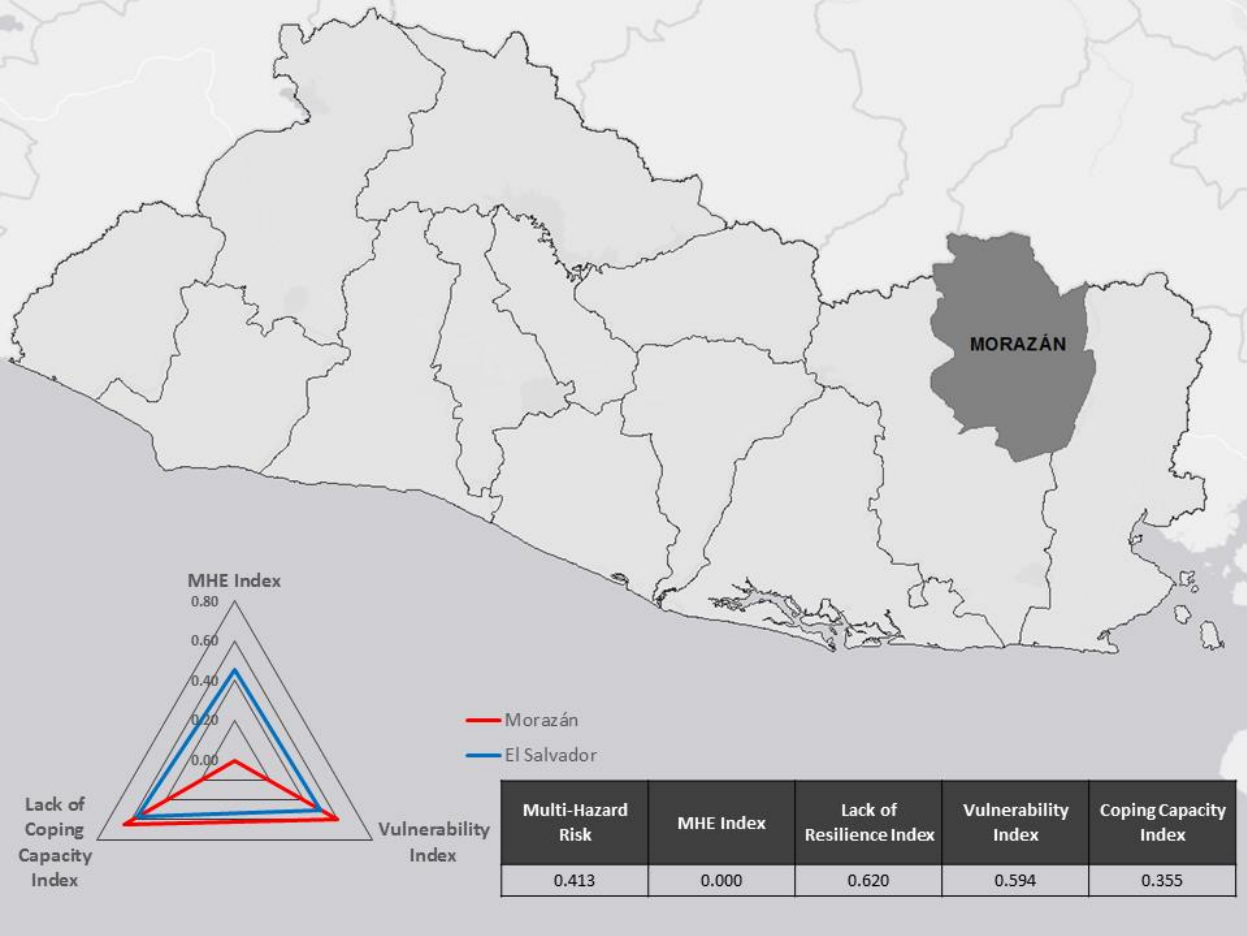
Figure 60: Percent population exposure to hazard type for Chalatenango

Table 53. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Chalatenango

Index	Chalatenango	
	Score	**Rank**
Multi-Hazard Exposure	0.188	12
Sub-Components		
Raw Exposure	0.074	11
Relative Exposure	0.301	13

Morazán: Risk

Morazán ranks **14th** out of **14** on the Multi-Hazard Risk index with a score of 0.417. Morazán has very low Multi-Hazard Exposure, very high Vulnerability, and low Coping Capacity. The department ranks 14th for Multi-Hazard Exposure, 2nd in Vulnerability, and 11th in Coping Capacity.



Multi-Hazard Risk	MHE Index	Lack of Resilience Index	Vulnerability Index	Coping Capacity Index
0.413	0.000	0.620	0.594	0.355

Morazán: Lack of Resilience

Morazán ranks **3rd** of 14 on **Lack of Resilience Index** with a score of **0.620**. Morazán's score and ranking are due to very high Vulnerability, and low Coping Capacity. Morazán has the 14th highest Multi-Hazard Exposure in the country, the 2nd highest Vulnerability, and the 11th highest Coping Capacity.

The three thematic areas with the weakest relative scores for the department of Morazán are: **Environmental Capacity**, **Information Access Vulnerability** and **Gender Inequality.**

Table 54. Lack of Resilience Index and Component scores for Morazán

Index	Morazán	
	Score	**Rank**
Lack of Resilience	0.620	3
Components		
Vulnerability	0.594	2
Coping Capacity	0.355	11

Morazán: Coping Capacity

Morazán's Coping Capacity is **11th** out of **14** with a score of **0.355**. The thematic areas with the weakest relative scores are **Environmental Capacity** and **Infrastructure**. These two thematic areas appear to constrain Coping Capacity within this department.

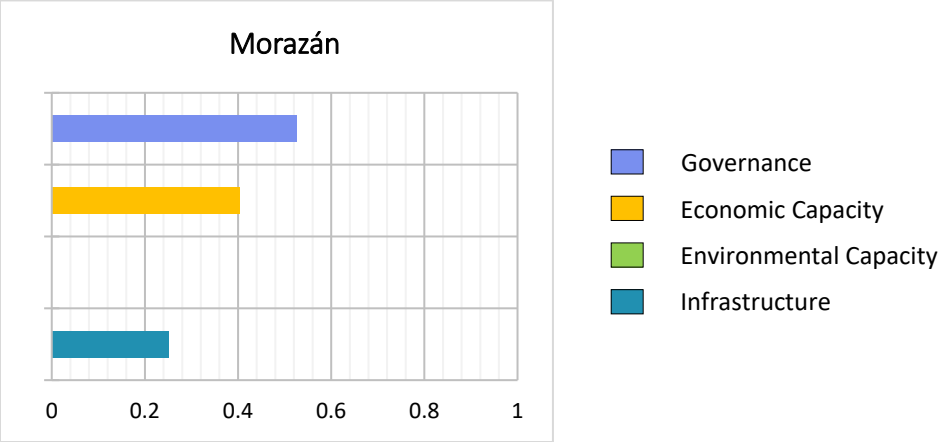


Figure 61: Coping Capacity sub-components for Morazán

Table 55 Coping Capacity Index, sub-component and sub-index scores for Morazán

Index	Morazán	
	Score	Rank
Coping Capacity	0.355	11
Sub-components		
Governance	0.527	8
Economic Capacity	0.403	6
Environmental Capacity	0.000	14
Infrastructure	0.252	12
Infrastructure Sub-indices		
Health Care	0.038	14
Transportation	0.580	6
Communications	0.139	12

Morazán: Vulnerability

Morazán ranks **2nd** out of **14** on the Vulnerability Index with a score of **0.594**. Vulnerability in Morazán is strongly influenced by **Information Access Vulnerability**, **Population Pressures**, and **Gender Inequality** sub-component scores.

Table 56. Vulnerability Index and sub-component index scores for Morazán

Index	Morazán	
	Score	Rank
Vulnerability	0.594	2
Sub-Components		
Economic Constraints	0.558	8
Info Access Vulnerability	0.751	2
Vulnerable Health Status	0.571	5
Clean Water Vulnerability	0.579	4
Population Pressures	0.654	5
Environmental Stress	0.474	8
Gender Inequality	0.654	4

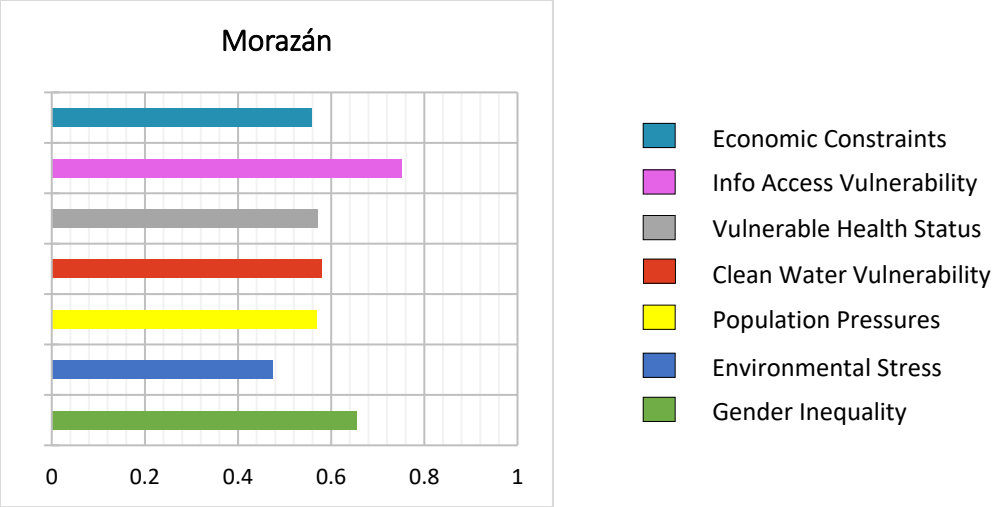


Figure 62: Vulnerability sub-components for Morazán

Morazán: Multi-Hazard Exposure

Morazán ranks **14th** out of **14** on the Multi-Hazard Exposure index with a score of **0.000**. It is important to note that a score of zero on the MHE Index does not indicate "zero exposure." Despite the low rank, a large proportion of the population is exposed to **landslides**. While Morazán is also exposed to seismic activity and flood, these hazards threaten a smaller proportion of the population.

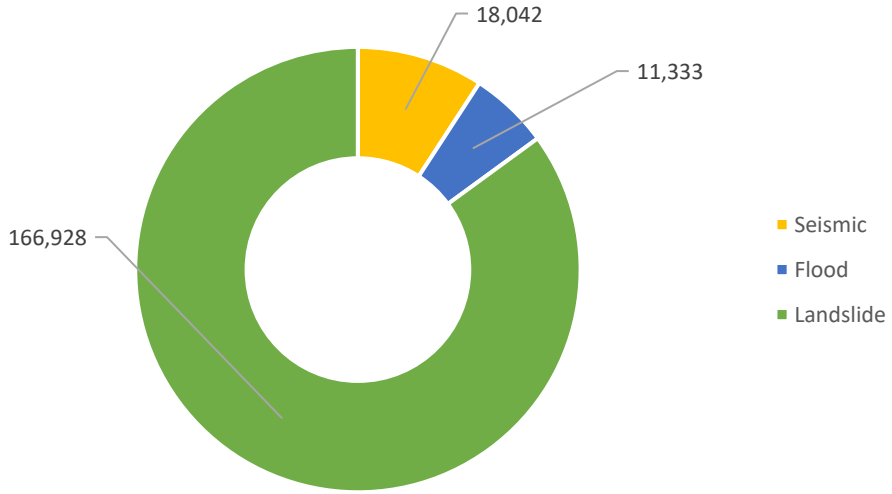


Figure 63: Raw population exposure by hazard type for Morazán

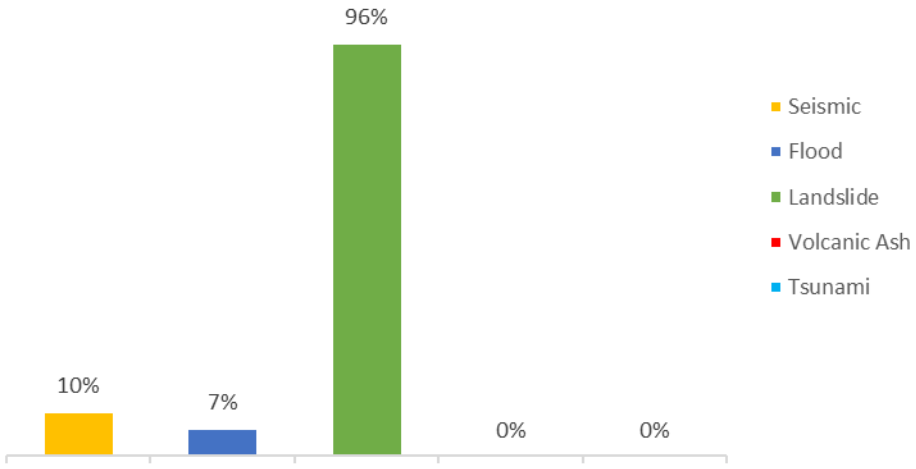


Figure 64: Percent population exposure to hazard type for Morazán

Table 57. Multi-Hazard Exposure Index, Raw and Relative Exposure Index scores for Morazán

Index	Morazán	
	Score	**Rank**
Multi-Hazard Exposure	0.000	14
Sub-Components		
Raw Exposure	0.000	14
Relative Exposure	0.000	14

RVA Recommendations

The following recommendations are based on the results of the El Salvador NDPBA RVA. These overarching recommendations are designed to acknowledge the complex drivers of risk that are prevalent throughout the country. As presented in the previous section, the specific drivers of risk can vary widely across departments. Consequently, to direct interventions that reduce vulnerability and increase coping capacity at the department level, decision makers must carefully examine these drivers for each department.

Programmatic Recommendations to Support Risk and Vulnerability Assessments in El Salvador

1. Implement strategies to formalize data sharing between all organizations active in disaster management to support evidence based decision making.
2. Implement plans to improve, standardize, and update documentation of recent disaster impacts to provide a more comprehensive understanding of vulnerability by identifying areas that may still be recovering from a disaster.
3. Strengthen strategic multi-stakeholder partnerships to expand disaster risk reduction resources to include non-traditional disaster management partners.

Strategies to Reduce Vulnerability and Increase Coping Capacity at the Department Level

The following strategies are designed to acknowledge and prioritize prevalent drivers of risk throughout El Salvador. These recommendations represent a summary of the subnational RVA assessment for the country. To identify or prioritize specific DRR investments for each department, refer to the detailed 5-page summaries provided above. By examining the specific drivers that increase risk in each department, focused interventions can be tailored to reduce vulnerability, increase coping capacity, and acknowledge exposure at the subnational level.

1. Foster economic development to support a healthy local GDP and to improve the quality and equity of critical infrastructure in rural areas. Improving access to communications, transportation and health care increases capacity to prepare for, respond to, and recover from disasters.
2. Support efforts to reduce disparities in access to quality education by implementing programs to maintain school enrollment and increase investment in teaching resources (human and material).
3. Increase access to information by distributing disaster information across multiple platforms (radio, television, internet) and increasing investment for supply-side interventions that ensure that information can be received in vulnerable communities.
4. Support efforts to promote gender equality including equal access to education, labor participation, wages and access to credit, and political rights and representation.

5. Develop mutual aid agreements to support the sharing of vital disaster management resources to increase coping capacity in less-equipped Departments.

    a. For example, the neighboring departments of San Salvador and Cuscatlán represent opposite ends on the Coping Capacity spectrum. Formal mutual aid from San Salvador (very high coping capacity) can be established to leverage critical resources and increase capacity in Cuscatlán (very low coping capacity).

6. Institutionalize multi-hazard planning at the Department and Municipal levels.

Comprehensive Disaster Management (CDM) Findings

EL SALVADOR

NATIONAL DISASTER PREPAREDNESS BASELINE ASSESSMENT

PACIFIC DISASTER CENTER

Findings: Comprehensive Disaster Management

The CDM results presented in this section provide a summary of the CDM analysis, followed by a discussion of each CDM theme, to include identified gaps and recommendations. Detailed recommendations for each CDM theme, along with a five-year implementation plan, have been designed to strengthen CDM in El Salvador.

The CDM helps to:

1. Provide a contextual overview of El Salvador's disaster management capabilities,
2. Identify the strengths and challenges of El Salvador's disaster management system, and
3. Provide context to the RVA results previously discussed by highlighting the larger DRR framework in El Salvador.

The CDM data gathering process included a review of over 100 documents, survey administration (*Appendix C and Appendix D*), detailed stakeholder interviews, and site visits to critical facilities. Data were analyzed using a mixed-methods approach, whereby both quantitative and qualitative information were integrated into overall findings and recommendations. This approach allowed for a more complete assessment of policy, legal environment, resources, public support, and perceptions of disaster management within El Salvador.

Summary

CDM findings indicate the legal framework governing disaster management is comprehensive and concise but has not been fully implemented at all administrative levels. Resource and budgetary constraints have impacted the country's ability to meet disaster management needs. This is made evident through the training and exercise programs which are limited in scope and do not meet the requirements for ensuring a well-trained team of professionals. NGOs with the goal of enhancing disaster management capacity are active in the country, and work to promote a participatory approach to strengthening the nation.

Significant gaps identified in El Salvador's disaster management system include:

1. A standardized training program for disaster managers at the national and departmental level has not been implemented. Training programs for disaster management professionals at the community level do not exist.
2. A centralized repository for disaster management training achievements does not exist, preventing the validation of credentials to ensure adequately trained staff.
3. Lack of a formalized exercise program including planning and execution guidelines at the national and subnational level. Standardized procedures, exercise evaluation, and after-action reporting does not occur.
    a. Budget constraints inhibit the formalization of an exercise program.
4. Exercises are not coordinated among the different administrative levels, limiting effectiveness.
5. El Salvador has a limited annual budget for disaster management activities.
6. National disaster reserve fund allocations focus primarily on response, and are not being used in a way that allows for comprehensive disaster management.
7. There is no direct cabinet-level position for disaster management in El Salvador.

8. Implementation of the legal framework for disaster management has not been fully realized at the subnational level due to a lack of clear guidelines.
9. Limited availability and integration of response plans and SOPs across all administrative levels.
10. A lack of historical information on disaster declarations inhibits planning efforts.
11. Damage and needs assessments lack accuracy and standardization, inhibiting the ability of emergency responders and disaster managers to effectively respond to the needs of the community post-event.
12. A centralized repository of NGOs and partner nations that have active disaster management or DRR projects in El Salvador does not exist, increasing potential overlap or duplication of efforts.
13. Shelter location information for nine departments does not exist or is not available.
14. No inventory of available resources for response was provided, indicating decision makers would not have access to the information.
15. Formalized mutual-aid agreements do not exist or are not available.
16. Regional EOCs lack adequate space, equipment, and supplies for sustainment during a major disaster.
    a. Regional EOCs lack robust communication requirements.
    b. Some regional EOCs do not have city water, support from fire department to fill 5000L water tanks periodically is required. Often the fire department is unable to support and the EOCs have no water.
17. EOCs do not have internal SOPs and staff have not received proper EOC training.

The following is an overview of CDM findings to include recommendations and a five-year plan to strengthen the disaster management capabilities of El Salvador.

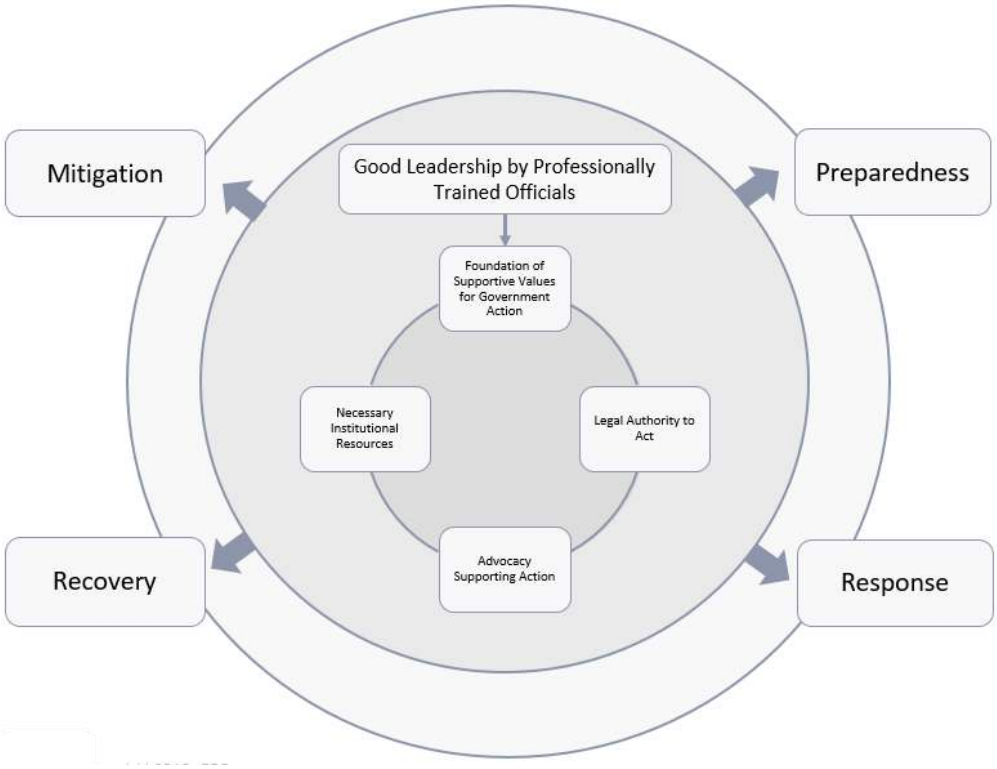


Figure 65. Comprehensive Disaster Management Model (Hughey, 2003)

Good Leadership by Professionally Trained Officials

The basis of successful disaster management centers upon the importance of well-trained professionals. A community or country that has established professionalization of the disaster management field through standardized training and education programs is ensuring a foundation of understanding and leadership among disaster management personnel at all levels.

Formalized training and exercise programs increase the professionalization of the disaster management field by establishing well-trained disaster management personnel at all levels. Protección Civil is the national agency responsible for disaster management training and exercise programs in El Salvador. According to Law 777, Art. 6 (b) Protección Civil is required to develop and coordinate plans to educate and inform the public on how to prevent potential disaster. Protección Civil's Training and Education Department is responsible for overseeing training for disaster management professionals. The capacity of the department is limited with most training provided in an uncoordinated fashion by multiple agencies and NGOs. The lack of formalized training and exercise programs inhibits the professionalization of the disaster management field in El Salvador.

Eighty-two percent (82%) of survey respondents indicated that their organizations exhibit strong disaster management leadership. Sixty percent (60%) felt their organization's disaster management programs were effective. Archival research and interviews revealed the absence of disaster management training and exercise programs throughout the country. The lack of a well-trained cadre of disaster management professionals can be an indicator of a young or under-developed program leading to limitations in effectiveness. Exercises are occasionally conducted but a formalized program does not exist. Exercises that are undertaken do not include all administrative levels of disaster management. Other major challenges include a lack of clearly defined educational requirements for disaster management professionals and limited funding for training. Specific findings regarding training and exercise programs are below.

Findings: Training Programs

Training programs designed to build the capacity of disaster management professionals encourage the professionalization of the disaster management field and increase the availability of qualified disaster managers. In El Salvador, disaster management training programs are not standardized. When available, training is mainly provided by NGOs. Without a national disaster management training program, courses offered by NGOs are not always consistent with national DRR objectives. Disaster management professionals are not required to hold a certification or update their training credentials on a regular basis.

The United Nations Disaster Assessment and Coordination (UNDAC) study conducted in April of 2010 recommended that Protección Civil create a yearly training program. Based on this recommendation a plan has been created to develop nationalized training programs, standards, and credentialing. Included in this plan will be the verification of training offered by NGOs within the country to ensure national DRR objectives are being met. No timeframe for the implementation of this program has been established.

Even with funding from NGOs, a centralized and standardized approach to disaster management training is still in the early stages of development in El Salvador. It is important to note that while training programs are not formalized, 68% of survey respondents felt their organizations have training programs designed

to build capacity in disaster management staff. Although survey respondents did indicate that training gaps exist at the community level.

Findings: Training Frequency

Frequent training allows personnel in the disaster management field to pursue training and increase their capacity in the field, thereby increasing the availability of qualified staff. Currently training courses are offered as they become available or as needed, a standardized training schedule has not been established. National guidelines for the evaluation of training and the credentialing of trained professionals do not currently exist. Training is conducted by different departments and in-country NGOs and is not consistent across the country.

The lack of standardized training, verification and credentialing across all levels of disaster management within El Salvador inhibits the professionalization of the disaster management field and limits the availability of officials with standard qualifications. Therefore, there is no systematic way for disaster management practitioners to progress in their professional development, reducing the availability of qualified staff.

Findings: Exercise Frequency

Regular exercises allow the entire disaster management system to evaluate their capacity for managing disaster and to identify areas for improving capabilities. In El Salvador, Protección Civil is responsible for the verification, exercise, and practice of disaster management plans at the national level. By law, one exercise per year is required but there are no plans or guidelines provided to agencies active in disaster management on exercise planning or execution. An annual exercise is conducted for one hazard type at the national level, this exercise is not inclusive of all agencies involved in disaster management and is typically managed by Protección Civil.

Exercises are not conducted at each administrative level simultaneously, rather, exercises are conducted at the community, municipal, departmental, and national levels individually. Guidelines or means of evaluation, verification, or enforcement of exercises do not currently exist. Stakeholders indicated that exercises may be limited or ineffective due to budget constraints, lack of oversight, tracking, after-action reviews, and follow-up.

Gaps

The following gaps were identified:

1. A standardized training program for disaster managers at the national and departmental level has not been implemented. Training programs for disaster management professionals at the community level do not exist.
2. A centralized repository for disaster management training achievements does not exist, preventing the validation of credentials to ensure adequately trained staff.
3. Lack of a formalized exercise program including planning and execution guidelines at the national and subnational level. Standardized procedures, exercise evaluation, and after-action reporting does not occur.
    a. Budget constraints inhibit the formalization of an exercise program.
4. Exercises are not coordinated among the different administrative levels, limiting effectiveness.

Recommendations

It is recommended that El Salvador:

1. Finalize and implement existing plans for a formalized disaster management training structure to promote the continual building of capacity and skills for disaster management professionals at all levels. This can be done through training programs and courses that are trackable, standardized, and consistent with national disaster risk reduction goals and objectives.
2. Establish national guidelines for the credentialing of trained professionals to promote the professionalization of the disaster management field.
3. Institutionalize an exercise program that provides planning guidelines for all administrative levels by promoting the use of standardized procedures, exercise evaluation, and after-action reporting.
    a. Explore alternative funding sources to increase budget allocations for exercise activities at all administrative levels.
4. Develop exercise scenarios that are inclusive of disaster management professionals at all administrative levels.

Foundation of Supportive Values for Government Action

More than good leadership by well-trained professionals is required for effective and efficient disaster management. A foundation of supportive values for government action is an essential component, which enables concepts to be developed into policies and provides government leaders the backing to spend money in an effort to build resources. This is critical for communities and countries with a limited economic base. Disaster preparedness is only one of many issues a government may face. Government support must be encouraged to ensure that the proper importance is placed on disaster management mitigation and preparedness in an effort to build disaster resilient communities with a focus on saving lives and reducing losses.

In El Salvador, disaster management leadership consists primarily of appointed political positions (e.g. president, vice-president, ministers, governors, and mayors). Within the disaster management structure, established in 2005 by Law 777, subject matter experts (specialists) support political leaders to guide disaster management decision making. El Salvador has a young disaster management structure that continues to evolve. Established in 2005, the institutional framework conveys the importance placed on CDM by the government. Survey respondents felt resource shortfalls (e.g., budget, equipment, and staff) and a lack of government leadership are challenges to effective disaster response.

Findings: Annual Budget

El Salvador has a limited annual budget for disaster management, with most funds allotted for fire prevention, response, and mitigation. For 2014, the Ministerio de Gobernacion y Desarrollo Territorial (MIGOBDT)'s institutional budget was $20,370,350, $6,481,890 of which was allocated for disaster management activities through Protección Civil, divided as follows:

- Fire prevention, response, and mitigation: $3,338,750
- Protección Civil: $3,143,140

Protección Civil's budget is designated for personnel salaries and wages, utilities, and basic supplies. In 2014, personnel salaries accounted for $2,427,430, with the remainder of the budget assigned to acquisitions of goods and services ($715,710).

Table 58. Annual Budget for Protección Civil

Budget Year	Protección Civil, Prevención y Mitigación de Desastres				
	Salaries and Wages	Acquisition of Goods and Services	Financial and Other Expenses	Investments in Fixed Assets	Total
2015	$2,523,080	$206,120	0	0	$2,729,200
2014	$2,427,430	$715,710	0	0	$3,143,140

In 2015, the overall budget of MIGOBDT increased ($21,927,505), allocations for disaster management were slightly lower than the previous year ($6,281,850), with Protección Civil receiving an operational budget of $2,279,200. With personnel expenses about the same as the previous year, 92% of Protección Civil's 2015 budget was used solely for salaries and wages ($2,523,080).

Disaster management activities in El Salvador are largely funded through donations from development organizations and NGOs. The limited annual budget for disaster management indicates that there are insufficient resources available for CDM in El Salvador.

Findings: National Disaster Reserve Fund

To support disaster management activities in El Salvador, Law 778 established the *Fondo de Protección Civil, Prevención y Mitigación de Desastres* (FOPROMID), with an initial contribution from the general budget in 2005 of US$4 million. Under Law 778, the Ministry of the Interior is authorized to request additional disaster funds from the Minister of Finance as needed to cope with the effects of disasters. The disaster reserve fund can also be supplemented by donations from any entity, national or foreign.

Annual contributions to FOPROMID occurs through El Salvador's general state budget (*Obligaciones Generales del Estado)*, which receives funds transferred from various management areas of El Salvador's overall budget, including Administrative Management, Administration of Justice and Public Safety, Social Development, and Economic Development Support. The general state budget for 2014 was $670 million. Of this, FOPROMID received $4 million, or 0.6% of the general state budget. This amount was maintained in 2015 even though the general state budget was reduced ($646.6 million).

Although FOPROMID was established to support both disaster preparedness and response activities in El Salvador, the funds have largely been used for response, neglecting preparedness. This indicates that resources are not being used to address all phases of disaster management, thereby hindering the advancement of CDM within the country. The fund cannot provide sufficient support for mitigation measures and long-term recovery following a disaster.

Findings: Appointed/Cabinet-Level Position

There is no direct cabinet-level position for disaster management in El Salvador. Protección Civil is under the authority of the MIGOBDT. Although the Director General of Protección Civil may serve as the Secretary of Vulnerability, a cabinet-level position established in 2011 with the creation of the Secretariat of Vulnerability Affairs, this is not an institutionalized arrangement and the same person is not required to occupy both positions.

The creation of the Secretariat of Vulnerability Affairs is a positive step in further institutionalizing DRR and CDM within El Salvador.

Gaps

The following gaps were identified:

1. El Salvador has a limited annual budget for disaster management activities.
2. National disaster reserve fund allocations focus primarily on response, and are not being used in a way that allows for comprehensive disaster management.
3. There is no direct cabinet-level position for disaster management in El Salvador.

Recommendations

It is recommended that El Salvador:

1. Explore alternative funding sources to increase the availability of dedicated disaster management funds within the national budget (public/private partnership).
2. Work with national and international partners to identify alternative ways to increase appropriations to the *Fondo de Protección Civil, Prevención y Mitigación de Desastres* to the point that it can cover all disaster expenses incurred each year based on a 20-year disaster loss average.
3. Establish an appointed cabinet-level position solely for overseeing the disaster management structure in El Salvador.

Legal Authority to Act

Legal Authority to Act provides the necessary foundation for implementation of CDM. The legal framework within which disaster operations occur can have a significant impact on preparedness, response, recovery, and mitigation. Without the authority to act and the support of government officials, CDM activities can be halted, leaving residents vulnerable to disasters.

El Salvador has developed a progression of key disaster management legislation designed to provide a solid foundation for CDM in the country. The full implementation of relevant legislation has yet to be realized. At the national level, disaster management has a strong, well-organized structure. However, dissemination of policies and pertinent disaster risk reduction information to the subnational level is hindered by insufficient communication and the wider political environment. Survey respondents referenced a lack of coordination among institutions and ineffective dissemination and sharing of information in the country as the biggest challenge for disaster response. Increased transparency and inter-agency cooperation would serve to enhance CDM in El Salvador.

Findings: Disaster Management Legislation

Legislative Decree No. 498, *Ley De Defensa Civil*, was passed in 1976 as the initial implementation of disaster risk management in El Salvador. The purpose of the legislation was to create a national system of civil defense for the protection of the El Salvadorian population from natural disasters, as well as to assist in the recovery process in the event of a disaster. In 1988, Legislative Decree No. 44 established a mechanism for declaring a *State of Emergency*. Under Decree No. 44, the *Comisión Nacional de Protección Civil* (CNPC) was given the authority to request the declaration of a *State of Emergency* from the President.

Over the past two decades, several major disaster events significantly altered El Salvador's disaster management system. The devastation caused by 1998's Hurricane Mitch was taken as an indication of an inadequate structure for disaster management under the existing system of civil defense. The disaster management system was largely reactive, overlooking the essential aspects of preparedness and mitigation for effective disaster management. In 2005, impacts from Hurricane Adrian prompted further action to improve disaster management in the country.

In August of 2005, Legislative Decree No. 777 brought into effect *Ley De Protección Civil, Prevención y Mitigación de Desastres en El Salvador*. This law authorized the establishment of the *Sistema Nacional de Protección Civil, Prevención y Mitigación de Desastres* as a decentralized system composed of both public and private agencies responsible for civil protection and DRR in El Salvador. Implemented in 2006, the passage of this law repealed Legislative Decrees No. 498 and No. 44, providing the necessary updates to the national disaster management system. Vertical lines of decision making were strengthened, and roles and responsibilities for effective disaster management were more clearly defined at all levels of government.

The *Protección Civil Nacional, Prevención y Mitigación Plan de Desastre* is detailed in Article 20 of Decree No. 777. Within this Article, a plan is defined for state and civil action in regards to the management of risk, vulnerability, and mitigation, as well as for disaster preparedness and recovery. As illustrated in Figure 66, additional legislation was passed to supplement and strengthen Decree No. 777, including:

- Legislative Decrees No. 55 and 56, passed on the 26th of May, 2005:
    - Decree No. 55 provides the regulations for the development and implementation of provisions for *Ley de Protección Civil, Prevención y Mitigación de Desastres en El Salvador.*
    - Decree No. 56 establishes the organizational structure and functions of Protección Civil, allowing the organization to carry out its duties as the lead disaster management organization for the country.
- Legislative Decree No. 778, passed on the 31st of August, 2005:
    - Decree No. 778 mandates the creation of *El Fondo de Protección Civil Prevención y Mitigación de Desastres.*
- Legislative Decree No. 11, passed on the 22nd of February, 2006.
    - Decree No. 11 ensures the implementation of *El Fondo de Protección Civil Prevención y Mitigación de Desastres.*

Figure 66. The progression of disaster management legislation from 2005 onwards.

Integration of DRR into all phases of disaster management and development planning at the community level ensures the implementation of disaster management legislation.

Findings: Designated Authorities

With the passage of Legislative Decree No. 777, the authority for disaster management decision making was transferred to the *Sistema Nacional de Protección Civil*, presided over by the Minister of the Interior and composed of the following authoritative bodies:

- *Comisión Nacional de Protección Civil (CNPC);*
- *Comisiónes Departamentales de Protección Civil (CDPC);*
- *Comisiónes Municipales de Protección Civil* (*CMPC);* and
- *Comisiónes Comunidades de Protección Civil (CCPC)*.

Protección Civil, the operational organization for the CNPC, is housed within the Ministerio de Gobernación y Desarrollo Territorial (MIGOBDT). Protección Civil's internal is detailed below in Figure 67.

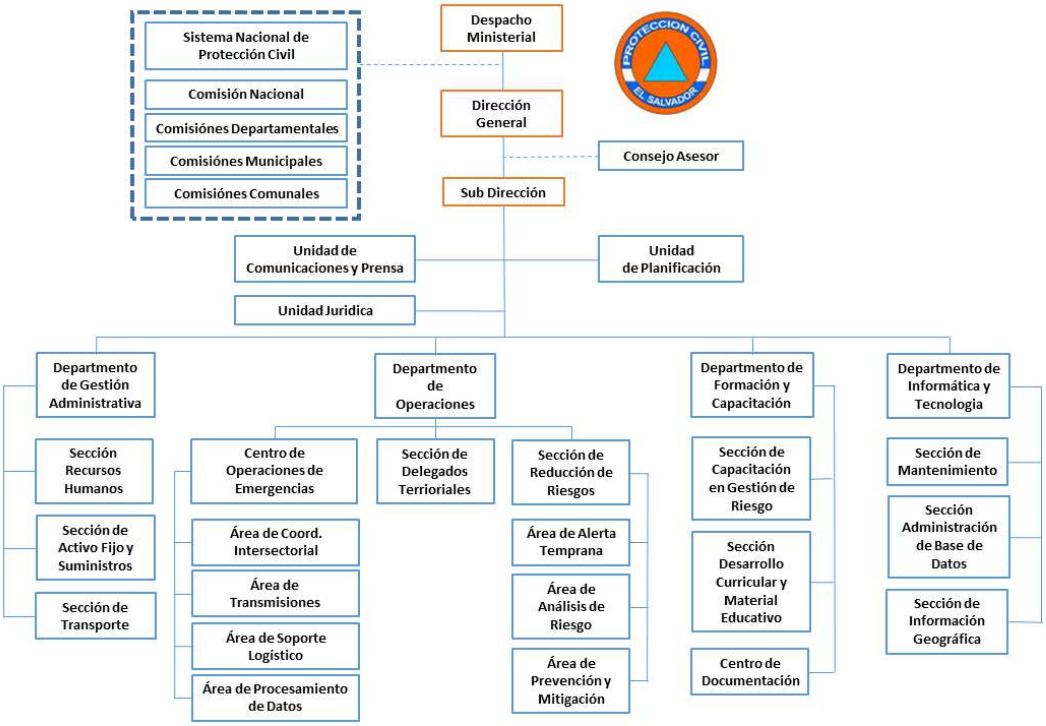


Figure 67. Organizational structure of Protección Civil.

Protección Civil is responsible for the development and maintenance of the national response plan and guidelines based on laws established by the El Salvadorian government. Protección Civil is legally authorized to enforce the national response plan and train the relevant agencies, units, and individuals responsible for disaster response in the country. Protección Civil is also charged with control of the national emergency resource inventory and budget.

Protección Civil consists of four hierarchical levels, with *Dirección General de Protección Civil* (DGPC) serving as the head of the Protección Civil system (see Figure 68). At the national level, the CNPC consists of the various agency Ministers and Directors involved in disaster management and risk reduction in the country. The CDPC represents the second organizational tier of Protección Civil and is composed of the country's departmental leaders, referred to as Governors. The third tier falls under the CMPC and consists of the country's municipal leaders, or Mayors. The CCPC makes up the final tier with influential leaders from neighborhoods, villages, and other relevant local level institutions.

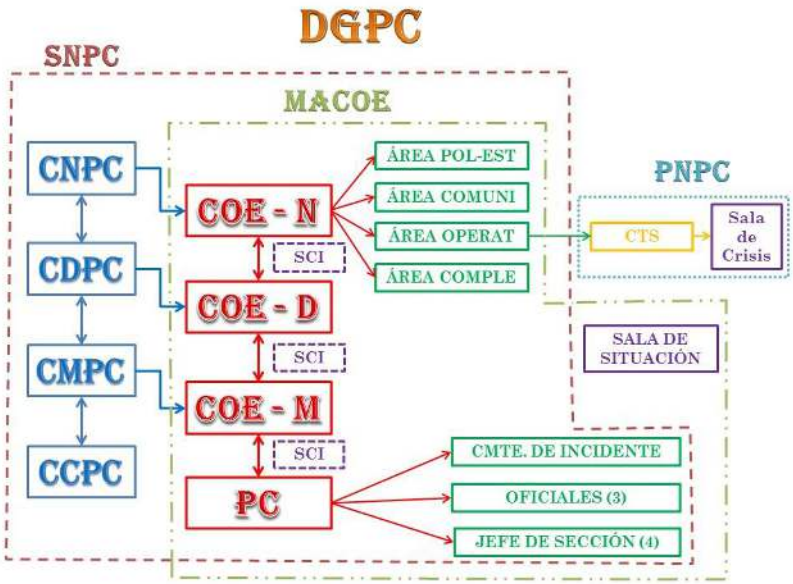


Figure 68. The response levels of the Protección Civil System.

When a disaster occurs at the local level, an emergency is declared and the Manejo De Centros De Operaciones De Emergencias (MACOE) becomes activated. The Protección Civil and the COEs respond from the local level up to the national level. When an administrative level can no longer support disaster response on its own, the next level up is activated for response support. Once an event reaches the national level, the DGPC assumes control and has the support of the *Area Politico-Estrategica* component which is composed of various Ministers. If a disaster overwhelms the national level, the President of El Salvador can declare a national disaster. The DGPC is in control of the COE-N from local-level response efforts to national-level response efforts. If a national disaster is declared, the President of El Salvador becomes the Director General (DG) of the COE-N.

Once Protección Civil is activated for disaster response, a traditional command and control structure is followed. Critical decisions are made from the top down, starting with the CNPC and passing to the next tier as applicable. With the exception of the community level, each administrative level has a corresponding Emergency Operations Center (EOC/COE):

- The National EOC (COE-N);
- The Departmental EOCs (COE-D);
- The Municipal EOCs (COE-M); and
- The Protección Civil Incident Command Post (PC).

COE structure follows the same guidelines at all levels with relatively minor differences. The DG serves as the floor lead of the EOC and makes decisions supported by a team of experts. The CMPC/CDPC and the *Area Politico-Estrategica* exist above the DG to validate decisions made by the DG. The legal authority to act in the event of a disaster has been established to operate in this manner. Stakeholder interviews indicated that as the operationalization of the law has yet to be fully realized, political leadership is often allowed the opportunity to influence the decision-making process and supersede decisions made by the DG.

Adjacent to the DG are the *Consejo Asesor* position and a *floating* position which serves as a place-holder for a subject-matter expert depending on the type of disaster. This position is given to one of the seven Support Functions that fall under the Operations Section and, when one is chosen to sit at the *floating* position, it maintains direct access to the DG for decision-making purposes. Each Support Function is headed by a specific ministry and supported by multiple agencies related to the Support Function. For example, the Security Support Function is headed by the National Civil Police and supported by the Armed Forces and the National Academy of Public Security.

The *floating* Support Function utilizes a Crisis Room – an extension of the EOC which is located at a designated location in accordance with the *floating* position, typically at the headquarters of the Ministry which heads the Support Function.

Alongside the role and responsibilities of Protección Civil, an additional authority has been designated to complement disaster management activities in the country. The legal authority for risk and vulnerability is the Ministerio de Medio Ambiente y Recursos Naturales (MARN). Established by the 1998 *Ley De Medio Ambiente* (LMA 1998), MARN is the agency responsible for environmental management in El Salvador. As part of its mission, MARN is responsible for national prevention, emergency planning, and environmental risk. The Ministry also monitors natural phenomena, provides technical information for critical decision-making, maintains the National Hazards Monitoring Center, and provides early warning for hazards.

While legislation outlines the legal authority to act in the event of a disaster, including designated authorities and their legal responsibilities, the clarity of legislation can significantly impact the overall effectiveness of the disaster management system. Fifty-eight percent (58%) of survey respondents felt that disaster response tasks are clearly defined and 52% felt that there is overlap and conflict between organizations active in disaster response in the country.

Findings: Disaster Management Documentation Availability

Disaster management documentation helps guide inter-agency cooperation and coordination throughout all phases of the disaster management process. The availability of and access to disaster management documentation is a key indicator for how effectively preparedness and response operations will function in the event of a disaster. According to survey results, 75% of survey participants reported the presence of comprehensive disaster management plans for their organizations. Seventy percent (70%) reported the presence of disaster preparedness plans, 45% the presence of disaster mitigation plans, and 45% the presence of recovery plans. Fifty-seven percent (57%) of survey participants have access to copies of their organization's disaster management plans, and 52% reported that their disaster plans have been shared with other agencies or organizations active in disaster management. These results indicate the potential for both the duplication of efforts as well as the misuse of disaster management resources due to the inadequate availability of and access to disaster management documentation in the country.

Seventy-seven percent (77%) of survey participants reported the presence of disaster response plans for their organizations. Response plans were available online at the Protección Civil website for each of the nine hazards identified by Protección Civil as major risks for the country. Department-level response plans were available online at the Protección Civil website for the year 2013 only. Although El Salvador's municipalities are legally mandated to submit draft response plans to Protección Civil for review, two municipalities declined to submit their plans due to political differences with Protección Civil. Recent departmental and municipal disaster management plans were not available for review.

An unofficial, one-page description of EOC Duties was developed for the San Vincente EOC, which also provided a copy of its 2015 Departmental Winter Plans for review. Formal SOPs for EOC operation were not available for review.

Findings: Documentation/SOP Update Frequency

Sixty-four percent (64%) of survey respondents indicated that their organizations disaster plans are updated regularly and 61% of disaster plans were tested or drilled regularly. Survey respondents indicated that improvements can be made in the regular updating of disaster management plans and SOPs. Stakeholder interviews supported a review of disaster plans on a two-year basis.

Gaps

The following gaps were identified:

1. Implementation of the legal framework for disaster management has not been fully realized at the subnational level due to a lack of clear guidelines.
2. Limited availability and integration of response plans and SOPs across all administrative levels.

Recommendations

It is recommended that El Salvador:

1. Develop guidelines to facilitate subnational implementation of Legislative Decree No. 777 to meet the changing disaster risk reduction requirements of El Salvador.
2. Increase availability of plans and SOPs among partner agencies across administrative levels.

Advocacy Supporting Action

Advocacy supporting action is necessary to ensure that disaster management policies are implemented throughout a country. The backing of political leaders is not always enough to ensure that hazard policies are implemented. Successful disaster management requires strong stakeholder support across all levels. Following a disaster, stakeholder support for action is generally high and may play a key role in hazard policy implementation. Stakeholders include traditional and non-traditional partners involving the general public, non-governmental organizations, academic institutions, the private sector, and those providing assistance before, during and after a disaster.

Over the last five years, significant disaster events have impacted El Salvador, including tropical storms, flooding, and volcanic eruptions. Response efforts to these major events were perceived as ineffective with survey respondents indicated that response support functions were inadequate. Multiple agencies with a disaster management focus conduct projects within El Salvador, although a complete catalog of all active agencies was unavailable.

Generally, political approval ratings and the total number of disaster declarations would be included in this section, however, they were unavailable. Political approval ratings can indicate public support for government initiatives including DRR. Disaster declarations can provide historical information on disaster event impacts to assist with planning and preparation activities.

Findings: Recent Disaster Events

Communities recently impacted by major disaster events are generally more supportive of DRR initiatives. Recent disaster impacts in El Salvador indicates high public and political support for disaster management related legislation.

In El Salvador, over 1.1 million people have been affected by disasters since 2010[1]. In October 2011, Tropical Depression 12-E impacted El Salvador, causing widespread damage, see Figure 69. Moreover, in 2011, river flooding impacted 300,000 people and caused $1,000,000 in damage. More recently, on December 29, 2013, San Miguel (Chaparrastique) Volcano erupted, affecting 60,000 people and displacing 2,300.

12-E Impacts	
Dead	35
Injured	31
Evacuations	59,854
Opened Shelters	611
Homes Flooded	18,000
Homes Damaged	1,000
Homes Destroyed	73

Figure 69. 12-E Impacts (Protección Civil)

[1] EM-DAT: The International Disaster Database, Centre for Research on the Epidemiology of Disasters (CRED). http://www.emdat.be/database.

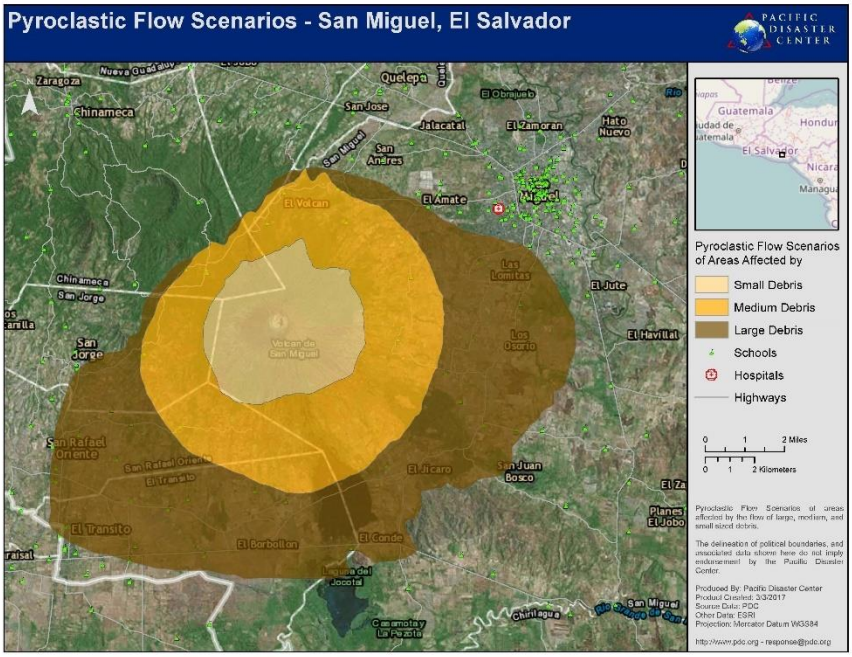


Figure 70. Pyroclastic Flow Scenarios - San Miguel, El Salvador

Stakeholder perception on the effectiveness of response to recent disaster events was captured through survey results. Seventy-one percent (71%) of respondents felt the response to the last major disaster (San Miguel Volcano Eruption – 2013) was effective and 77% felt their organization responded to the last major disaster as outlined in policy/governing documents. Thirty percent (30%) of survey respondents felt their disaster response tasks were not clearly defined. The perceptions of survey respondents to disaster response support functions are shown in Figure 71:

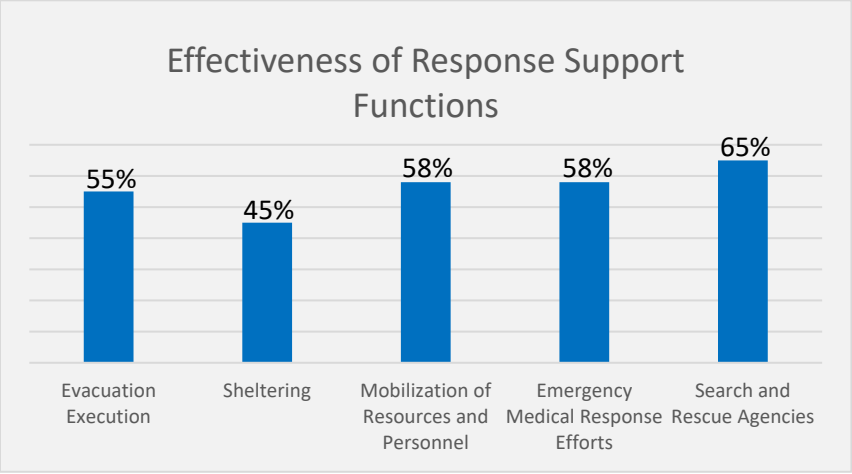


Figure 71. Effectiveness of Response Support Functions

Eighty-seven percent (87%) of survey respondents identified post-disaster damage and needs assessments (DANA) to be helpful in response decision-making. Eighty percent (80%) of survey respondents reported that post-disaster damage and needs assessments were conducted following the last major disaster, however, only 48% indicated that these assessments were done accurately.

Findings: Recent Disaster Legislation

Recent disaster management legislation can provide an indication on whether lawmakers are actively supporting disaster management and DRR. In El Salvador, no disaster management-specific legislation has been enacted since 2006. In 2010, El Salvador signed the Central American Policy for Comprehensive Disaster Risk Management which provides a guiding framework to support DRR objectives.

Findings: Agencies with a Disaster Focus Active in the Country

Effective disaster response requires multiple agencies and organizations. All partners active in disaster management, including non-traditional partners, need to be considered to fully assess the level of stakeholder support. In El Salvador, there is a high level of international advocacy and investment supporting DRR initiatives. Survey responses illustrate a clear awareness of the role each agency/organization plays in the disaster management process, indicating a functioning disaster management system. Sixty-five percent (65%) of survey respondents indicated their organization engages with the private sector to support disaster response, while 48% reported their organization engages with the military.

Over 2,000 NGOs are registered in El Salvador and there have been 35 key donor engagements from the period 1970 to 2010. From 2012 to 2015, USSOUTHCOM sponsored 78 projects in El Salvador. Inter-American Development Bank sponsored five projects related to environment and natural disasters and USAID/OFDA sponsored two disaster preparedness projects. The Disaster Preparedness European Community Humanitarian Office (DIPECHO) program that is funded by the European Commission Humanitarian Office (ECHO) has been active in El Salvador since 1996 and continues to finance projects to build disaster management capacity. El Salvador is also a member of the Central American Coordination Center for the Prevention of Natural Disasters (CEPREDENAC) and the United Nations International Strategy for Disaster Reduction (UN ISDR).

Traditionally, El Salvador is open to receiving funding and projects from international donors with the goal of enhancing disaster management capacities. No formal comprehensive list of all agencies active within the country exists, which presents a challenge for disaster management practitioners in understanding all available resources and ensuring that all projects align with national DRR objectives. Survey respondents also noted overlap or duplication of efforts between agencies and activities with 52% reporting this as a concern.

Gaps

The following gaps were identified:

1. A lack of historical information on disaster declarations inhibits planning efforts.
2. Damage and needs assessments lack accuracy and standardization, inhibiting the ability of emergency responders and disaster managers to effectively respond to the needs of the community post-event.
3. A centralized repository of NGOs and partner nations that have active disaster management or DRR projects in El Salvador does not exist, increasing potential overlap or duplication of efforts.

Recommendations

It is recommended that El Salvador:

1. Develop a method to store data and information on disaster impacts to assist with planning and policy.
2. Review post-disaster damage and needs assessments to identify areas of improvement to ensure accuracy and increase response effectiveness.
3. Develop a centralized repository of in-country programs and to ensure alignment with national DRR goals and objectives and reduce duplication of efforts.

Necessary Institutional Resources

It is critical that every jurisdiction has an accurate assessment of available resources (human and material), and is familiar with their availability during disaster. Although many areas have a limited economic base and few immediate resources, through mutual-aid agreements with neighboring jurisdictions, resources can be easily mobilized to respond. Being able to quickly assess the community needs and having the knowledge of resource availability, aid can be requested in a timely manner to ensure immediate emergency needs are met.

Despite the limited availability of necessary resources, El Salvador maintains a strong national capacity for disaster management activities. Through its legislation and designated resources for disaster management, Protección Civil has a basis from which to respond to disasters. Disaster management practitioners were found to be effective at leveraging partnerships with donor agencies for basic equipment needs as Protección Civil's budget only includes salary and basic utilities, it relies largely on donations to be able to accomplish its mission. Mutual-aid agreements were unavailable for assessment, indicating that resources may not be effectively shared or mobilized during a disaster.

Survey respondents reported that the necessary institutional resources including adequate staffing for disaster response, plans for logistics management, and mutual aid agreements are available. However, 69% of respondents reported that their organization's EOC does not have the necessary resources required to communicate disaster impacts to key decision makers.

Findings: Resources Designated for Disaster Management

Resources designated for disaster management provides an indication that a country has invested in and supports disaster management activities. This can include legislations, Emergency Operations Centers (EOCs), and shelters.

As previously noted, El Salvador has a robust legal framework for national disaster management, but lacks the dissemination of policies to the subnational level. This signals that government support at the national level is high, while the local level lacks authority and capacity to direct disaster management resources and activities.

El Salvador has a designated National EOC (COE-N) in San Salvador Department plus 13 Departmental EOCs located at each department's Protección Civil office. Three of the 13 Departmental EOCs also serve as regional offices (not regional EOCs) in Paracentral, East, and West regions. An EOC identical to the COE-N (Central Region) was built in each of these regions to support regional administrative functions. At the municipal level, town halls frequently serve dual-purpose as the municipal EOC during disasters. The fact that El Salvador has designated National and Department EOCs shows the country's commitment to disaster management, but still leaves gaps at the local level.

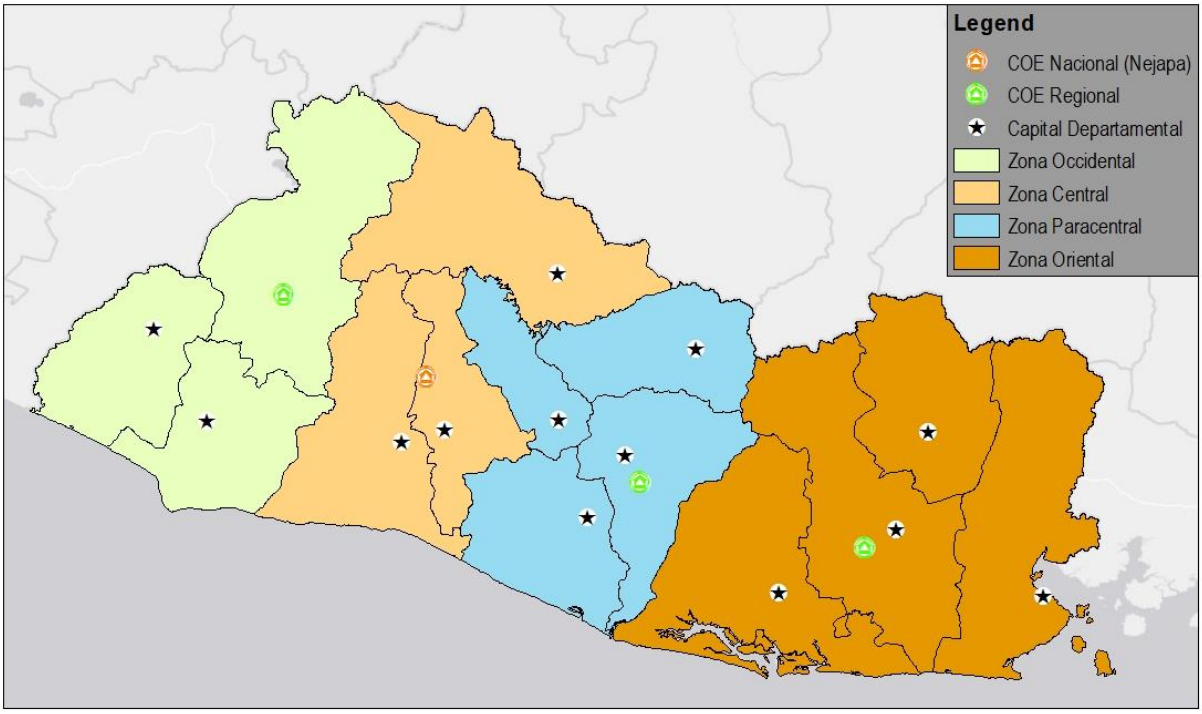


Figure 72. EOC/COE Locations in El Salvador

Shelter operations are managed by the Shelter Commission within the Ministerio de Gobernacion. The Shelter Commission coordinates with all agencies involved with shelter operations. As part of this assessment, a list of 570 shelters, covering five departments (Ahuachapán, Cabañas, La Paz, Morazán, San Vicente) was provided. From this list, most shelters are located within schools.

A complete list identifying all national shelters should be easily accessible to all agencies involved with shelter operations that can be leveraged during disasters. The missing information for the remaining 7 departments indicates that the list is either not available to other agencies or that shelters have not been pre-identified.

Findings: Inventory of Available Resources

Supply inventories provide an indication of available resources in shelters, warehouses, and other structures that can be utilized in the event of a disaster response. The national Armed Forces is the lead of the Logistics Commission responsible for coordination among all agencies involved with logistics, including providing support to the shelters. They are responsible for warehouses and resource maintenance, distribution, and storage, including the tracking of resources. No inventory of available resources was provided, indicating decision makers would not have access to the information.

Findings: Mutual-Aid Agreements

Interviews with stakeholders showed that there are informal channels of communication to secure international aid in the event of a disaster, but no official mechanisms. Regional Protección Civil offices will coordinate mutual-aid needs between Departments, although no documentation was found outlining procedures for coordination.

Findings: EOC Equipment and Facilities List

During EOC site visits conducted in June 2015, the layout of each of the four EOCs in each region was noted, and an inventory of communication and logistic equipment recorded. The national EOC is the only EOC location that conducts 24-hour operations year-round. The other three regional EOCs have facilities that allow for 24-hour shifts during response events, but are only manned during regular business hours while on steady state.

Details on each EOC layout, training, logistics, communications, shortfalls are in *Appendix E: EOC Information.*

Gaps

The following gaps were identified:

1. Shelter location information for nine departments does not exist or is not available.
2. No inventory of available resources for response was provided, indicating decision makers would not have access to the information.
3. Formalized mutual-aid agreements do not exist or are not available.
4. Regional EOCs lack adequate space, equipment, and supplies for sustainment during a major disaster.
    a. Regional EOCs lack robust communication requirements.
    b. Some regional EOCs do not have city water, support from fire department to fill 5000L water tanks periodically is required. Often the fire department is unable to support and the EOCs have no water.
5. EOCs do not have internal SOPs and staff have not received proper EOC training.

Recommendations

It is recommended that El Salvador:

1. Identify designated shelters nationwide and create a national shelter list to assist with planning and response.
2. Develop and maintain an inventory of available resources nationwide to support disaster management and inform disaster managers.
3. Develop and formalize the use of mutual-aid agreements to address budgetary and resource shortfalls to supplement preparedness measures throughout the country.
4. Plan and construct regional EOCs that can sustain 24-hour EOC operations during a response event. EOCs should include food, water, generator, rest area, and enough work space to support operations.
    a. Construct and maintain an emergency communications system for each regional Emergency Operations Center (EOC) to strengthen internal communications between regional EOCs, the national EOC, and the public. This includes the incorporation of disaster alerts and early warning.
    b. Connect EOCs to city water or develop a partnership or mutual-aid agreement with a NGO or public/private entity to supply the EOC with water, especially a during major disaster.
5. Develop SOPs and training programs focused on internal EOC activities and procedures.

Recommended Projects to Enhance CDM

The following recommended projects have been developed based on the findings, gaps, and recommendations identified above. The recommended projects are grouped according to the five CDM components. Refer to Table 59 and Table 60 for additional information on the evaluation.

Table 59. Definitions

Definitions	
Level of Effort	Estimated length of time it will take to complete the project once it is started
Difficulty	Overall complexity based on the estimated amount of staff time, resources, and collaboration required to complete the project
Cost	Estimated annual cost of the project, not including salaries, based on a percentage of the current NDMO annual budget
Impact	The amount the project will increase the comprehensive disaster management capability of the nation

Table 60. Ratings

Ratings		
Level of Effort		12 months or less
		13 – 60 months
		>61 months
Difficulty	Simple	Few resources, time or collaboration required to implement
	Medium	Some resources, time or collaboration required
	Complex	A great deal of resources, time, or collaboration required
Cost	$	<1% of NDMO operational budget on an annual basis
	$$	1% to 10% of NDMO operational budget on an annual basis
	$$$	>10% of NDMO operational budget on an annual basis
Impact	Minor	Some impact on increasing the CDM capability of the nation
	Moderate	Moderate impact on increasing the CDM capability of the nation
	Significant	Significant impact on increasing the CDM capability of the nation

Table 61. Recommended Projects for CDM Theme: Good Leadership by Professionally Trained Officials

CDM Theme: Good Leadership by Professionally Trained Officials				
Recommendations: *To further strengthen the professionalization of disaster management in El Salvador.*	**Level of Effort**	**Difficulty**	**Cost**	**Impact**
Finalize and implement existing plans for a formalized disaster management training structure to promote the continual building of capacity and skills for disaster management professionals at all levels. This can be done through training programs and courses that are trackable, standardized, and consistent with national disaster risk reduction goals and objectives. Elements of the training structure should include: • A training schedule for programs and courses at all levels; • Implementation of annual training; and • Establishment of minimum disaster management training requirements for all government employees who maintain disaster management roles.	24	Medium	$$	Significant
Establish national guidelines for the credentialing of trained professionals to promote the professionalization of the disaster management field.	12	Medium	$	Moderate
Institutionalize an exercise program that provides planning guidelines by promoting the use of standardized procedures, exercise evaluation, after-action reporting, and verification.	48	Complex	$$	Significant
Explore alternative funding sources to increase budget allocations for exercise activities at all administrative levels.	12	Medium	$$	Significant
Develop exercise scenarios that are inclusive of disaster management professionals at all administrative levels.	24	Medium	$	Moderate

Table 62. Recommended Projects for CDM Theme: Foundation of Supportive Values for Government Action

CDM Theme: Foundation of Supportive Values for Government Action				
Recommendations: *To enhance government support for disaster management efforts at all administrative levels.*	**Level of Effort**	**Difficulty**	**Cost**	**Impact**
Explore alternative funding sources to increase the availability of dedicated disaster management funds within the national budget (public/private partnership).	36	Complex	$$	Significant
Work with national and international partners to identify alternative ways to increase appropriations to the *Fondo de Protección Civil, Prevención y Mitigación de Desastres* to the point that it can cover all disaster expenses incurred each year based on a 20-year disaster loss average.	24	Complex	$	Moderate
Establish an appointed cabinet-level position solely for overseeing the disaster management structure in El Salvador.	24	Medium	$$	Moderate

Table 63. Recommended Projects for CDM Theme: Legal Authority to Act

CDM Theme: Legal Authority to Act				
Recommendations: *To ensure the development and implementation of relevant disaster management legislation throughout El Salvador.*	**Level of Effort**	**Difficulty**	**Cost**	**Impact**
Develop guidelines to facilitate subnational implementation of Legislative Decree No. 777 to meet the changing disaster risk reduction requirements of El Salvador.	36	Complex	$$	Significant
Increase availability of plans and SOPs among partner agencies across administrative levels.	12	Medium	$	Moderate

Table 64. Recommended Projects for CDM Theme: Advocacy Supporting Action

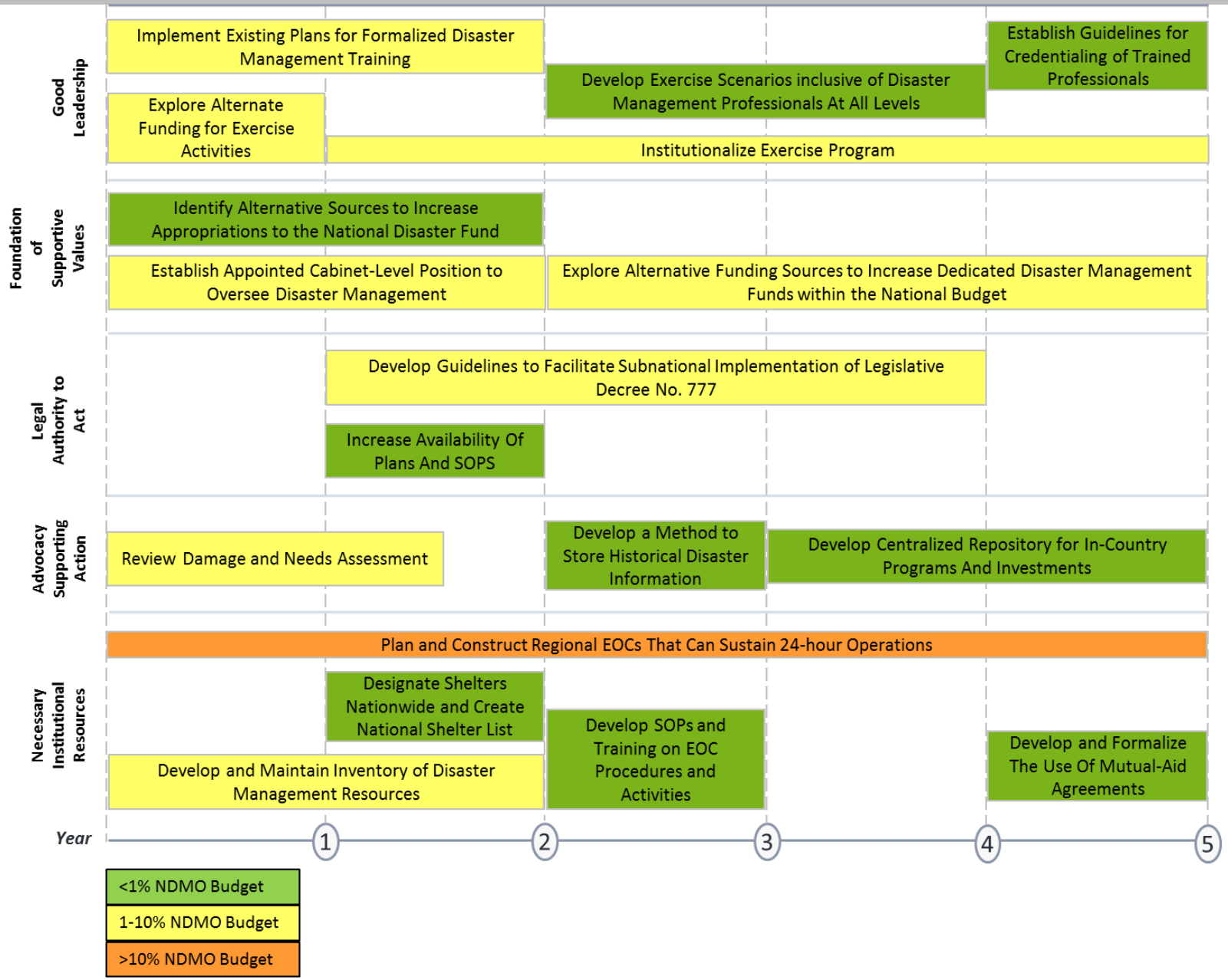
CDM Theme: Advocacy Supporting Action				
Recommendations: *To further strengthen non-governmental stakeholder engagement and support for disaster management activities in El Salvador.*	**Level of Effort**	**Difficulty**	**Cost**	**Impact**
Develop a method to store historical disaster information to assist with planning and policy.	12	Simple	$	Significant
Review post-disaster damage and needs assessments to identify areas of improvement to ensure accuracy and increase response effectiveness.	18	Simple	$$	Moderate
Develop a centralized repository of in-country programs and investments to ensure alignment with national DRR goals and objectives and reduce duplication of effort.	24	Medium	$	Moderate

Table 65. Recommended Projects for CDM Theme: Necessary Institutional Resources

CDM Theme: Necessary Institutional Resources				
Recommendations: *To increase the availability of and access to the necessary resources for effective disaster management in El Salvador.*	**Level of Effort**	**Difficulty**	**Cost**	**Impact**
Identify designated shelters nationwide and create a national shelter list to assist with planning and response.	12	Simple	$	Minor
Develop and maintain an inventory of available resources nationwide to support disaster response and inform disaster managers.	24	Complex	$$	Moderate
Develop and formalize the use of mutual-aid agreements to address budgetary and resource shortfalls to supplement preparedness measures throughout the country.	12	Simple	$	Moderate

Plan and construct regional EOCs that can sustain 24-hour EOC operations during a response event. EOCs should include food, water, generator, rest area, and enough work space to support operations. • Construct and maintain an emergency communications system for each regional Emergency Operations Center (EOC) to strengthen internal communications, as well as communications between regional EOCs, the national EOC, and the public. This includes the incorporation of disaster alerts and early warnings. • Connect EOCs to city water or develop a partnership or mutual-aid agreement with a NGO or public/private entity to supply the EOC with water, especially a during major disaster.	60+	Complex	$$$	Significant
Develop SOPs and training programs focused on internal EOC activities and procedures.	12	Simple	$	Moderate

CDM Recommendations for El Salvador by Cost



Conclusion

The El Salvador NDPBA results provide a comprehensive understanding of the strengths and challenges facing the country. The RVA and CDM components of the NDPBA are complementary, providing valuable context on how to reduce vulnerability and increase coping capacity. These results provide actionable recommendations to increase disaster management capabilities and guide investments.

The results of the RVA highlighted areas of the country that may require support in preparing for, responding to, and recovering from disasters. By identifying specific factors that influence risk in each department, the RVA supports evidence-based decision making through focused interventions that increase coping capacity, reduce vulnerability, and acknowledge hazard exposure at the sub-national level.

Key drivers of risk in El Salvador include:

- Economic Constraints
- Access to Information
- Gender Inequality
- Hazard Exposure to Multiple Hazards

The results of the CDM illustrated a structured disaster management system with a comprehensive and concise legal framework, however resource and budget limitations prevent the implementation at all administrative levels. By addressing gaps, El Salvador can significantly increase its CDM capacity.

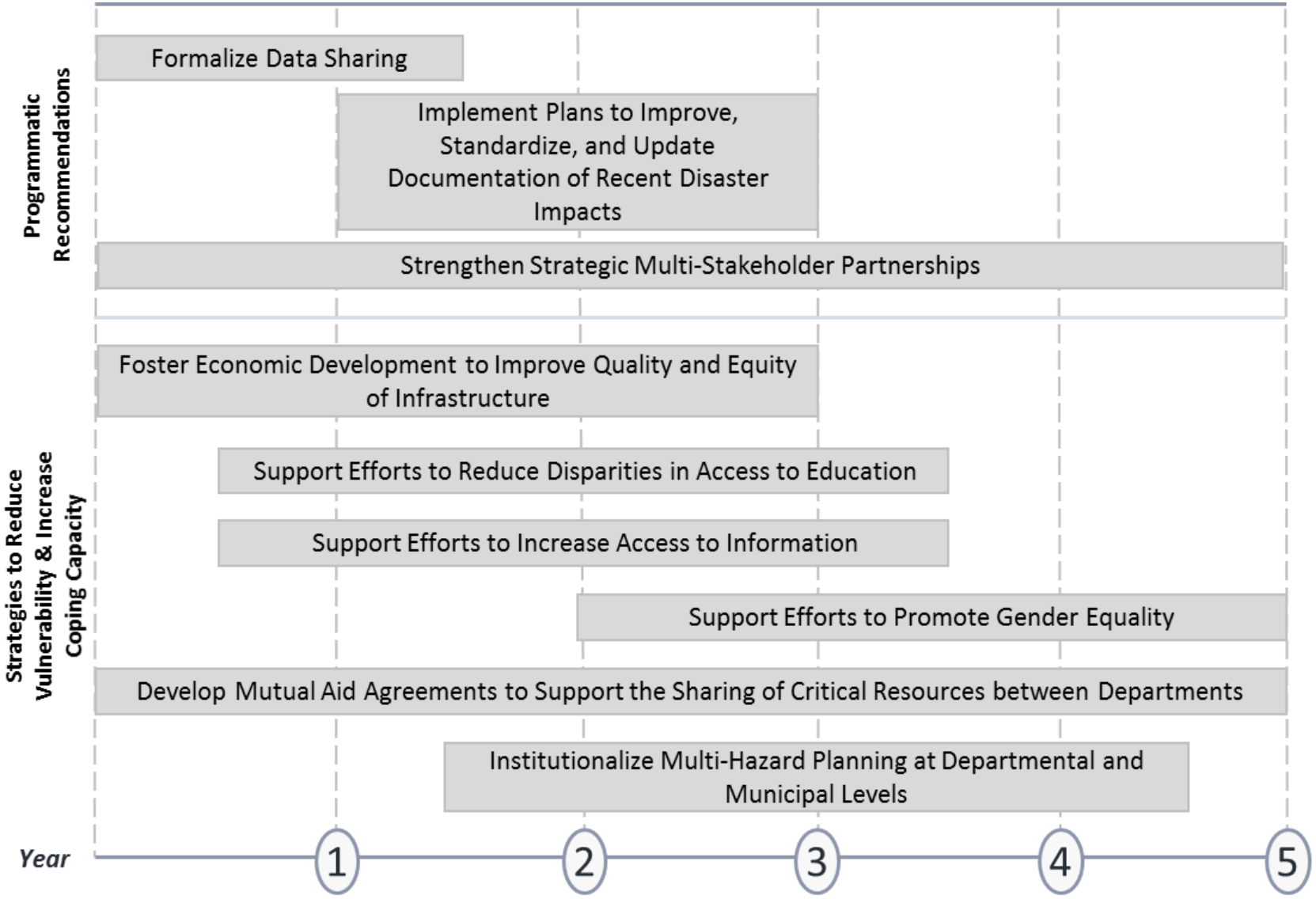
Key disaster management capacity gaps:

- Absence of a standardized training and exercise program
- Lack of standardized subnational disaster management plans
- Resource and budgetary constraints

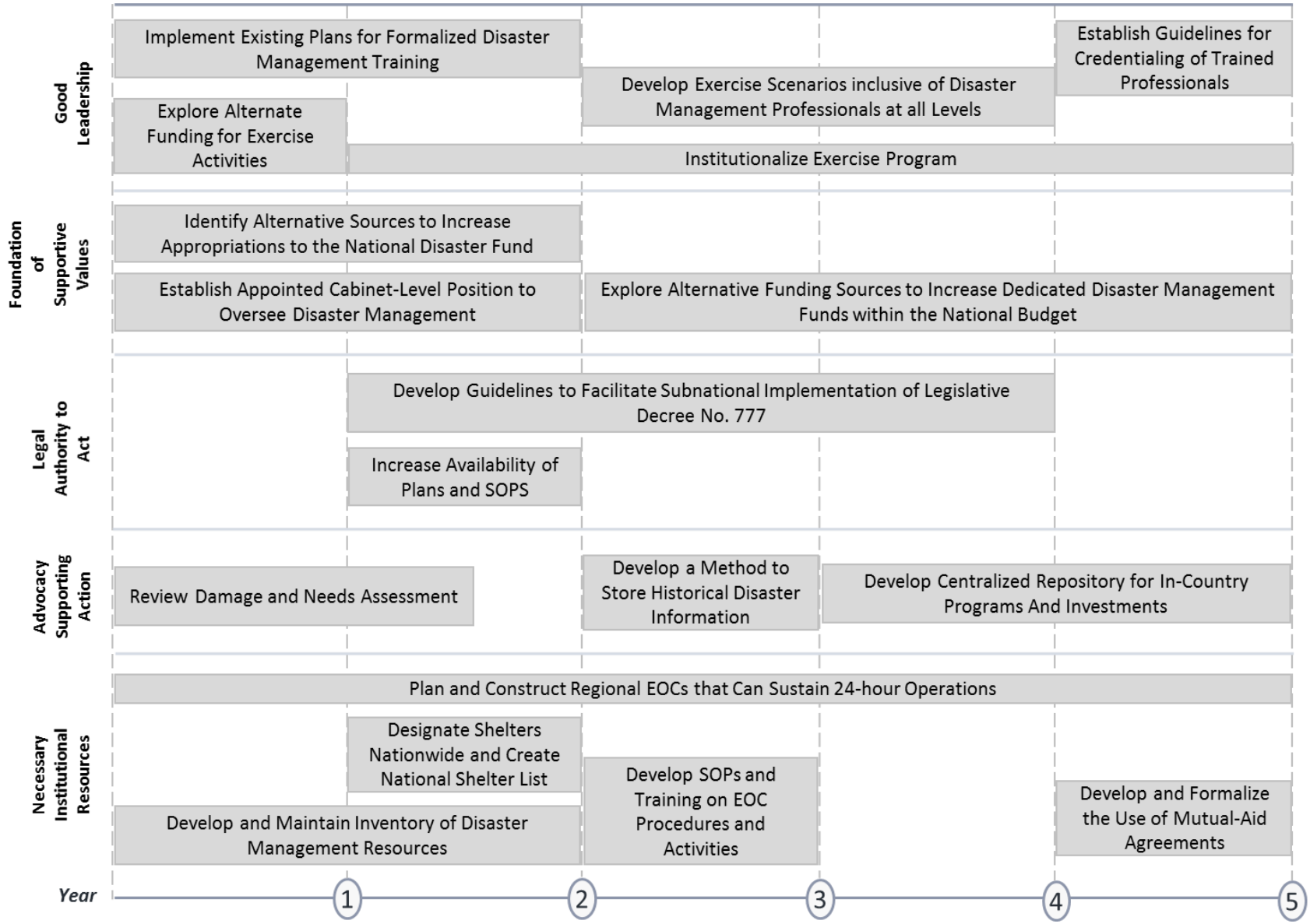
The recommendations provided in this assessment are designed to be implemented over the next five years, after which time a follow-up assessment is recommended to evaluate progress from the baseline. As a measurable and repeatable approach, the NDPBA provides a methodology to support national and regional efforts to save lives and reduce losses by continuing to build a more disaster-resilient nation.

RVA and CDM Integration

Risk and Vulnerability Recommendations



Comphrensive Disaster Management Recommendations



Appendices

EL SALVADOR

NATIONAL DISASTER PREPAREDNESS BASELINE ASSESSMENT

PACIFIC DISASTER CENTER

Appendix A: RVA Component Index Hierarchies & Thematic Rationale

Multi-Hazard Exposure

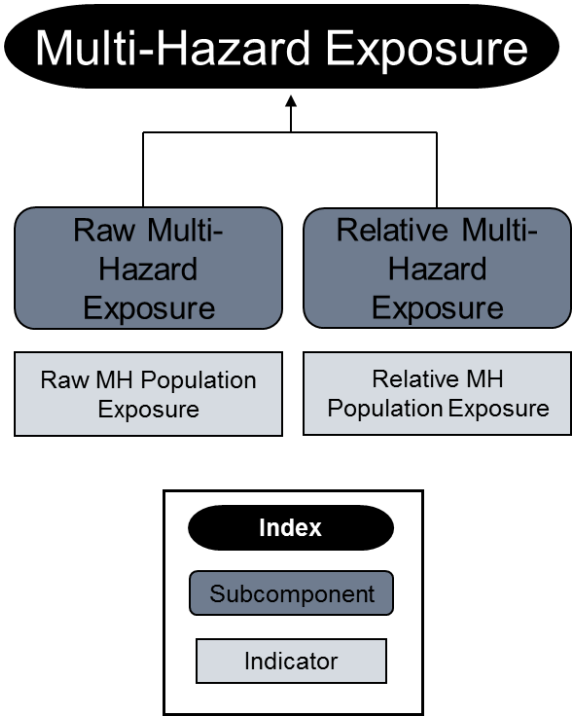


Figure 73. RVA - Multi-Hazard Exposure Index Construction

Table 66. RVA - MHE Scores and Ranks for all Indices and Subcomponents

Department	MHE Index		Raw MHE		Relative MHE	
	Score	Rank	Score	Rank	Score	Rank
Ahuachapán	0.424	8	0.326	8	0.522	8
Cabañas	0.177	13	0.015	13	0.339	12
Chalatenango	0.188	12	0.074	11	0.301	13
Cuscatlán	0.379	10	0.187	10	0.570	6
La Libertad	0.846	1	1.000	2	0.692	3
La Paz	0.489	6	0.339	7	0.639	4
La Unión	0.399	9	0.204	9	0.594	5
Morazán	0.000	14	0.000	14	0.000	14
San Miguel	0.649	4	0.591	3	0.708	2
San Salvador	0.761	2	1.000	1	0.522	9
San Vicente	0.266	11	0.053	12	0.478	10
Santa Ana	0.469	7	0.590	4	0.349	11
Sonsonate	0.556	5	0.545	5	0.567	7
Usulután	0.757	3	0.514	6	1.000	1

Table 67. RVA - Multi-Hazard Exposure Metadata

Multi-Hazard Exposure					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Raw Exposure	Raw Population Exposure	MARN (Flood Susceptibility, Historical Earthquake Intensity, Landslide Susceptibility, Volcanic Ash, Tsunami Inundation); USGS HAZPAC (Tropical Cyclone Intensity Zones); MINEC (Segment Population)	2007 (population)	Raw count of person units exposed to multiple hazards, including flood inundation, landslide, volcanic ash, earthquakes, tsunami inundation, and tropical cyclone wind	Hazard Zone Definitions: Flood: Moderate, High, and Very High Susceptibility Volcanic Ash: Scenario 1 (high probability, lower intensity, based on historical obs.) Hurricane Wind: Cat1+ Landslide: High and Very High Susceptibility Tsunami: Inundation area based on "worst case scenario modeling" Earthquake: Combined areas of MMI VII+ from historical earthquake events (including May '65, June '82, Oct '86, Jan '01, Feb '01 and earlier events)
Relative Exposure	Relative Population Exposure	MARN (Flood Susceptibility, Historical Earthquake Intensity, Landslide Susceptibility, Volcanic Ash, Tsunami Inundation); USGS HAZPAC (Tropical Cyclone Intensity Zones); MINEC (Segment Population)	2007 (population)	Total count of person units exposed to multiple hazards by department population	

Vulnerability

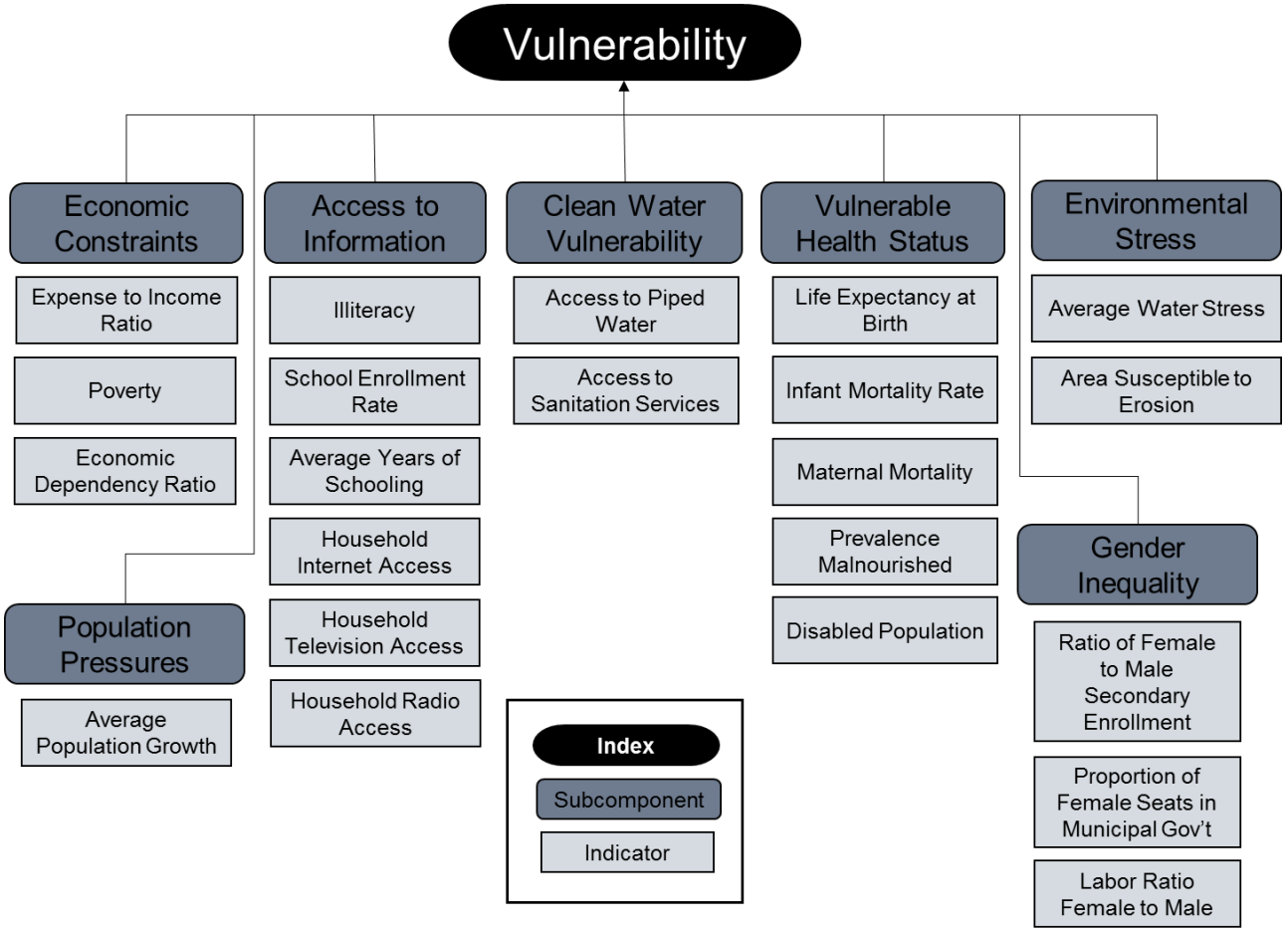


Figure 74. RVA - Vulnerability Indictors

Table 68. RVA - Vulnerability Subcomponent Theme Rationale

Subcomponent Theme	Rationale for Inclusion
Economic Constraints	Represent limitations on resources available to take hazard mitigation and preparedness measures
Access to Information	Represents the ability to access and comprehend hazard- and disaster-related information before, during and after an event. If mediums of information exchange are limited, or if people lack familiarity with somewhat technical information, critical information on impending hazard events, preparedness measures, available resources, and mitigation options may not be received.
Access to Clean Water	Represents the general state of water-related infrastructure. Poor distribution and containment systems contribute to reduced water quality and increase the potential for spread of disease.
Vulnerable Health Status	Reflects the population's general health as an outcome of multiple factors (e.g., health care processes and practices, biophysical and socio-economic environment). Poor health contributes to increased susceptibility to injury, disease, and stress associated with disasters and may necessitate special accommodations for activities such as evacuation.
Population Pressures	Rapid changes in the size and distribution of a population are more difficult to plan for and can destabilize social, economic, and environmental systems and alter patterns of exposure.
Environmental Stress	Environmental stressors such as substantial water withdrawals and land degradation can damage habitat and reduce quantity and quality of resources required to maintain human health and livelihoods. Additionally, these stressors increase the likelihood and magnitude of hazards such as flooding, landslides, and subsidence and can exacerbate impacts.
Gender Inequality	Represents gender-based differences in access to resources, services, opportunities and formal economic and political structures. Marginalized populations are less likely to have their needs met under "normal" conditions, and therefore become more susceptible to harm during times of disaster. They may be overlooked in mitigation and preparedness planning and subsequent response and recovery activities.

Table 69. RVA - Vulnerability Scores and Ranks for all Indices and Subcomponents

Department	Vulnerability Index		Economic Constraints		Info Access Vuln.		Clean Water Vuln.		Vuln. Health Status		Gender Inequality		Population Pressures		Environ. Stress	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Ahuachapán	0.592	3	0.57	5	0.725	3	0.511	6	0.506	7	0.593	5	0.69	4	0.545	4
Cabañas	0.616	1	0.815	1	0.627	5	0.636	3	0.278	13	0.742	3	0.462	9	0.754	1
Chalatenango	0.458	9	0.566	6	0.471	11	0.212	12	0.609	3	0.806	1	0	14	0.544	5
Cuscatlán	0.455	11	0.385	13	0.543	9	0.257	11	0.233	14	0.199	14	0.907	2	0.661	2
La Libertad	0.450	12	0.474	10	0.371	13	0.184	13	0.318	12	0.45	8	1	1	0.357	12
La Paz	0.556	5	0.46	11	0.658	4	0.638	2	0.457	10	0.32	11	0.855	3	0.5	7
La Unión	0.582	4	0.634	3	0.820	1	0.98	1	0.494	8	0.748	2	0.205	11	0.196	14
Morazán	0.594	2	0.558	8	0.751	2	0.579	4	0.571	5	0.654	4	0.654	5	0.474	8
San Miguel	0.527	6	0.643	2	0.555	8	0.529	5	0.479	9	0.559	6	0.484	8	0.438	11
San Salvador	0.237	14	0.295	14	0.076	14	0	14	0.395	11	0.305	13	0.129	13	0.458	10
San Vicente	0.486	8	0.507	9	0.457	12	0.366	10	0.605	4	0.411	10	0.531	6	0.523	6
Santa Ana	0.435	13	0.566	7	0.483	10	0.473	8	0.61	2	0.315	12	0.132	12	0.465	9
Sonsonate	0.526	7	0.453	12	0.556	7	0.471	9	0.643	1	0.474	7	0.502	7	0.582	3
Usulután	0.458	10	0.602	4	0.559	6	0.484	7	0.536	6	0.415	9	0.312	10	0.298	13

Table 70. RVA - Vulnerability Indicator Metadata

Vulnerability					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Economic Constraints	Economic Dependency Ratio	DIGESTYC - EHPM	2013	Ratio of dependents - people younger than 15 and older than 64 - to the working-age population - those ages 15-64	
	Expense to Income Ratio	DIGESTYC - EHPM	2013	Ratio of monthly household expenses to monthly household income - including monthly household remittances	
	Household Poverty	DIGESTYC - EHPM	2013	Percentage of households in poverty, including both extreme and relative poverty cases	
Access to Information Vulnerability	Illiteracy	DIGESTYC - EHPM	2013	Percentage of the population aged 10 and older that are illiterate	
	Average Years of Schooling	DIGESTYC - EHPM	2013	Average years of schooling of the population aged 6 and over	
	School Enrollment	MINED (enrollment data); DIGESTYC (population projection)	2014	Percentage of the population aged 4 to 19 years (inclusive) that are enrolled in school	1. We are using a wide age range for a more conservative enrollment estimate 2. Total enrollment figure likely includes adult education enrollment for people aged 18+, however, in checking the 2011 enrollment census, these students represented only 0.32% of all enrollees attending school in the country that year
	Radio Access	DIGESTYC - EHPM	2013	Percentage of total households that have a radio	
	TV Access	DIGESTYC - EHPM	2013	Percentage of total households that have a television	
	Internet Access	DIGESTYC - EHPM	2013	Percentage of total households that access internet	
Access to Clean Water Vulnerability	Access to Piped Water	DIGESTYC - EHPM	2013	Percentage of households with piped water access	
	Access to Sanitation Services	DIGESTYC - EHPM	2013	Percentage of households that have sanitation service access	
Vulnerable Health Status	Life Expectancy	DIGESTYC (projection)	2014	Life Expectancy at birth	
	Infant Mortality Rate	MINSAL - SIMMOW	2014	Single-year infant mortality rate per 1,000 live births	

	Maternal Mortality Ratio	MINSAL - SIMMOW	2014	Single-year maternal mortality ratio per 10,000 live births	
	Disability	DIGESTYC	2007	Percentage of the population that is disabled	Includes the following types of disability: walking, self care, mental, talking, hearing, arms, sight, other. 'Any disability' is the total number of people with any (or multiple) disability.
	Prevalence Malnourished	MINSAL - SIMMOW	2014	Percentage of children under 5 that are malnourished	There are some slight variations in how the universe for each age group was defined, noted in the derivation description
Environmental Stress	% Erosion Susceptibility Area	MARN	Received 2015	Percentage of total Department land area with significant, high or very high erosion susceptibility	
	Average Water Stress	MARN	Received 2015	Estimated Ratio of demand to available resources (as a percentage)	**Note**: Department values approximated from hydrologic region (a larger unit) using an areal weighted average
Population Pressures	Population Change	DIGESTYC (projection)	2010 -2015	Average annual percentage population change for the period 2010 - 2015	
Gender Inequality	Proportion of Female Seats in Government	COMURES (Female seats); DIGESTYC (population projection)	2012-2015	Proportion of Female Seats in Government by Proportion of Females in Total Population	
	Ratio of Female to Male Labor Participation	DIGESTYC - EHPM	2013	Ratio of female labor participation rate to male labor participation rate Labor participation expressed at the ratio of active working-age population to total working - age population - by gender	
	Ratio of Female to Male Secondary Education Enrollment	MINED (enrollment data); DIGESTYC (population projection)	2011	Ratio of female secondary school enrollment to male secondary school enrollment Secondary school enrollment expressed as the proportion of students enrolled in general or technical/vocational high school (referred to as Bachelor's degree) to the population aged 15-19 (inclusive) - by gender	We are using a wide age range for a more conservative enrollment estimate. Secondary School is typically attended from age 16 - 18 in El Salvador.

Coping Capacity

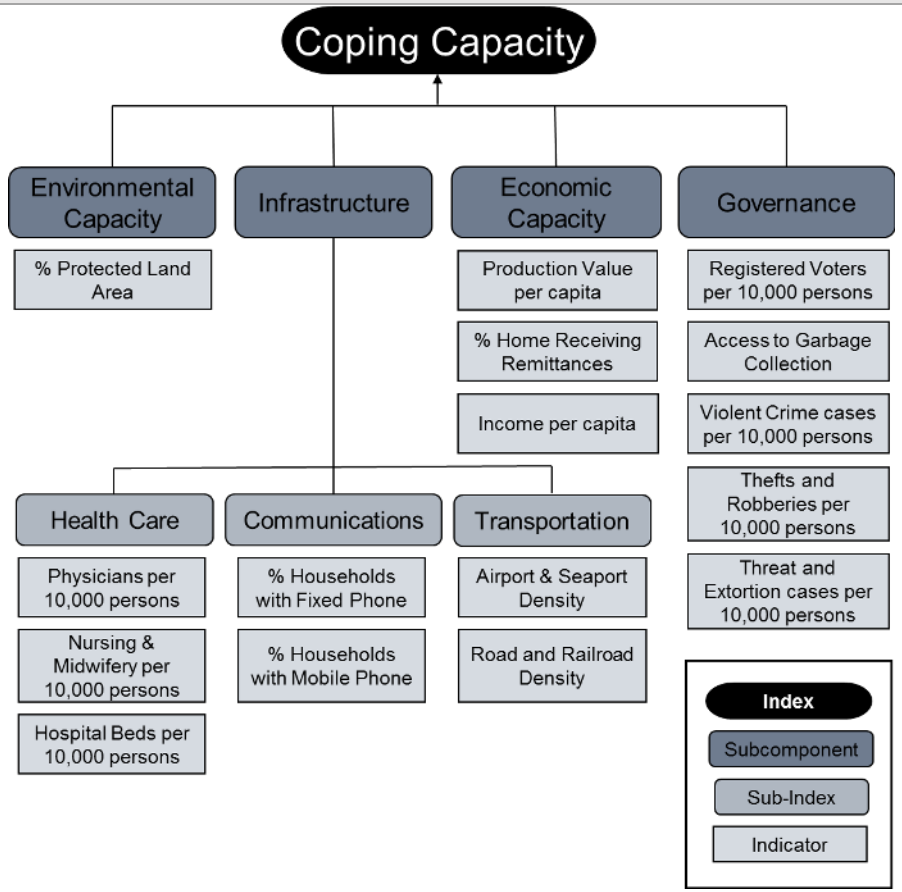


Figure 75. RVA - Coping Capacity Indicators

Table 71. RVA - Coping Capacity Subcomponent Theme Rationale

Subcomponent Theme	Rationale for Inclusion
Governance	Reflects the stability and effectiveness of institutional structures to provide equitable public services, freedom in selecting government, and enforcement of laws to prevent and control crime and violence.
Economic Capacity	Represents a region's ability to absorb immediate economic losses and quickly mobilize financial assets to provide needed assistance.
Environmental Capacity	Represents the ability of the environment to recover from a shock and maintain species health, biodiversity, and critical ecosystem services after impact.
Infrastructure	Represents the ability to learn about needs and exchange information (Communications), and physically distribute goods and services to those affected (Transportation and Health Care).

Table 72. RVA - Coping Capacity Scores and Ranks for all Indices and Subcomponents

Department	Coping Capacity Index		Governance		Econ. Capacity		Environ. Capacity		Infrastructure Index		Healthcare (Infra.)		Transport (Infra)		Comms (Infra.)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Ahuachapán	0.352	12	0.608	3	0.161	14	0.604	4	0.204	13	0.142	9	0.357	11	0.115	14
Cabañas	0.200	14	0.294	11	0.187	13	0.048	13	0.171	14	0.194	8	0.034	13	0.284	11
Chalatenango	0.395	8	0.561	4	0.377	9	0.107	11	0.344	9	0.581	5	0.000	14	0.451	8
Cuscatlán	0.217	13	0.168	14	0.223	12	0.234	10	0.255	11	0.082	11	0.312	12	0.370	9
La Libertad	0.603	2	0.536	7	0.645	2	0.441	7	0.682	2	0.089	10	0.957	1	1.000	1
La Paz	0.366	9	0.284	13	0.378	8	0.779	2	0.299	10	0.072	13	0.711	4	0.115	13
La Unión	0.478	7	0.489	9	0.552	3	0.547	5	0.371	8	0.079	12	0.538	7	0.496	6
Morazán	0.355	11	0.527	8	0.403	6	0.000	14	0.252	12	0.038	14	0.580	6	0.139	12
San Miguel	0.566	3	0.545	6	0.502	4	0.622	3	0.632	3	0.887	2	0.528	8	0.481	7
San Salvador	0.681	1	0.660	2	0.667	1	0.072	12	0.917	1	0.999	1	0.791	3	0.962	2
San Vicente	0.363	10	0.288	12	0.328	11	0.260	9	0.508	6	0.719	3	0.472	9	0.332	10
Santa Ana	0.511	4	0.558	5	0.471	5	0.415	8	0.535	5	0.602	4	0.36	10	0.643	3
Sonsonate	0.491	6	0.692	1	0.335	10	0.488	6	0.445	7	0.215	7	0.599	5	0.520	5
Usulután	0.495	5	0.352	10	0.385	7	1	1	0.581	4	0.270	6	0.903	2	0.57	4

Table 73. RVA - Coping Capacity Indicator Metadata

Coping Capacity					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Environmental Capacity	% Protected Area	MARN	2012	Percentage of total Department land area that is protected	Some protected area polygon slivers may have been excluded if they fell outside the geometric extent of the country boundary.
Infrastructure - Healthcare	Physicians per 10k Persons	MINSAL - HR; DIGESTYC (population projection)	2014	Physicians per 10,000 population	Includes all physicians employed by Ministry of Health, Solidarity Fund for Health, Salvadoran Social Security Institute, Army Medical Command, Salvadoran Institute for Comprehensive Rehabilitation, and Salvadoran Institute for Teachers' Welfare. Does not include private physicians - MINSAL did not provide.
	Nurses and Midwives per 10k Persons	MINSAL - HR; DIGESTYC (population projection)	2014	Nurses and Midwives per 10,000 population	Note: Data on Midwives reported as LICENCIADAS MATERNO INFANTIL - MINSAL advised using this as an acceptable proxy Includes all nurses employed by Ministry of Health, Solidarity Fund for Health, Salvadoran Social Security Institute, Army Medical Command, Salvadoran Institute for Comprehensive Rehabilitation, and Salvadoran Institute for Teachers' Welfare. Does not include private nurses and non-professional nurses (those not trained at university) - MINSAL did not provide.
	Hospital beds per 10k Persons	MINSAL - SEPS; DIGESTYC (population projection)	2015	Hospital beds per 10,000 population	Includes hospital bed details by specialization (i.e. General Medicine, Surgery, Obstetrics) for all MINSAL and ISSS Hospitals. Like the other data, it appears that this does not include privately licensed beds. MINSAL did not provide.
Infrastructure - Transportation	Road and Rail Density	Protección Civil (roads), NREL (rails), MARN (water bodies)	Roads Received 2014; Rails 2004	Length of road and rail lines by total land area	Some road segments may have been excluded if they were outside the geometric extent of the country boundary.
	Port and Airport density	NGA (airports), MINEC (ports), MARN (water bodies)	Airports 2007; Ports 2015	Count of ports and airports per 10,000 sq km land area	We did not have a layer that included all ports, however since this indicator does not require a precise location, I simply noted the departments in which each port is located using the MINEC map viewer base data Airports include military airstrips and runways.
Infrastructure - Communications	Fixed Phone Access	DIGESTYC - EHPM	2013	Percentage of households with fixed phone line	

	Mobile Phone Access	DIGESTYC - EHPM	2013	Percentage of households with a cellular phone	
Economic Capacity	Monthly Income per Capita	DIGESTYC - EHPM	2013	Total monthly income per capita	
	Census Value Added Per Capita (Production Value)	MINEC - Economic Base Census (Census value added); DIGESTYC (population projection)	2005	Similar to GDP per capita - 'Census Value Added' is the value of production increases during the working process, by the generating activity, capital and organization (factors of production), executed on materials consumed in the process of economic activity. It is the result from subtracting the total gross output intermediate consumption	
	Households Receiving Remittance	DIGESTYC - EHPM	2013	Percentage of households that receive remittances	
Governance	Voter Participation	Tribunal Supremo Electoral (electoral roll); DIGESTYC (population projection)	2013	Registered voters per 10,000 population	
	Trash Collection	HUNGERMAP	2007	Percentage of households that receive trash collection services	
	Violent Crimes	FUNDEMOSPAZ (crime data); DIGESTYC (population projection)	2014	Total cases of homicide, rape, and assault per 10,000 population	Crime data for lesiones is being interpreted as assault. Lesiones translates to "injury" or "wound"
	Extortion and Threats	FUNDEMOSPAZ (crime data); DIGESTYC (population projection)	2014	Total cases of extortion and threats per 10,000 population	
	Theft and Robbery	FUNDEMOSPAZ (crime data); DIGESTYC (population projection)	2014	Total cases of theft and robbery per 10,000 population	

Appendix B: RVA Index Construction

This appendix details additional information on RVA index construction.

After finalizing the datasets to be used in the analysis, indicators were created. Indicators are simply standardized datasets representing one aspect of multi-hazard risk that can be combined together in a meaningful way. The indicators used to create subcomponent indices represent a wide range of concepts and are often measured using inconsistent units, ranges, and scales. In order to make meaningful comparisons between concepts, and to combine them and perform the mathematical operations required to create a single composite index score, indicator values were normalized. Normalization produces a consistent value range and direction across all indicators.

However, as data skewness and outliers may heavily influence the distribution of observations along a normalized scale, some transformations were made prior to rescaling. Minimums, maximums, standard deviations, means, and skew were calculated for each dataset. Datasets showing substantial skewness (beyond +/-1) were evaluated on a case by case basis and transformed using common statistical methods (e.g., natural log, square root, or cube root). In addition to controlling for skewness, indicators were evaluated to ensure consistent conceptual direction between the data and the overall concept modeled in the subcomponent and component index. For example, an indicator of households' access to internet is included within the Information Access Vulnerability subcomponent in the Vulnerability Index. However, *increases* in household internet access conceptually *decrease* vulnerability. To match the direction of the indicator with its effect on overall vulnerability, the data is transformed using the reflection equation:

(Indicator maximum value + 1) – Observed indicator value

Following these transformations, indicators were normalized to create scaled scores ranging from 0 to 1, with the following equation:

(Observed indicator value – Indicator minimum value) /
(Indicator maximum value – Indicator minimum value)

In cases where an indicator observed value was outside +/- 3 standard deviations from the mean, these were excluded from the scaling equation (e.g., 'indicator minimum value' and 'indicator maximum value' in the above equation). Instead the value closest to 3 standard deviations of the mean (without exceeding) was substituted, replacing the minimum or maximum value.

This approach to establishing minimum and maximum values conceptually anchors the range, indicating relative position between the "worst realistic case" and the "best realistic case" for each indicator in the country. Subcomponent scores represent the unweighted average of indicators. Likewise, component Indices (MHE, V, and C) represent the average of their respective subcomponent scores. This method maintains a consistent scale and range through the index construction hierarchy, with a minimum value of 0 and a maximum value of 1.

It is important to note that "0" does not represent "No Risk," (or Hazard Exposure or Coping Capacity or Vulnerability), but instead indicates the minimum realistic case relative to the data analyzed for the

country. The resulting indices are mapped using a quantile classification to illustrate the relative distribution of each overall concept throughout El Salvador.

Appendix C: El Salvador – CDM Preparedness Survey (February 2015)

Introduction

As part of Comprehensive Disaster Management (CDM) data gathering efforts, stakeholder participants completed a preparedness survey during the Midterm Knowledge Exchange in San Salvador, El Salvador, on 10 February 2015. The survey was designed to assess the presence of comprehensive disaster management plans, specific components of disaster management plans, and the drilling and exercising of plans within organizations at both national and subnational levels. The survey was organized into two sections – a quantitative portion (questions 1-28) and a qualitative portion (questions 29-33). Frequency tables for responses to survey questions 1-28 are included for reference in Table 75 through Table 102 *Annex A: Frequency Tables for CDM Preparedness Survey (Questions 1-28)* of this document.

Figure 76. Organizational Affiliation of Survey Respondents.

A total of 44 stakeholders participated in the survey, with 58% of the respondents representing central government agencies and 20% representing United Nations organizations. An additional 8% represented national universities, 8% were from international non-governmental organizations (INGOs), 4% from international organizations, and 2% from national NGOs (Figure 76). Respondents were 65% male and 31% female with 4% not reporting their gender. Approximately 30% of respondents were between the ages of 41-50, 30% were 51-60, 23% were 31-40, and the remaining 17% were distributed across other age ranges (18-25; 26-30; 61-65; and over 65).

Survey responses were validated through stakeholder interviews conducted by PDC staff over the course of the project. Interview participants represented national and sub-national government organizations and NGOs, and included leaders and specialists.

Responses to Quantitative Survey Questions (1-28)

Availability and Accessibility of Disaster Plans

Of the participants in the Midterm Knowledge Exchange, three-quarters (75%; 33/44) reported that their organizations have comprehensive disaster management plans. Seventy-seven percent (34/44) reported the presence of disaster response plans, and 70% (31/44) reported having disaster preparedness plans. Fewer organizations reported the existence of disaster mitigation plans (45%; 20/44) and recovery plans

(45%; 20/44) (Figure 77). Sixty-four percent (28/44) of organizations' disaster plans are updated regularly, and 61% (27/44) of disaster plans are tested, drilled, or exercised regularly.

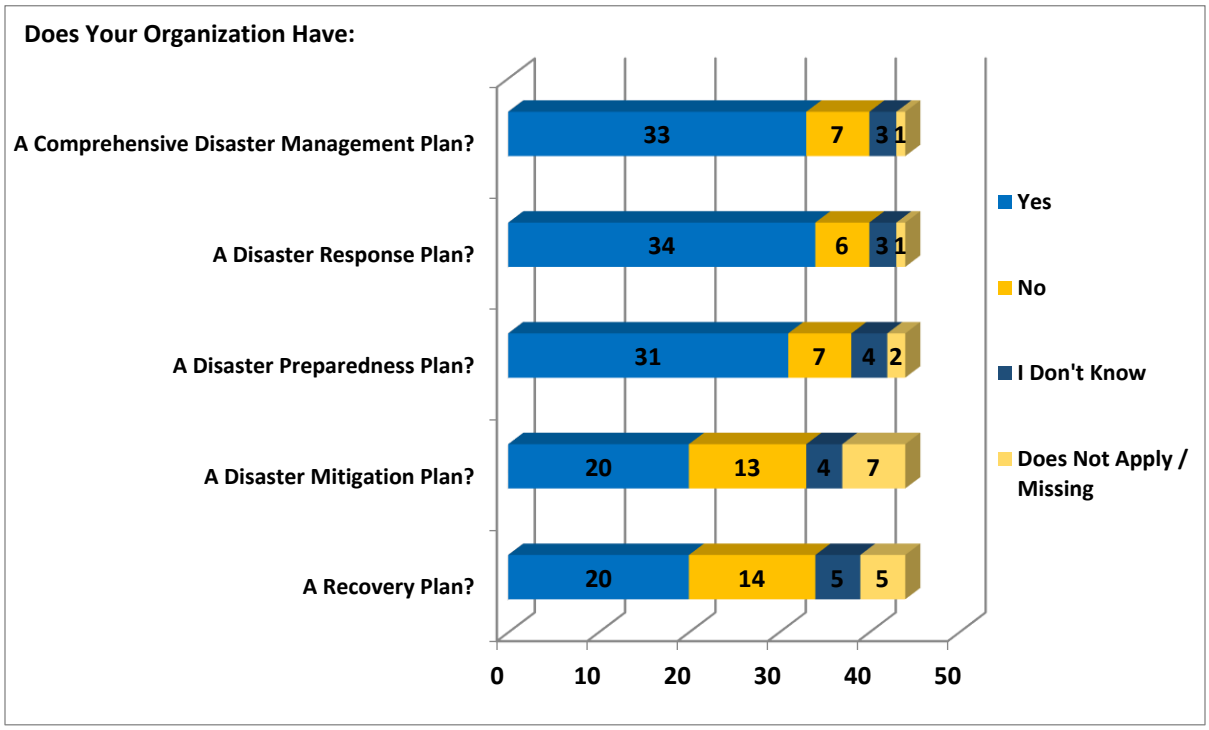


Figure 77. Availability and accessibility of disaster plans according to survey results.

Planning Collaboration

Forty-eight percent (21/44) of survey participants reported their involvement in the drafting of one or more of their organization's disaster plans. Fifty-seven percent (25/44) have access to copies of their organization's disaster management plans, and 52% (23/44) reported that their disaster plans have been shared with other agencies or organizations active in disaster management.

Composition of Disaster Plans

Fifty-two percent (23/44) of survey participants reported that their organization's disaster management plans include information on all hazard types. Fifty-nine percent (26/44) have disaster plans that address public outreach, 66% (29/44) have disaster plans that address early warning, but only 36% (16/44) have disaster plans that address evacuation. Fifty-two percent (23/44) of participants reported that their disaster plans address logistics management, 45% (20/44) have disaster plans that address transportation, however, just 27% (12/44) have disaster plans that address shelter operations. Only 14% (6/44) stated that their organizations have plans that address public safety and security. Less than half of respondents (41%; 18/44) reported that their organizations have disaster plans that address long-term community recovery.

Forty-one percent (18/44) of participants have organizational disaster plans that address when and how to activate their Emergency Operations Centers (EOC). Fifty-nine percent (26/44) have disaster plans that address emergency communications during times of disaster. Fourteen percent (6/44) of participants reported that their organizations have disaster plans that address public works and engineering, and 25% (11/44) stated that their plans address public health and medical services. Eighteen percent (8/44) have

disaster plans that address search and rescue, 25% (11/44) have disaster plans that address oil and hazardous materials response, and 23% (10/44) have disaster plans that address agriculture and natural resources. Refer to Table 74 for a summary of stakeholder responses to questions regarding specific components of disaster plans in El Salvador.

Table 74. Frequency of responses to questions regarding specific components of disaster management plans in El Salvador.

Does plan include information on:	*Yes*		*No*		*Don't Know*		*Does Not Apply*		*Missing*	
	N	**%**	**N**	**(%)**	**N**	**%**	**N**	**%**	**N**	**%**
All Hazard Types	23	(52)	15	(34)	2	(5)	3	(7)	1	(2)
Public Outreach	26	(59)	10	(23)	3	(7)	4	(9)	1	(2)
Early Warning	29	(66)	8	(18)	2	(5)	4	(9)	1	(2)
Evacuation	16	(36)	14	(32)	3	(7)	10	(23)	1	(2)
Logistics	23	(52)	9	(21)	3	(7)	8	(18)	1	(2)
Shelter Operations	12	(27)	20	(46)	2	(5)	9	(20)	1	(2)
EOC Activation	18	(41)	12	(27)	4	(9)	8	(18)	2	(5)
Transportation	20	(45)	14	(32)	2	(5)	6	(13)	2	(5)
Communications	26	(59)	9	(20)	2	(5)	6	(14)	1	(2)
Public Works & Engineering	6	(14)	26	(59)	2	(5)	9	(20)	1	(2)
Public Health & Medical Services	11	(25)	20	(46)	1	(2)	11	(25)	1	(2)
Search & Rescue	8	(18)	22	(50)	1	(2)	12	(28)	1	(2)
Hazardous Materials	11	(25)	19	(43)	3	(7)	10	(23)	1	(2)
Agricultural & Natural Resources	10	(23)	20	(45)	2	(5)	11	(25)	1	(2)
Public Safety	6	(14)	27	(61)	0	(0)	9	(20)	2	(5)
Long-term Community Recovery	18	(41)	18	(41)	1	(2)	6	(14)	1	(2)

Perceptions of Disaster Management Leadership Programs

Eighty-two percent (36/44) of survey participants felt that their disaster management organizations exhibit strong leadership, while 61% (27/44) believed that their organizations have effective disaster management programs.

Responses to Qualitative Survey Questions (29-33)

Questions 29-33 required open-ended responses from survey participants. Respondents generally provided brief answers to these questions which centered around the role of their organizations in providing effective disaster management within El Salvador.

Forty-two (95%) survey participants provided an answer to Question 29 ("How do you define *"effective disaster management"*?"). Responses heavily favored the concepts of planning and preparedness, with twenty-two participants using the words 'planning' and/or 'preparation' in their answers (Figure 78). Five responses highlighted 'all phases' of disaster management, including the planning/preparedness phase. Nine participants included some reference to 'coordination' or 'cooperation'. Additional concepts of note included 'response' (seven responses), 'prevention/mitigation' (six responses), and the 'capacity to act' which was referenced by five survey participants. Complete answers to this question can be seen in Table 103.

Figure 78. Word Cloud for Question 29: "How do you define "effective disaster management"?"

One hundred percent (44/44) of participants provided an answer to Question 30 ("What is the function of your organization in disaster management?"). The most prevalent functions included 'capacity building' in relation to risk management, 'preparation and support' of communities throughout all phases of disaster management, and 'humanitarian assistance' for disaster response. Additional organizational functions included 'saving lives', 'coordination', providing qualified 'human resources', and 'recovery' activities.

Question 31 ("What are the three most effective preparation activities that your organization has carried out?") was answered by 95% (42/44) of survey participants. The most common emergent themes included 'training', 'drills/exercises/simulations', 'planning', and 'vulnerability/risk assessments'. 'Organization', 'coordination', 'preparation', 'monitoring of threats', and 'capacity building' were also recurring answers to this question. Emphasis was placed on preparedness activities taking place at municipal and community levels.

Forty (91%) survey participants responded to Question 32 ("How can your organization improve disaster management?"). The two most common themes pertained to increasing capacity (25%; 11/44 (Figure 79). Additional participant suggestions included increasing information and knowledge exchanges, support, equipment, and the training and education of practitioners.

Figure 79. Word Cloud for Question 32: "How can your organization improve disaster management?"

Question 33 ("What is the area of responsibility of your organization? (local, provincial, national, all, etc.)") was answered by 93% of survey participants (41/44). Nearly half of those surveyed were responsible for disaster management activities at the national level. Three participants dealt with disaster management specifically at the local level of the country while 17 work at all levels of the government. One participant focused solely on international disaster management efforts, with 3 highlighting a capacity to work at the regional level.

Annex A: Frequency Tables for CDM Preparedness Survey (Questions 1-28)

Table 75. Preparedness Survey – Question 1

Does your organization have a comprehensive disaster management plan?	*Frequency*	*Percent*
No	7	15.91
Yes	33	75.00
I don't know	3	6.82
Does not apply	1	2.27
Missing	0	0
Total	44	100

Table 76. Preparedness Survey – Question 2

Does your organization have a disaster response plan?	*Frequency*	*Percent*
No	6	13.64
Yes	34	77.27
I don't know	3	6.82
Does not apply	1	2.27
Missing	0	0
Total	44	100

Table 77. Preparedness Survey – Question 3

Does your organization have a disaster preparedness plan?	*Frequency*	*Percent*
No	7	15.91
Yes	31	70.45
I don't know	4	9.09
Does not apply	1	2.27
Missing	1	2.27
Total	44	100

Table 78. Preparedness Survey – Question 4

Does your organization have a disaster mitigation plan?	*Frequency*	*Percent*
No	13	29.55
Yes	20	45.45
I don't know	4	9.09
Does not apply	5	11.36
Missing	2	4.55
Total	44	100

Table 79. Preparedness Survey – Question 5

Does your organization have a disaster recovery plan?	*Frequency*	*Percent*
No	14	31.82
Yes	20	45.45
I don't know	5	11.36
Does not apply	4	9.09
Missing	1	2.27
Total	44	100

Table 80. Preparedness Survey – Question 6

Did you participate in the drafting of any of the disaster plans?	*Frequency*	*Percent*
No	21	47.73
Yes	21	47.73
I don't know	1	2.27
Does not apply	1	2.27
Missing	0	0
Total	44	100

Table 81. Preparedness Survey – Question 7

Do you have a copy of the disaster management plan(s)?	*Frequency*	*Percent*
No	16	36.36
Yes	25	56.82
I don't know	0	0
Does not apply	1	2.27
Missing	2	4.55
Total	44	100

Table 82. Preparedness Survey – Question 8

Does your disaster management plan include information on all hazard types?	*Frequency*	*Percent*
No	15	34.09
Yes	23	52.27
I don't know	2	4.55
Does not apply	3	6.82
Missing	1	2.27
Total	44	100

Table 83. Preparedness Survey – Question 9

Has your plan been shared with other agencies or organizations active in disaster management?	*Frequency*	*Percent*
No	14	31.82
Yes	23	52.27
I don't know	5	11.36
Does not apply	2	4.55
Missing	0	0
Total	44	100

Table 84. Preparedness Survey – Question 10

Are your organizations disaster plans updated regularly?	*Frequency*	*Percent*
No	8	18.18
Yes	28	63.64
I don't know	6	13.64
Does not apply	2	4.55
Missing	0	0
Total	44	100

Table 85. Preparedness Survey – Question 11

Are your organizations disaster plans tested, drilled or exercised regularly?	*Frequency*	*Percent*
No	10	22.73
Yes	27	61.36
I don't know	1	2.27
Does not apply	5	11.36
Missing	1	2.27
Total	44	100

Table 86. Preparedness Survey – Question 12

Do your disaster plans address public outreach?	*Frequency*	*Percent*
No	10	22.73
Yes	26	59.09
I don't know	3	6.82
Does not apply	4	9.09
Missing	1	2.27
Total	44	100

Table 87. Preparedness Survey – Question 13

Do your disaster plans address early warning?	*Frequency*	*Percent*
No	8	18.18
Yes	29	65.91
I don't know	2	4.55
Does not apply	4	9.09
Missing	1	2.27
Total	44	100

Table 88. Preparedness Survey – Question 14

Do your disaster plans address evacuation?	*Frequency*	*Percent*
No	14	31.82
Yes	16	36.36
I don't know	3	6.82
Does not apply	10	22.73
Missing	1	2.27
Total	48	100

Table 89. Preparedness Survey - Question 15

Do your disaster plans address logistics management? (the movement of personnel and resources during times of disasters)	*Frequency*	*Percent*
No	9	20.45
Yes	23	52.27
I don't know	3	6.82
Does not apply	8	18.18
Missing	1	2.27
Total	44	100

Table 90. Preparedness Survey – Question 16

Do your disaster plans address shelter operations?	*Frequency*	*Percent*
No	20	45.45
Yes	12	27.27
I don't know	2	4.55
Does not apply	9	20.45
Missing	1	2.27
Total	44	100

Table 91. Preparedness Survey – Question 17

Do your disaster plans address when and how to activate the Emergency Operation Center?	*Frequency*	*Percent*
No	12	27.27
Yes	18	40.91
I don't know	4	9.09
Does not apply	8	18.18
Missing	2	4.55
Total	48	100

Table 92. Preparedness Survey – Question 18

Do your disaster plans address transportation during times of disasters?	*Frequency*	*Percent*
No	14	31.82
Yes	20	45.45
I don't know	2	4.55
Does not apply	6	13.64
Missing	2	4.55
Total	44	100

Table 93. Preparedness Survey - Question 19

Do your disaster management plans address emergency communications during times of disaster?	*Frequency*	*Percent*
No	9	20.45
Yes	26	59.09
I don't know	2	4.55
Does not apply	6	13.64
Missing	1	2.27
Total	44	100

Table 94. Preparedness Survey – Question 20

Do your disaster plans address public works and engineering?	*Frequency*	*Percent*
No	26	59.09
Yes	6	13.64
I don't know	2	4.55
Does not apply	9	20.45
Missing	1	2.27
Total	44	100

Table 95. Preparedness Survey – Question 21

Do your disaster plans address public health and medical services?	*Frequency*	*Percent*
No	20	45.45
Yes	11	25.00
I don't know	1	2.27
Does not apply	11	25.00
Missing	1	2.27
Total	44	100

Table 96. Preparedness Survey – Question 22

Do your plans address search and rescue?	*Frequency*	*Percent*
No	22	50.00
Yes	8	18.18
I don't know	1	2.27
Does not apply	12	27.27
Missing	1	2.27
Total	44	100

Table 97. Preparedness Survey – Question 23

Do your plans address oil and hazardous materials response (chemical, biological, radiological, etc.)?	*Frequency*	*Percent*
No	19	43.18
Yes	11	25.00
I don't know	3	6.82
Does not apply	10	22.73
Missing	1	2.27
Total	44	100

Table 98. Preparedness Survey – Question 24

Do your plans address agriculture and natural resources?	*Frequency*	*Percent*
No	20	45.45
Yes	10	22.73
I don't know	2	4.55
Does not apply	11	25.00
Missing	1	2.27
Total	44	100

Table 99. Preparedness Survey – Question 25

Do your plans address public safety and security?	*Frequency*	*Percent*
No	27	61.36
Yes	6	13.64
I don't know	0	0
Does not apply	9	20.45
Missing	2	4.55
Total	44	100

Table 100. Preparedness Survey – Question 26

Do your plans address long-term community recovery?	*Frequency*	*Percent*
No	18	40.91
Yes	18	40.91
I don't know	1	2.27
Does not apply	6	13.64
Missing	1	2.27
Total	48	100

Table 101. Preparedness Survey – Question 27

Does your organization have strong disaster management leadership?	*Frequency*	*Percent*
No	4	9.09
Yes	36	81.82
I don't know	1	2.27
Does not apply	1	2.27
Missing	2	4.55
Total	44	100

Table 102. Preparedness Survey – Question 28

Do you think your organization has an effective disaster management program?	*Frequency*	*Percent*
No	6	13.64
Yes	27	61.36
I don't know	6	13.64
Does not apply	2	4.55
Missing	3	6.82
Total	44	100

Annex B: Definitions of Disaster Management

Participant responses to Preparedness Survey Question 29: "How do you define '*effective disaster management*'?" are included in Table 30.

Table 103. CDM Preparedness Survey – Participant Written Responses

To achieve what is planned
Actions that allow the preparation and mitigation of threats, monitoring of threats and which establish disaster response mechanisms
A better preparation, organization, and an effective response and a reduced impact together with an active resilience for an immediate, medium and long term development
It is every timely action which may guarantee activity. To safeguard life and its means in a disaster situation
To have true and updated information from the start of the event (if sudden) and with a good monitoring (if forecasted).
It makes reference to the capacity of achieving goals in terms of emergency management attention improvement and disaster prevention.
A management with a prospective approach which allows citizen participation
That by which, in the event of a natural threat, there are the lesser number of deaths and various losses in the economy.
That in the event of a disaster the response to it is precise and at the time needed.
To have all resources for compliance
With preparatory actions and previous coordination, as well as with prospective scenarios
To comply with the mandate required by law of the organization in the topics that will be addressed to the target audience.
It refers to the effective preparation for or in the event of disasters, attention/response, recovery, and assessment.
To meet or deal with all needs.
Effectiveness refers to the optimization of resources and non-duplicity, and to the generation of resilience
Integral with Acgoras. Scientific technicians + Government + prepared and educated community
Timely generation of notices and warning, with the pertinent information, so aid and assistance entities give aid to the population affected.
Effective would be a good coordination at the national, department, and municipal level, for the good attention to the disaster and allocation of resources.
Disaster management involves national and international efforts to have capacity to serve communities under low risk.
That is has a well-defined plan, taking into account and consolidating information by having immediate responses and especially by working to minimize risks
To take into account the before, during and after actions.
(None)
In case of a disaster, the people affected are assisted in a timely and appropriate manner
It is the condition that develops inter-institutional and community conditions to avoid disasters or at least to avoid them.
Where there are clear and precise protocols on how to act during and after an event in order to minimize the impact of a disaster.
To guarantee through coordination and participation of everyone for a greater resilience.

Processes to reduce the impact of phenomena, to reduce losses and damages, taking into account social, physical, economic factors
It must include all phases, from preparation to the recovery itself.
To take charge of the preparation and response according to the different events and ensure a soon recovery and rehabilitation.
(None)
True information. Good organization and logistics. Immediate response.
The set of timely and functional actions at the time required for handling the event.
Effective Risk Management or Disaster Management means: efficient, quick but also appropriate. It improves the systems. It improves equity. It reduces vulnerability with in the response, mitigation, recovery, and preparation
It is when there are plans to balance the available resources with the reaction or prevention of the disaster at an appropriate time.
To anticipate on a timely basis. To strengthen areas susceptible to different threats. To strengthen communities, mitigation and adaptation works.
Very higher management level.
There is preparation. It is delivered as soon as the disaster occurs. Based on actual needs.
It is that in which all stakeholders and resources provide the necessary and appropriate services to minimize its impact on people.
To have the capacity to act before, during, and after the emergency.
Preparation, organization, identification of vulnerabilities
The context depends a lot to ensure that my management plan is effective. However, all those preparation actions, diagnoses and planning are to react and avoid loss of life.
That there is planning and organization before any emergency event. For this purpose, there is a previous preparation to have the humanitarian assistance available in case a disaster occurs.

Appendix D: El Salvador – CDM Response Survey (February 2015)

Introduction

As part of Comprehensive Disaster Management (CDM) data gathering efforts, stakeholder participants completed a follow-on response survey during the Midterm Knowledge Exchange in San Salvador, El Salvador, on 10 February 2015. The survey explored a variety of aspects pertaining to disaster response activities within the country. Questions were focused on, but not limited to, resources and capacity building, damage and needs assessments, staffing, roles and responsibilities during disaster response operations, budget allocations, early warning system usage, the existence of mutual aid agreements, response partnerships and collaboration, and the operationalization of Emergency Operations Centers. The survey was organized into two sections – a quantitative portion (questions 1-25) and a qualitative portion (questions 26-30). Frequency tables for responses to survey questions 1-25 are included for reference in Table 104 through Table 128 contained in *Annex C: Frequency Tables for CDM Response Survey (Questions 1-25)* of this document.

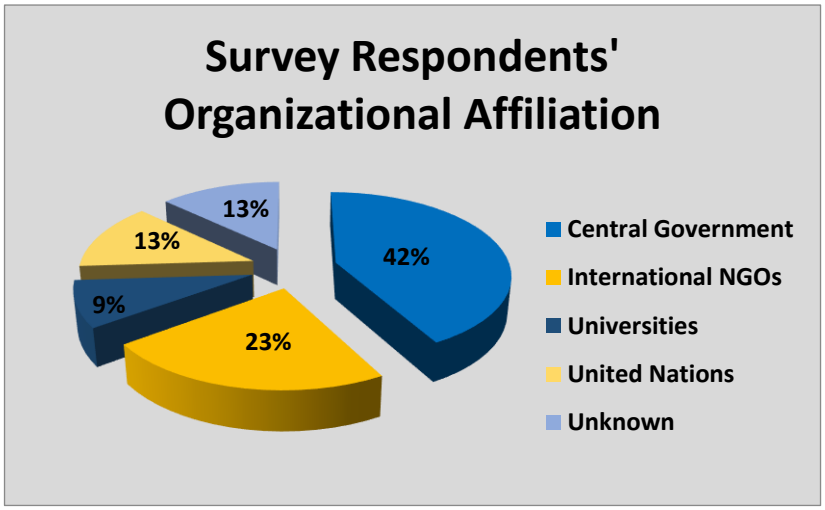


Figure 80. Organizational affiliation of survey respondents.

A total of 31 stakeholders participated in the survey, with 42% representing central government agencies, 23% representing international non-governmental organizations (INGOs), 13% from United Nations organizations, and 9% from national universities in El Salvador (Figure 80). Thirteen percent chose not to list their organizations. Respondents were 65% male and 29% female. The remaining 6% of survey participants chose not to state their gender. Approximately 38% of respondents were between the ages of 41-50, 35% were 31-40, 12% were 26-30, and the remaining 15% were distributed across other age ranges (18-25; 51-60; 61-65; and over 65).

Survey responses were validated through stakeholder interviews conducted by PDC staff over the course of the project. Interview participants represented national and sub-national governmental organizations and NGOs, and included leaders and specialists.

Responses to Quantitative Survey Questions (1-25)

Effectiveness of Response to Recent Disaster Events

Seventy-one percent (22/31) of respondents felt that the response to the last major disaster was effective. Just over half of respondents (55%; 17/31) believed disaster information messages were issued effectively, and 58% (18/31) believed the mobilization of resources and response personnel was effective during the last disaster. Fifty-five percent (17/31) of respondents felt that emergency evacuations were conducted effectively, 45% (14/31) that emergency sheltering was effective, 58% (18/31) that emergency medical response efforts were effective, and 65% (20/31) that Search and Rescue efforts were effective

during the last disaster. More than three-quarters of respondents (77%; 24/31) felt that their organizations responded to the last major disaster as outlined in policy/governing documents.

Disaster Early Warning

A little over half of organizations (52%; 16/31) surveyed provide disaster warning to their communities, and 74% (23/31) receive hazard-warning messages directly from the lead agency.

Organizational Resources and Capacity Building for Disaster Response

Nearly three-quarters of respondents (74%; 23/31) identified their organizations as being active in disaster response. Seventy-seven percent (24/31) stated that their organizations have pre-established agreements for support, such as mutual aid agreements, during times of disaster. Forty-eight percent (15/31) of respondents indicated that their organizations engage with the military during disaster response, while just under two-thirds (65%; 20/31) reported that their organizations engage with the private sector in support of disaster response activities. Seventy-one percent (22/31) of respondents felt that their organizations have adequate staffing to conduct disaster response. Sixty-eight percent (21/31) stated that their organizations have training programs to help develop and build capacity in disaster management staff members.

Post-Disaster Damage and Needs Assessments

Sixty-five percent (20/31) of respondents stated that their organizations are responsible for post-disaster damage and needs assessments. Eighty percent (25/31) reported that post-disaster damage and needs assessments were conducted following the last major disaster, however, fewer than half (48%; 15/31) of those surveyed considered the assessments to be accurate. Eighty-seven percent (27/31) of respondents find the results of post-disaster damage and needs assessments to be helpful in response decision-making.

Emergency Operations Center

Just over half of survey respondents (55%; 17/31) indicated that their organizations maintain Emergency Operations Centers. Only 39% (12/31), however, felt that their Emergency Operations Centers have the necessary resources required to communicate the impacts of a disaster to decision makers. Fifty-two percent (16/31) have representatives from other agencies and organizations in their Emergency Operations Centers.

Roles and Responsibilities in Disaster Response

Fifty-eight percent (18/31) of respondents felt that disaster response tasks are clearly defined in El Salvador. More than half of respondents (52%; 16/31) felt that there is overlap and/or conflict between organizations active in disaster response in the country.

Responses to Qualitative Survey Questions (26-30)

Questions 26-30 required open-ended responses from survey participants. Respondents provided brief answers to questions pertaining to organizational capacities and challenges to disaster response in El Salvador.

Thirty (97%) respondents provided an answer to Question 26 (“How do you receive the alert or warning messages of a disaster?”). The most common methods mentioned for receiving disaster alerts and warning messages was by text messages and cellphone. Email and other unspecified media are additional

ways of receiving early warning notifications. The Internet, radio, social networks, and mobile apps were also cited by participants.

Question 27 ("Which was the last disaster that required a response from your organization?") was answered by 100% (31/31) of survey respondents. The most common response was Tropical Depression 12E, followed by the eruption of San Miguel volcano. Other disasters of note included drought, blight, the 2001 earthquake, the Chikungunya epidemic, and the migration of unaccompanied children.

Eighty-four percent (26/31) of respondents answered Question 28 ("In your opinion, in what disaster did your organization respond more effectively?"). Many respondents identified their organizational response to Tropical Depression 12E as being effective, with several respondents indicating that their organization responds effectively to all disasters. Response to tropical storms, earthquakes, volcanoes, and the migration of unaccompanied children were also regarded as effective.

Twenty-one (68%) respondents provided an answer to Question 29 ("In your opinion, in what disaster did your organization respond less effectively?"). The most common response was 'I don't know', giving no indication as to what previous disaster response was ineffective. A number of those surveyed drew attention to the 2001 earthquake, Tropical Depression Ida, the 2012 tsunami, and Hurricane Mitch disasters as examples of less than effective response.

Question 30 ("In your opinion, what is the biggest challenge to respond more effectively to disasters?") was answered by 97% (30/31) of survey respondents. Responses referenced ineffective dissemination and sharing of data and information as well as a lack of training and government leadership (Figure 81). Additional challenges included resource shortfalls (budget, equipment, and staff) and a lack of updated plans.

Figure 81. Word Cloud for Question 30: "In your opinion, what is the biggest challenge to respond more effectively to disasters?"

Annex C: Frequency Tables for CDM Response Survey (Questions 1-25)

Table 104. Response Survey - Question 1

Is your organization active in disaster response?	*Frequency*	*Percent*
No	3	9.7
Yes	23	74.2
I do not know	3	9.7
Does not apply	1	3.2
Missing	1	3.2
Total	31	100

Table 105. Response Survey – Question 2

Does your organization provide disaster warning to the community?	*Frequency*	*Percent*
No	12	38.7
Yes	16	51.6
I do not know	1	3.2
Does not apply	1	3.2
Missing	1	3.2
Total	31	100

Table 106. Response Survey – Question 3

Do you receive hazard-warning messages directly from the lead agency?	*Frequency*	*Percent*
No	5	16.1
Yes	23	74.2
I do not know	1	3.2
Does not apply	1	3.2
Missing	1	3.2
Total	31	100

Table 107. Response Survey – Question 4

In your opinion, was the response to the last major disaster effective?	*Frequency*	*Percent*
No	5	16.1
Yes	22	71.0
I do not know	4	12.9
Does not apply	0	0
Missing	0	0
Total	31	100

Table 108. Response Survey – Question 5

In your opinion, were disaster information messages issued effectively during the last disaster?	*Frequency*	*Percent*
No	12	38.7
Yes	17	54.8
I do not know	1	3.2
Does not apply	1	3.2
Missing	0	0
Total	31	100

Table 109. Response Survey – Question 6

In your opinion, were emergency evacuations executed effectively during the last disaster?	*Frequency*	*Percent*
No	8	25.8
Yes	17	54.8
I do not know	4	12.9
Does not apply	2	6.5
Missing	0	0
Total	31	100

Table 110. Response Survey – Question 7

In your opinion, was emergency sheltering effective during the last disaster?	*Frequency*	*Percent*
No	6	19.4
Yes	14	45.2
I do not know	8	25.8
Does not apply	3	9.7
Missing	0	0
Total	31	100

Table 111. Response Survey – Question 8

In your opinion, were the emergency medical response efforts effective during the last disaster?	*Frequency*	*Percent*
No	3	9.7
Yes	18	58.1
I do not know	6	19.4
Does not apply	4	12.9
Missing	0	0
Total	31	100

Table 112. Response Survey – Question 9

In your opinion, were the Search and Rescue agencies response efforts effective during the last disaster?	*Frequency*	*Percent*
No	2	6.5
Yes	20	64.5
I do not know	5	16.1
Does not apply	4	12.9
Missing	0	0
Total	31	100

Table 113. Response Survey – Question 10

In your opinion, was the mobilization of resources and response personnel effective during the last disaster?	*Frequency*	*Percent*
No	6	19.4
Yes	18	58.1
I do not know	4	12.9
Does not apply	3	9.7
Missing	0	0
Total	31	100

Table 114. Response Survey – Question 11

Does your organization have pre-established agreements for support during times of disaster (i.e., Mutual Aid)?	*Frequency*	*Percent*
No	1	3.2
Yes	24	77.4
I do not know	4	12.9
Does not apply	2	6.5
Missing	0	0
Total	31	100

Table 115. Response Survey – Question 12

Is your agency responsible for post-disaster damage and needs assessments?	*Frequency*	*Percent*
No	5	16.1
Yes	20	64.5
I do not know	1	3.2
Does not apply	5	16.1
Missing	0	0
Total	31	100

Table 116. Response Survey – Question 13

Is your agency responsible for post-disaster damage and needs assessments?	*Frequency*	*Percent*
Yes	25	80.6
I do not know	4	12.9
Does not apply	2	6.5
Missing	0	0
Total	31	100

Table 117. Response Survey – Question 14

In your opinion, were the post-disaster damage and needs assessments conducted after the last major disaster accurate?	*Frequency*	*Percent*
No	7	22.6
Yes	15	48.4
I do not know	6	19.4
Does not apply	3	9.7
Missing	0	0
Total	31	100

Table 118. Response Survey – Question 15

Do you find the results of post-disaster damage and needs assessments helpful in response decision making?	*Frequency*	*Percent*
No	2	6.5
Yes	27	87.1
I do not know	1	3.2
Does not apply	1	3.2
Missing	0	0
Total	31	100

Table 119. Response Survey – Question 16

Does your organization maintain an Emergency Operations Center?	*Frequency*	*Percent*
No	8	25.8
Yes	17	54.8
I do not know	1	3.2
Does not apply	4	12.9
Missing	1	3.2
Total	31	100

Table 120. Response Survey – Question 17

Do you have representatives from other agencies and organizations in your Emergency Operations Center?	*Frequency*	*Percent*
No	5	16.1
Yes	16	51.6
I do not know	3	9.7
Does not apply	7	22.6
Missing	0	0
Total	31	100

Table 121. Response Survey – Question 18

In your opinion, does your Emergency Operations Center have the necessary resources required to communicate the impacts of a disaster to decision makers? (examples: maps, status boards, decision support software, etc.)	*Frequency*	*Percent*
No	9	29.0
Yes	12	38.7
I do not know	0	0
Does not apply	8	25.8
Missing	2	6.5
Total	31	100

Table 122. Response Survey – Question 19

In your opinion, does your organization have adequate staffing to conduct disaster response?	*Frequency*	*Percent*
No	7	22.6
Yes	22	71.0
I do not know	1	3.2
Does not apply	1	3.2
Missing	0	0
Total	31	100

Table 123. Response Survey – Question 20

Does your organization have a training program to help develop and build capacity in disaster management staff members?	*Frequency*	*Percent*
No	6	19.4
Yes	21	67.7
I do not know	2	6.5
Does not apply	2	6.5
Missing	0	0
Total	31	100

Table 124. Response Survey – Question 21

In your opinion, are disaster response tasks clearly defined?	*Frequency*	*Percent*
No	9	29.0
Yes	18	58.1
I do not know	3	9.7
Does not apply	1	3.2
Missing	0	0
Total	31	100

Table 125. Response Survey – Question 22

In your opinion, is there overlap and conflict between organizations active in disaster response?	*Frequency*	*Percent*
No	9	29.0
Yes	16	51.6
I do not know	5	16.1
Does not apply	1	3.2
Missing	0	0
Total	31	100

Table 126. Response Survey – Question 23

Does your organization engage with the military to support disaster response?	*Frequency*	*Percent*
No	12	38.7
Yes	15	48.4
I do not know	1	3.2
Does not apply	2	6.5
Missing	1	3.2
Total	31	100

Table 127. Response Survey – Question 24

Does your organization engage with the private sector to support disaster response?	*Frequency*	*Percent*
No	7	22.6
Yes	20	64.5
I do not know	1	3.2
Does not apply	2	6.5
Missing	1	3.2
Total	31	100

Table 128. Response Survey – Question 25

In your opinion, did your organization respond to the last major disaster as outlined in policy/governing documents?	*Frequency*	*Percent*
No	2	6.5
Yes	24	77.4
I do not know	4	12.9
Does not apply	1	3.2
Missing	0	0
Total	31	100

Appendix E: EOC Information

National EOC

The national EOC was visited by PDC on 08 June 2015. The facility is in Nejapa, just north of the capital San Salvador and also serves as the Central Region's Protección Civil office. Its location was strategically chosen to be adjacent to two major highways with easy access to and from the capital by staff members during a disaster. The facility was placed out of the flood zone and away from most hazards within the region. The floor plan and capacity of the building is not sufficient to accommodate the number of people identified as required staff members for response operations. This operations center conducts 24-hour monitoring operations. The kitchen is operational but there is no food stored. The warehouse within the compound is operational and can store disaster response supplies or food. Warehouse is equipped with generator but EOC is not. No Standard Operation Procedures (SOPs) exists or were not available to PDC staff.

Capabilities

The national EOC contains the following:

- Seven Stations, one for each technical commission. Each station has one computer and one landline telephone.
- Two monitor staff stations with computer and landline telephone.
- Four large-screen televisions displaying weather information, volcanic activity, tsunami alerts, and maps via a platform provided by MARN.
- One UHF radio provides communication capabilities with departmental and municipal EOCs.
- One fax machine provides communication capabilities with regional offices.

Equipment

- All Protección Civil employees that work at the EOC have been issued laptops and a cellphone push-to-talk radio.
- The national EOC houses four busses donated by the Japan International Cooperation Agency (JICA). The busses are fully equipped mobile incident command posts with communications systems, sleeping quarters, and food and water storage. At the time of PDC's site visit, the busses had been parked for over a year waiting on license plates and registrations before being distributed to the other Regional Offices.
- Warehouse contains a forklift and logistics management equipment donated by USSOUTHCOM to manage disaster response supplies.

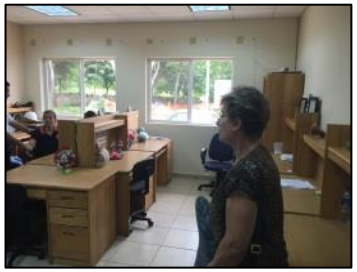
Training

- National EOC staff have received MACOE (EOC Management) Training which is provided by Protección Civil.
- EOC and Warehouse training provided by USSOUTHCOM.

Santa Ana EOC

The Santa Ana EOC was visited by PDC on 08 June 2015. The facility is located in the capital city, Santa Ana, in the department of Santa Ana. It is approximately 40 miles northwest of the country's capital San Salvador. It serves as the department and city's EOC as well and the Western Region Protección Civil administrative office. The facility does not have a properly functioning kitchen with no food storage or generator. The warehouse will be equipped with a generator and upon completion the generator will be moved to the EOC. No Standard Operation Procedures (SOPs) existed or were not available.





Capabilities

The Santa Ana EOC contains the following:

- Working stations for technical commissions, however, the stations are not equipped with computers or telephones.
- No display televisions.
- One UHF radio provides communication capabilities with national, departmental and municipal EOCs.
- One fax machine provides communication capabilities with national and regional offices.

Equipment

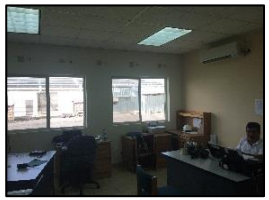
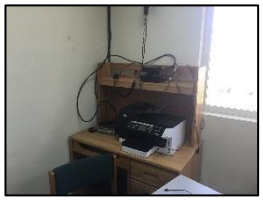
- All Protección Civil employees that work at the EOC have been issued laptops and a cellphone push-to-talk radio.
- One Truck.
- USACE is constructing a warehouse that was donated by the USSOUTHCOM to store disaster response supplies.

Training

- National EOC staff have received MACOE (EOC Management) Training, provided by Protección Civil.

San Miguel EOC

The San Miguel EOC was visited by PDC on 09 June 2015. The facility is located in the capital city, San Miguel, in the department of San Miguel. It is approximately 86 miles east of the country's capital San Salvador. It also serves as the department and city and the Eastern Region Protección Civil administrative office. The facility is not connected to city water, it has a 5000L water tank that needs to be filled periodically. A full 5000L tank lasts about five days during normal operations (approximatelly four people working), in an activated EOC it would probably last about two to three days. Facility does not have a properly functioning kitchen, there is no food storage or generator. The warehouse will be equipped with a generator and upon completion the generator will be moved to the EOC. No Standard Operation Procedures (SOPs) existed or were not available.



Capabilities

The Santa Ana EOC contains the following:

- Working stations for technical commissions, however, the stations are not equipped with computers or telephones.
- No display televisions.
- One UHF radio provides communication capabilities with national, departmental and municipal EOCs.
- One fax machine provides communication capabilities with national and regional offices.

Equipment

- All Protección Civil employees that work at the EOC have been issued laptops and a cellphone push-to-talk radio.
- Three Trucks.
- USACE is constructing a warehouse that was donated by the USSOUTHCOM to store disaster response supplies.

Training

- National EOC staff have received MACOE (EOC Management) Training, provided by Protección Civil.

San Vicente EOC

The San Vicente EOC was visited by PDC on 09 June 2015. The facility is located in the capital city, San Vicente, in the department of San Vicente. It is approximately 39 miles east of the country's capital San Salvador. It serves as the department and city EOC and the Paracentral Region Protección Civil administrative office. During the visit it was determined that San Vicente does not have city water. It uses water from a tank which needs to be filled. During the site visit, there was no water in the sinks or bathroom, which happens often. The tank is refilled by the Fire Department truck, or one of the employee's personal pick-up trucks. A full 5000L tank lasts about five days during normal operations (approximatelly four people working), in an activated EOC would probably last about two to three days. Facility does not have a properly functioning kitchen, there is no food storage or generator. The warehouse will be equipped with a generator and upon completion the generator will be moved to the EOC. No Standard Operation Procedures (SOPs) existed or were not available.







Capabilities

The Santa Ana EOC contains the following:

- Working stations for technical commissions, however, the stations are not equipped with computers or telephones.
- No display televisions.
- One UHF radio provides communication capabilities with national, departmental and municipal EOCs.
- One fax machine provides communication capabilities with national and regional offices.

Equipment

- All Protección Civil employees that work at the EOC have been issued laptops and a cellphone push-to-talk radio.
- Three Trucks.
- USACE is constructing a warehouse that was donated by the USSOUTHCOM to store disaster response supplies.

Training

- National EOC staff have received MACOE (EOC Management) Training, provided by Protección Civil.