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Honduras

National Disaster Preparedness Baseline Assessment -
Final Report

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Acronyms

ADRA	Adventist Disaster Relief Agency
AHM	Honduran Association of Maquilas
ASEAN	Association of Southeast Asian Nations
CC	Coping Capacity
CCAHI	International Humanitarian Aid Coordination Center
CDM	Comprehensive Disaster Management
CENICAC	Centro Nacional de Investigación y Capacitación en Atención de Contingencias
CEPREDENAC	Centro de Coordinación para la Prevención de los Desastres Naturales en América Central
CERT	Community Emergency Response Team
CODECE	Comité de Emergencia Escolar
CODECEL	Comité de Emergencia Centro Laboral
CODED	Comité Departamental de Emergencias
CODEL	Comité de Emergencias Local
CODEM	Comité Municipal de Emergencias
COE	Centro de Operaciones Emergencias
COEN	Centro Nacional de Operaciones Emergencias
COHEP	Consejo de la Empresa Privada de Honduras
CONRED	Coordinadora Nacional para la Reducción de Desastres
COPECO	Comisión Permanente de Contingencias
CPR	Cardiopulmonary Resuscitation
CRH	Cruz Roja Hondureña
CRID	Regional Disaster Information Center of Latin America and the Caribbean
CRIF	Catastrophic Risk Insurance Facility
DIPECHO	Disaster Preparedness Program, Department of Humanitarian Aid and Civil Protection
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EOC	Emergency Operations Center

FAHUM	Fuerzas Aliadas Humanitarias
FE	Functional Exercise
FFP	USAID Office of Food for Peace
FONAPRE	Fondo Nacional para la Prevención
FSE	Full-Scale Exercise
GOAL	Not an acronym, although styled in ALL CAPS. An Irish humanitarian assistance organization.
HAZMAT	Hazardous Materials
IFAD	International Fund for Agricultural Development
ICF	Instituto Conservación Forestal
IDB	Inter-American Development Bank
IFRC	International Federation of Red Cross / Red Crescent Societies
IOM	International Organization for Migration
JICA	Japan International Cooperation Agency
JTF-Bravo	United States Southern Command Joint Task Force Bravo
LR	Lack of Resilience
MHE	Multi-Hazard Exposure
MHR	Multi-Hazard Risk
NDMO	National Disaster Management Organization
NDPBA	National Disaster Preparedness Baseline Assessment
NGO	Nongovernmental Organization
NRMP	National Risk Management Plan
NSS	American Red Cross National Shelter System
OAS	Organization of American States
OFDA	Office of Foreign Disaster Assistance
PAHO	Pan-American Health Organization
PDC	Pacific Disaster Center
PEGIRH	Política de Estado para la Gestión Integral del Riesgo en Honduras (State Policy for Comprehensive Risk Management in Honduras)
REDULAC	Red Universitaria de Latinoamérica y el Caribe para la Reducción de Riesgo

RM	Risk Management
RVA	Risk and Vulnerability Assessment
SIMRET	Sistema de Información Municipal sobre Riesgos y Studios Territoriales
SINAGER	Sistema Nacional de Gestión de Riesgos
SOP	Standard Operating Procedures
SOUTHCOM	United States Southern Command
TTX	Table-Top Exercise
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund
UNISDR	United Nations International Strategy for Disaster Reduction
USAID	United States Agency for International Development
V	Vulnerability
WB	World Bank
WFP	World Food Program

Executive Summary

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

The NDPBA project provides a repeatable and measurable approach to examining key elements of DRR. The NDPBA approach consists of distinct yet complimentary activities, including:

- Focused stakeholder engagements;
- A detailed subnational Risk and Vulnerability Assessment (RVA) that included the following elements: multi-hazard exposure, vulnerability, coping capacity, lack of resilience, and multi-hazard risk;
- A review of national and subnational Comprehensive Disaster Management (CDM) capabilities to identify challenges and provide recommendations for strengthening preparedness and response;
- A proposed five-year plan including recommendations 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 system may be requested through ndpba@pdc.org.

Findings

Risk and Vulnerability Assessment

The population of Honduras experiences very high levels of exposure to tropical cyclone winds and seismic activity. Drought and inland floods also pose a significant threat, while smaller proportions of the populations are also exposed to landslides and coastal flooding. See Figure 1 for the total population exposure to hazards in Honduras.

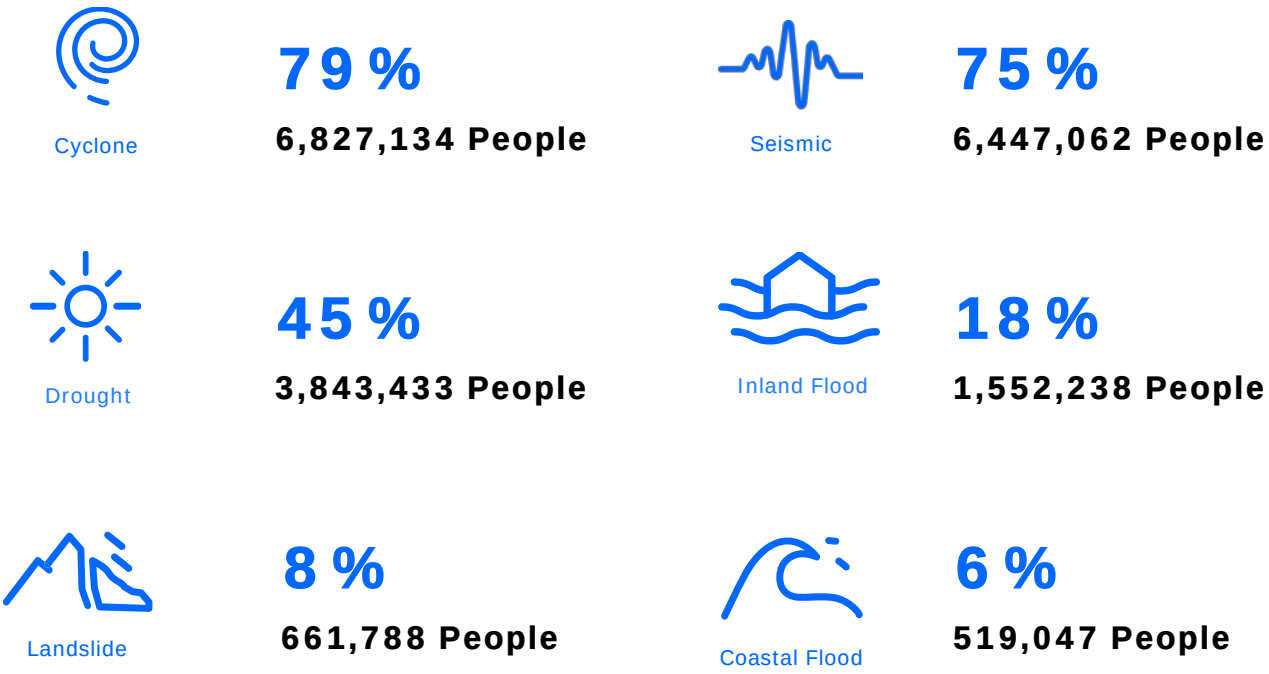

Figure 1. Total population exposure to hazards in Honduras.

The results of this analysis determined that Gracias a Dios, Yoro, and Comayagua have the highest risk in Honduras (see Table 1). Risk is composed of Multi-Hazard Exposure (MHE), Vulnerability (V), and Coping Capacity (CC). An examination of these risk components helps to build a more comprehensive understanding of the drivers of risk in each department. Risk in Gracias a Dios is driven primarily by Vulnerability and Coping Capacity. In contrast, risk in Cortés is driven almost entirely by hazard exposure. Risk in Yoro is driven by high exposure and low coping capacity. Finally, risk in Comayagua is driven by high exposure, while vulnerability and coping capacity are moderate.

Table 1: Honduras Multi-Hazard Risk (MHR) index scores, rankings and component indices, by department.

Department	Multi-Hazard Risk		Multi-Hazard Exposure		Vulnerability		Coping Capacity		Department Risk Level
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	
Atlántida	0.446	12	0.539	6	0.363	15	0.563	6	Low
Choluteca	0.422	15	0.315	15	0.459	13	0.508	12	Very Low
Colón	0.422	16	0.325	13	0.409	14	0.468	14	Very Low
Comayagua	0.554	3	0.658	4	0.564	7	0.559	7	Very High
Copán	0.489	9	0.472	9	0.573	5	0.579	5	Moderate
Cortés	0.545	4	1.000	1	0.265	18	0.629	4	High
El Paraíso	0.514	7	0.438	11	0.598	3	0.494	13	Moderate
Francisco Morazán	0.458	11	0.747	2	0.298	16	0.670	3	Low
Gracias a Dios	0.573	1	0.326	12	0.639	1	0.247	18	Very High
Intibucá	0.432	13	0.242	17	0.57	6	0.516	10	Low
Islas de la Bahía	0.333	17	0.444	10	0.28	17	0.726	1	Low
La Paz	0.427	14	0.288	16	0.524	10	0.532	9	Low
Lempira	0.499	8	0.325	14	0.631	2	0.460	17	Moderate
Ocotepeque	0.303	18	0.051	18	0.541	8	0.682	2	Very Low
Olancho	0.534	6	0.520	7	0.594	4	0.513	11	High
Santa Bárbara	0.545	5	0.619	5	0.482	11	0.465	15	High
Valle	0.485	10	0.473	8	0.537	9	0.557	8	Moderate
Yoro	0.568	2	0.697	3	0.473	12	0.464	16	Very High

Comprehensive Disaster Management Assessment

Comprehensive Disaster Management (CDM) is the integrated approach of managing all hazards through all four phases of the disaster management cycle. The CDM assessment examined Honduras' disaster management system and identified strengths, challenges, and actionable recommendations to strengthen disaster management.

Key Strengths

Honduras has an integrated national disaster management system (Sistema Nacional de Gestión de Riesgos, SINAGER) with a strong legal underpinning (Ley del SINAGER). Additional strengths include:

- A culture of support for training is building. Centro Nacional de Investigación y Capacitación en Atención de Contingencias (CENICAC) is in the process of establishing policies, curriculum, course requirements, and training materials to support training needs;
- COPECO receives an annual budget;

- A national disaster fund (Fondo Nacional para la Prevención, FONAPRE) has been established;
- Ley del SINAGER establishes a clear and hierarchical disaster response structure;
- Standard Operating Procedures (SOP) and plans are regularly updated; and
- El Centro de Operaciones de Emergencia Nacional (COEN) is modern and capable of extended operations on internal power.

Key Challenges

The assessment process has identified a number of challenges for Honduras (Figure 2). These challenges limit Honduras' ability to effectively prepare for and respond to disasters. Officials in Honduras recognize many of the shortfalls they face within the disaster management system and are actively working to rectify them. Key challenges include:

Figure 2: Word Cloud of survey responses to: "In your opinion, what is the greatest challenge to effective disaster response?".

- Lack of staff and resources for CENICAC;
- Simulation exercises are often conducted without a requirement to communicate or coordinate actions with COPECO or any other disaster coordination node;
- The absence of a formalized national volunteer program means that a potential local resource is being underutilized;
- The lack of an operational emergency fund forces the government to reprogram annual expenditures to cover disaster costs;
- No formal disaster management structure in over 60% of the municipalities;
- No private-sector engagement strategy at any level of disaster management; and

- Lack of disaster management software and equipment (servers) restricts the ability of COEN to efficiently manage disasters.

CDM strengths, challenges, and recommendations are discussed in greater detail in **Findings: Comprehensive Disaster Management (CDM)**.

Recommendations

Detailed recommendations for DRR in Honduras are included later in the document. Overarching themes include:

- *Institutionalize training and exercise programs*. Develop and document required courses for disaster management personnel. Work with local educational institutes to design and deliver courses. Implement an exercise program that includes participants at all levels of disaster response, including the private sector, public, and other government agencies. Establish a method to document training, exercises, and lessons learned to effectively implement improvement plans.
- *Strengthen data standards and sharing*. Ensure that hazard data and definitions are consistently defined among stakeholders, and promote data sharing among all disaster management organizations.
- *Develop and strengthen multi-stakeholder partnerships*. Partnerships include memorandums of agreement between neighboring communities and municipalities, involvement of the private sector in planning and response, and cooperation across all levels of government with international government and non-governmental partners.
- *Increase capacity for COPECO*. Explore partnerships to increase funding, providing for additional personnel, equipment, and stocked disaster warehouses throughout the country. Expand support to all levels, including departmental, municipal and local COPECO organizations.
- *Institutionalize disaster planning*. Support and encourage multi-hazard planning at the departmental and local levels, engaging the public in the process. This will reduce risk by both acknowledging hazard exposure and increasing coping capacity by improving governance in the context of disaster management.
- *Expand availability of disaster plans*. Require all levels of government to complete disaster response plans, share those plans among stakeholders, and establish a minimum update period for the plans.
- *Increase accessibility to rural communities*. Provide disaster management educational material in multiple languages, improve the nationwide disaster-alert system, and develop programs to increase local and municipal capabilities and involvement in disaster response.

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Project Overview

This report summarizes the results of the National Disaster Preparedness Baseline Assessment (NDPBA) project conducted by the Pacific Disaster Center (PDC) in partnership with and in support of Honduras.

The objective of the NDPBA was to identify the conditions within the country to assess its preparedness and capabilities in effectively responding to and recovering from disasters. Designed to provide a comprehensive understanding of the risk and disaster management capabilities of Honduras, the findings support evidence-based decision making to enhance disaster risk reduction (DRR) through focused capacity and capability building. Using a stakeholder-driven approach, the NDPBA project facilitated the integration of national DRR goals into the Risk and Vulnerability Assessment (RVA) and Comprehensive Disaster Management (CDM) methodologies.

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

Strengthening Governance
Provides necessary justification to support policy decisions that will protect lives and reduce losses resulting from disasters.

Prioritizing Budgets and Investments
Helps decision makers identify, assess, and prioritize investments that will have the greatest impact on disaster risk reduction.

Informing Decision Making
Provides access to spatial and temporal information by multiple stakeholders including multi-hazard exposure, impact, and risk information all in one place.

Encouraging Cooperation
Brings international, national, and local stakeholders together to discuss country goals, capacities, needs, and successes to help shape priorities.

Identifying Actions to Increase Resilience
Helps stakeholders develop a five-year action plan to achieve risk-reduction goals and to enhance disaster mitigation, preparedness, response, and recovery.

Allowing Risk Monitoring and Data Management
Multiple agencies can easily update data and monitor how risk and vulnerability changes over time at the national and subnational level.

The NDPBA project provides a repeatable and measurable approach to examining key elements of disaster risk reduction (DRR). The NDPBA approach consists of distinct yet complimentary activities, including:

- Focused stakeholder engagements;
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Country Background

The second largest country in Central America, Honduras borders Guatemala to the northwest, the Caribbean Sea to the north, Nicaragua to the southeast, and El Salvador to the southwest. The small Gulf of Fonseca, shared by Honduras, Nicaragua, and El Salvador, provides direct access to the Pacific Ocean from Honduras. Honduras covers an area of 112,492 km^2 (~43,433 sq. miles). Honduras has 823 km (~511 miles) of coastline, mainly on the Caribbean. Honduras experienced more natural disasters between 1995 and 2014 than any other country[1].

Honduras has two of the five most populated metropolitan centers in Central America: Tegucigalpa and San Pedro Sula. The capital city of Tegucigalpa has a population over 1.1 million people, while San Pedro Sula, the industrial capital of the country, has a population of approximately 638,000, although the entire metropolitan area has over 1.4 million. Industry in San Pedro Sula contributes almost two-thirds of the national GDP.[2]

The country is subdivided into 18 administrative departments: Atlántida, Choluteca, Colón, Comayagua, Copán, Cortés, El Paraíso, Francisco Morazán, Gracias a Dios, Intibucá, Islas de la Bahía, La Paz, Lempira, Ocotepeque, Olancho, Santa Bárbara, Valle, and Yoro. Honduras' departments are further subdivided into 298 municipalities, each with its own elected mayor.

[1] *2016 Global Climate Risk Index* released by Germanwatch

[2] World Atlas 2016. Accessed online 10/19/17 at: http://www.worldatlas.com/articles/which-are-the-biggest-cities-in-honduras.html

Honduras can be divided into four geographical/climatic regions: the "Dry Corridor" to the south; extensive coastline and forests to the north; dense rainforest, jungles, and "La Costa de Mosquitos" to the east; and mountains to the west. Over the last ten years, the Dry Corridor has experienced one of the world's worst droughts, with an estimated 3.5 million people in need of assistance and a 50-90% loss of crops.[3] The northern coast provides significant tourism income for the country, with Roatán in Islas de la Bahía" serving as a top 10 cruise destination, and the water surrounding the area offering world-class diving and snorkeling. The majority of the jungles and rainforests to the east are impenetrable, and are highlighted by the Rio Platano Biosphere, a UNESCO World Heritage Site.

Honduras' geography makes it vulnerable to hurricanes, landslides, droughts, fires, volcanic eruptions, tsunamis, and earthquakes. The country's high susceptibility to natural hazards is continually exacerbated by the inherent weaknesses of the larger political, social, and economic contexts. The government of Honduras has stated that it recognizes the direct link between environmental degradation, high levels of poverty, and increased vulnerability to natural disasters. It has therefore committed itself to enhancing the existing legal and institutional frameworks for disaster risk management.

On December 18, 1990, the Honduran legislature passed Decree No. 9-90E – the Law of National Contingencies – authorizing the creation of the Permanent Commission of Contingencies/Comisión Permanente de Contingencias (COPECO). As the national disaster management organization for Honduras, COPECO is tasked with response, rehabilitation, and reconstruction responsibilities, as well as with the development of prevention activities. Decree No. 9-90E was revised in 1993 by Decree No. 217-93 to enhance coordination among all stakeholders involved in disaster management in Honduras. This law expanded the COPECO executive body and established COPECO representation at the municipal level.

[3] Food and Agriculture Organization of the United Nations, *Central America Dry Corridor Situation Report*, June 2016

After Hurricane Mitch (1988), it became apparent that too much emphasis had been placed on response and only minimal attention given to prevention measures. There was a need for a more comprehensive disaster management system and a common set of disaster management criteria to coordinate roles and responsibilities for all involved stakeholders. In 2009, Honduras published Decree No. 151-2009 establishing the National System of Risk Management/Sistema Nacional de Gestión de Riesgos (SINAGER) as the legal framework . SINAGER has enabled the country to develop the capacity to reduce and prevent the risks of potential disasters.

Methods

Methods

This section of the report summarizes the NDPBA methodology implemented in Honduras to include stakeholder engagement, 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 and were fundamental components of the NDPBA. Over the duration of the project, stakeholders in Honduras were invited to attend three Knowledge Exchanges (*Initial, Midterm, and Final*) and to participate in data reviews, interviews, and standardized surveys. Knowledge Exchanges provided opportunities for stakeholders to present on disaster management topics of interest and highlight the important work each organization has undertaken in support of DRR. Leveraging a participatory approach, a diverse group of traditional and non-traditional disaster management stakeholders were engaged. This approach encouraged active participation and promoted diversity among participants and partners.

Prior to the Knowledge Exchanges, in-depth archival research was conducted to gain insight into the national disaster management system and identify disaster management stakeholders who were subsequently invited to the Initial Knowledge Exchange. Presentations by the project team and in-country stakeholders during this event and two subsequent Knowledge Exchanges provided opportunities to discuss the NDPBA methodology, explore available data sources and gaps, administer surveys, discuss disaster management challenges and successes, and review preliminary assessment results. Following the exchange, meetings with stakeholders were scheduled to conduct detailed interviews and share data and information. Additional stakeholder engagements provided opportunities to share data, conduct interviews, provide training on PDC's DisasterAWARE™ decision support system, and exchange professional insights, experiences, and best practices.

This participatory approach was coordinated with the national disaster management agency, COPECO. Working closely with COPECO, the project team collaborated with a broad range of project stakeholders at the national and subnational levels, including Plan de Nación, El Instituto Nacional de Estadísticas, el Instituto Conservación Forestal, Cruz Roja, el Banco Central, Fuerzas Armadas de Honduras, la Secretaria de Salud Pública, Ministerio de Ambiente, and national and international NGOs. A full list of participating agencies and organizations is included in the Acknowledgements section of this report.

Risk and Vulnerability Assessment (RVA)

The purpose of conducting a subnational baseline Risk and Vulnerability Assessment (RVA) was to characterize elements of multi-hazard risk. The subnational NDPBA RVA was adapted from PDC's established Global RVA framework to meet the specific needs of Honduras. To capture the complex concept of risk, PDC's RVA leverages a composite-index approach. Composite indices are constructed by combining data sets that represent general themes that contribute to risk (e.g., access to information, health status, or governance). These 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.

Multi-Hazard Exposure

Multi-Hazard Exposure (MHE) is characterized by the people, property, systems, and other elements present in hazard zones that are thereby subject to potential losses. For this assessment, exposure considers six hazard types:

Cyclone

Areas exposed to tropical cyclone maximum sustained wind speeds that coincide with the Saffir-Simpson Scale, Category 1 (119 km/h) or higher.

Seismic

Areas with MMI VII and above based on 1.0 second spectral acceleration at a 2,475-year return period.

Drought

Areas modeled as being in water shortage.

Inland Flood

Areas susceptible to inland flood based on historical observations and modeling.

Coastal Flood

Areas susceptible to coastal flooding, tides, and tidal waves based on historical observations and modeling.

Landslide

Areas susceptible to landslide, estimated using a combination of Mora-Vahrson environmental susceptibility modeling and observation-based datasets. This zone includes 1) areas observed as unstable or previously impacted by landslides; and 2) areas modeled as having medium, high, or very high susceptibility.

The MHE 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 a better understanding of the raw scale of potential response activities needed, 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 also helps to assess the relevance of hazards within regions that have relatively small populations.

Vulnerability

Vulnerability (V) can act to intensify hazard impacts, increasing overall risk. The Vulnerability Index was designed to capture the multi-dimensional nature of poverty, the inequality in access to resources due to gender, and the ability of a given area to adequately support the population. The dimensions of poverty measured are economy, health, living standards, and information access. Poverty is a major contributor to disaster vulnerability. However, pressures based on demographic factors like population growth and environmental quality also affect vulnerability throughout the country. In Honduras, Economic Constraints, Access to Information, Gender Inequality, Clean Water Vulnerability, Environmental Stress, Vulnerable Health Status, and Population Pressures are significant determinants of departmental vulnerability in areas with high Multi-Hazard Risk. The components of Vulnerability are defined here:

Economic Constraints
Represents the limitations on the resources available to invest in mitigation and preparedness measures at the individual, household, and country levels.

Access to Information
Represents the ability to access and comprehend hazard and disaster-related information before, during, and after an event.

Gender Inequality
Represents gender-based differences in access to resources, services, opportunities, and formal economic and political structures.

Clean Water Vulnerability
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.

Environmental Stress
Substantial water stress and land degradation can damage habitat and reduce quantity and quality of resources required to maintain human health and livelihoods. These stressors increase the likelihood and magnitude of hazards, such as flooding and landslides, while exacerbating impacts.

Vulnerable Health Status
Reflects the population's general health. 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
Refers to rapid, significant changes in the size and distribution of a population. Such changes tend to be difficult to plan for, and can destabilize social, economic, and environmental systems, placing additional stress on resources and infrastructure.

Coping Capacity

Coping Capacity (CC) describes the ability of people, organizations, and systems, using available skills and resources, to face and manage adverse conditions, emergencies, or disasters. In the Central American Region, Honduras ranks lowest in overall coping capacity, according to PDC's Global RVA. The country's limited coping capacity is driven primarily by high prevalence of violent crime, and constraints on governance, economy, and infrastructure. These indicators are reflected at the subnational level where coping capacity is largely driven by Economic Capacity, Governance, and Infrastructure. This indicates that departments may have limited ability to absorb immediate economic losses and mobilize resources during a disaster.

The CC Index represents factors that influence the ability of a department to effectively absorb negative impacts associated with a hazard event. Unlike Multi-Hazard Exposure and Vulnerability, the CC Index was calculated using a *weighted average* of the four subcomponents: Governance was weighted at 30%, Economic Capacity at 30%, Infrastructure at 30%, and Environmental Capacity at 10%. The weighting serves to emphasize the relative importance of each subcomponent's contribution to the concept of Coping Capacity and takes into consideration the quality of available of data. Thematic areas with less information or lower-quality data are therefore de-emphasized. In the case of Honduras, the quantity and quality of environmental capacity data are generally limited.

Environmental Capacity
Represents the ability of the environment to recover from shock and maintain species health, biodiversity, and critical ecosystem services after impact. The environment can provide food/water and even tourism benefit.

Economic Capacity
Represents a region's ability to absorb immediate economic losses and quickly mobilize financial assets for response and recovery activities.

Governance
Reflects the stability and effectiveness of institutional structures to provide public services, freedom in selecting government, and enforcement of laws to prevent and control crime and violence. Instability of institutional structures can make a region more susceptible to the effects of hazard impacts.

Infrastructure Capacity
Represents the resources that enable the exchange of information (Communications) and the physical distribution of goods and services to the population (Transportation and Health Care).

Communications Capacity
Represents the density and variety of communications infrastructure available to support coordinated action among local, national, and international actors.

Transportation Capacity
Denser transportation networks provide more options for bringing outside resources into a country (ports and airports) and increase the likelihood of alternate routes for reaching impacted populations.

Health Care Capacity
Represents availability of skilled caregivers and facilities, whether populations have access to vital resources before, during, and after a hazard event.

Lack of Resilience

The Lack of Resilience (LR) Index represents 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. The LR Index provides an indication of current socioeconomic conditions on the ground independent of hazard exposure. These data can be used during hazard events to prioritize response efforts. The basic model for the LR Index is:

Lack of Resilience = Vulnerability + (1 − Coping Capacity) / 2

Multi-Hazard Risk

Multi-Hazard Risk (MHR)
The combination of Multi-Hazard Exposure, susceptibility to impact (Vulnerability), and the relative inability to absorb, respond to, and recover from negative impacts that occur over the short term (Coping Capacity).

Multi-Hazard Exposure (MHE)
People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.

Vulnerability (V)
The characteristics and circumstances of a community, system, or asset that make it susceptible to the damaging effects of a hazard.

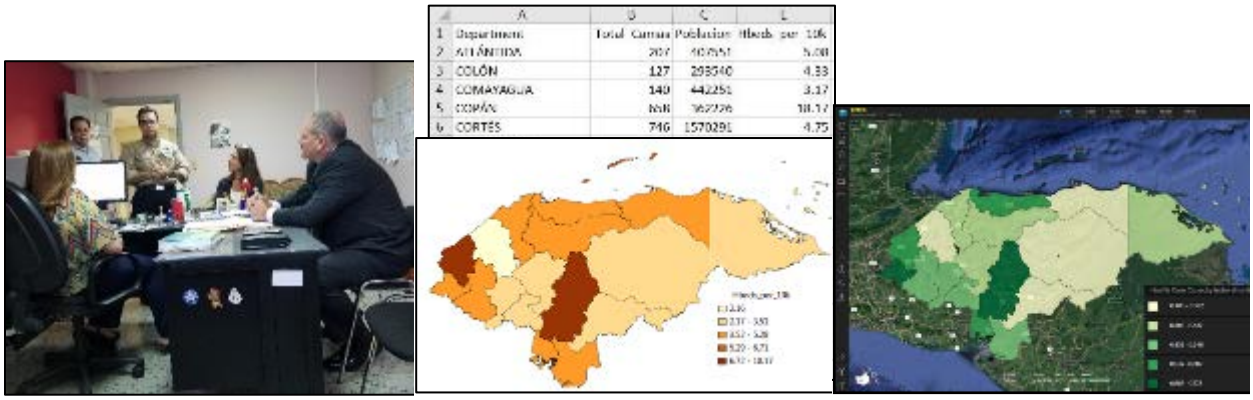
Coping Capacity (CC)
The ability of people, organizations, and systems, using available skills and resources, to face and manage adverse conditions, emergencies, or disasters.

The basic model for Multi-Hazard Risk Index is:

Multi-Hazard Risk =

$$[\text{Multi-hazard Exposure} + \text{Vulnerability} + (1 - \text{Coping Capacity})]/3$$

Methodological Process



Data Gathering
- Online/Archival Research
- Stakeholder Interviews

Data Processing & Analysis
- Indicator Development
- Index Construction

RVA Findings
- Reporting and Dissemination
- DisasterAWARE™ Data Integration

Figure 3. NDPBA Risk and Vulnerability Assessment (RVA) methodological process.

Data Gathering

In partnership with stakeholders, a review of archival research and stakeholder interviews was 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 data sets used in this analysis see **Appendix A: RVA Component Index Hierarchies and 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 in which to focus limited resources to reduce disaster risk. As part of the final report, programmatic recommendations at the national level 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™.

Recommendations are a product of the Honduras Risk and Vulnerability Assessment. These overarching recommendations are designed to acknowledge the complex drivers of risk that are prevalent throughout the country, and support future assessments and sustainable disaster risk reduction initiatives. As presented in the previous section, the specific drivers of risk can vary widely across departments. Consequently, to focus interventions that reduce vulnerability and increase coping capacity at the department level, decision makers must carefully examine these drivers for each department.

Comprehensive Disaster Management (CDM)

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 department into the larger DRR framework of Honduras.

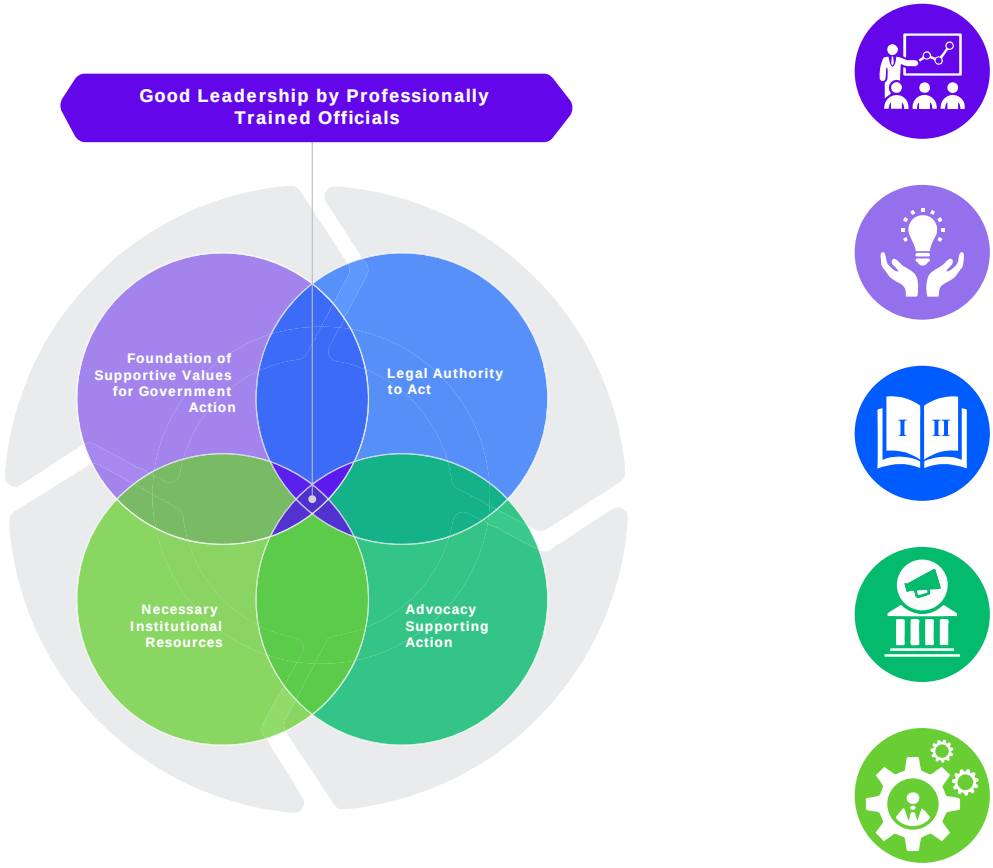


Figure 4: CDM conceptualized as a function of five elements.

For the purposes of this assessment, CDM is conceptualized as a function of five elements (see Figure 4):

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 formalized training and education programs is ensuring a foundation of understanding and leadership among disaster management personnel at all levels. Training and exercises also offer opportunities to build leadership capacity in the disaster management field, increasing the professionalization of the field.

Foundation of Supportive Values for Government Action

A foundation of supportive values for government action is an essential component that enables concepts to be developed into policies and provides government leaders the backing to spend money to obtain necessary 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 order to build disaster-resilient communities with a focus on saving lives and reducing disaster losses.

Legal Authority to Act

Legal authority to act provides the necessary foundation for implementation of CDM. The legal framework within which disaster operations occur has 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.

Advocacy Supporting Action

Advocacy supporting action ensures that disaster management policies are implemented nationwide. 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.

Necessary Institutional Resources

It is critical that every jurisdiction has an accurate assessment of available resources (human and material) and availability to those resources during a disaster. Although a jurisdiction may have a limited economic base and few immediate resources, through

mutual-aid agreements with neighboring jurisdictions resources can be easily mobilized to respond. With the ability to quickly assess community needs and knowledge of available resources, aid can be requested in a timely manner to ensure immediate emergency needs are met.

Methodological Process

The methodological process for the NDPBA CDM is illustrated below (Figure 5). CDM data were analyzed using a mixed-methods approach. This approach combined both qualitative and quantitative data and methods of analysis, allowing for a more complete assessment of the CDM theoretical framework.

Data Gathering

- Archival Research
- 63 Surveys
- 19 Interviews
- 21 Site Visits

Data Processing & Analysis

- Quantitative and qualitative analysis of data inputs

CDM Findings

- Final report documents successes and areas for CDM enhancement
- DisasterAWARE™ Data Integration

Figure 5: NDPBA Comprehensive Disaster Management (CDM) methodological process.

Data Gathering

Archival research, surveys, and interviews were the primary data-gathering methods used to gain insight into existing capabilities of Honduras' disaster management structure. Interviews with stakeholders corroborated information obtained through online research and from surveys administered during Knowledge Exchange workshops. All information collected was put in context using elements of the CDM framework as a guide. Figure 6 illustrates the types of information gathered and analyzed for each component of the CDM analysis.

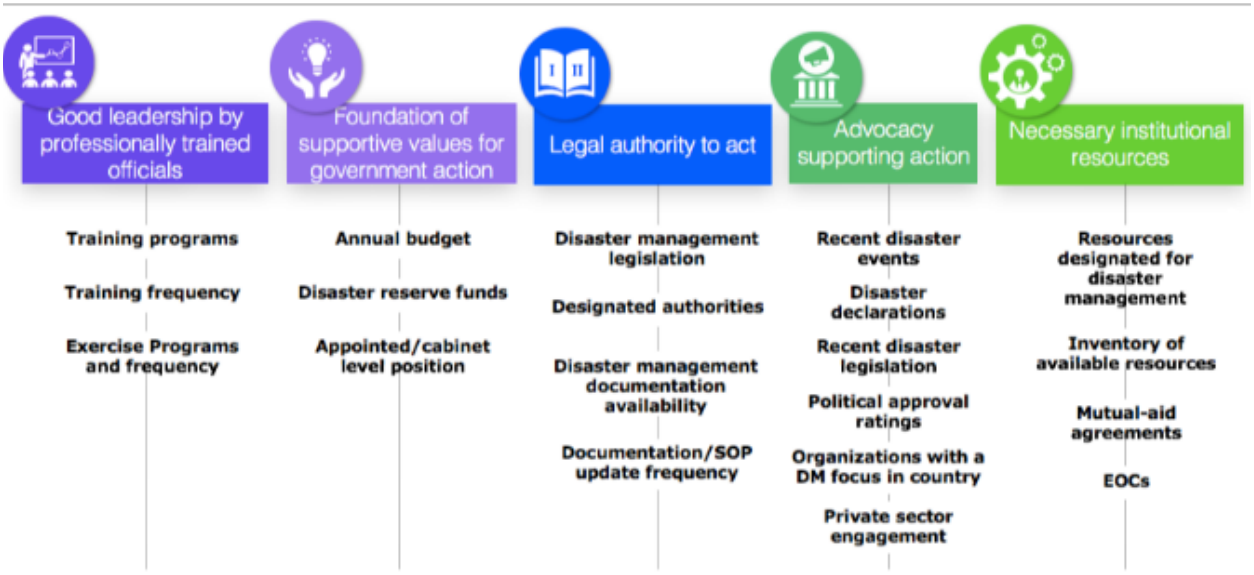


Figure 6. Datasets for CDM analysis.

Data Processing and Analysis

Three CDM surveys were administered over the course of the project, with emphasis on questions related to disaster preparedness and response activities. Survey responses were analyzed either quantitatively or qualitatively, depending upon the question. Summary statistics and frequencies were generated for ranked-response questions. Open-ended questions helped to identify recurring themes that could be further explored during interviews with disaster management stakeholders. Survey responses are discussed in **Appendix C: CDM Survey I, Appendix D: CDM Survey II** and **Appendix E: CDM Survey III.**

CDM Findings

CDM results helped to identify existing strengths and potential challenges that limit the delivery of effective disaster management. As part of this report, programmatic recommendations are provided to strengthen preparedness and response capacities, and thereby safeguard lives and reduce disaster losses.

Findings: National

National Disaster Preparedness Baseline Assessment
Final Report

Risk and Vulnerability Assessment (RVA)

Based on PDC's Global Risk and Vulnerability Assessment, Honduras has the second highest multi-hazard risk within the Central American Region, and ranks 43rd highest in the world, overall. In Honduras, risk is driven by high multi-hazard exposure and high socioeconomic vulnerability coupled with a limited coping capacity in many areas. The subnational risk assessment describes how these factors are distributed across departments in Honduras. The RVA results presented in this section represent the analysis of the 18 departments in Honduras. The RVA results highlight regions of Honduras that may be in greater need for support due to increased population exposure, higher vulnerability, or lower coping capacity. The RVA helps to:

Identify Disaster Risk Reduction Priorities
Helps stakeholders develop a five-year action plan to achieve risk-reduction goals and to enhance disaster mitigation, preparedness, response, and recovery.

Assess Drivers of Risk
Allows examination from index to dataset level, identifying the level of exposure an area has to multiple hazards, the aspects of population that make them susceptible to hazard impact, and areas that can be improved to support coping strategies following hazard events.

Provide a Baseline for Resource Distribution
Identify areas that may need additional support before, after, and during hazard events.

Table 2 provides a summary of the component results for Multi-Hazard Risk (MHR), Multi-Hazard Exposure (MHE), Vulnerability (V), Coping Capacity (CC), including index scores, and relative ranking among the 18 departments. A rank of 1 corresponds to a high score (e.g., high multi-hazard risk), while a rank of 18 indicates a low score (e.g., low multi-hazard risk).

Table 2. Honduras Multi-Hazard Risk (MHR) Index scores, rankings, and component indices by department.

Department	Multi-Hazard Risk		Multi-Hazard Exposure		Vulnerability		Coping Capacity		Department Risk Level
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	
Atlántida	0.446	12	0.539	6	0.363	15	0.563	6	Low
Choluteca	0.422	15	0.315	15	0.459	13	0.508	12	Very Low
Colón	0.422	16	0.325	13	0.409	14	0.468	14	Very Low
Comayagua	0.554	3	0.658	4	0.564	7	0.559	7	Very High
Copán	0.489	9	0.472	9	0.573	5	0.579	5	Moderate
Cortés	0.545	4	1.000	1	0.265	18	0.629	4	High
El Paraíso	0.514	7	0.438	11	0.598	3	0.494	13	Moderate
Francisco Morazán	0.458	11	0.747	2	0.298	16	0.670	3	Low
Gracias a Dios	0.573	1	0.326	12	0.639	1	0.247	18	Very High
Intibucá	0.432	13	0.242	17	0.57	6	0.516	10	Low
Islas de la Bahía	0.333	17	0.444	10	0.28	17	0.726	1	Low
La Paz	0.427	14	0.288	16	0.524	10	0.532	9	Low
Lempira	0.499	8	0.325	14	0.631	2	0.460	17	Moderate
Ocotepeque	0.303	18	0.051	18	0.541	8	0.682	2	Very Low
Olancho	0.534	6	0.520	7	0.594	4	0.513	11	High
Santa Bárbara	0.545	5	0.619	5	0.482	11	0.465	15	High
Valle	0.485	10	0.473	8	0.537	9	0.557	8	Moderate
Yoro	0.568	2	0.697	3	0.473	12	0.464	16	Very High

Multi-Hazard Exposure

The population of Honduras experiences very high levels of exposure to tropical cyclone, seismic activity, and tropical cyclone winds. Smaller proportions of the population are also exposed to landslides (usually associated with concurrent flooding) and drought.

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 geography and hazard type inherently dictate which mitigation options are more effective for reducing casualties and losses in Honduras. For example, mitigation efforts designed to reduce the impacts of coastal flooding in Islas de la Bahia will likely be ineffective in preventing losses from seismic activity in Cortés. 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 (see **Error! Reference source not found.**). At the department level, Multi-Hazard Exposure ranges from very high in densely populated and highly exposed departments of Cortés and Francisco Morazán, to very low in less-populated and less hazard-prone areas, such as Ocotepeque.

Figure 7. Distribution of Multi-Hazard Exposure Index scores across departments with relative ranking of each department by Multi-Hazard Exposure score.

Vulnerability

PDC's Global Risk and Vulnerability Assessment shows that Honduras has the second highest socioeconomic vulnerability in Central America. At the national level, vulnerability is primarily driven by dimensions of poverty. Honduras is a low middle-income country that faces major challenges, with more than 66% of the population living in poverty in 2016 and the highest level of economic inequality in Latin America[4]. With large socioeconomic disparities, certain regions lack adequate resources to build disaster resilience at local, household, and individual levels. As a result, vulnerable regions may rely heavily on national resources to prepare for, respond to, and recover from disasters.

Vulnerability can act to intensify hazard impacts, increasing overall risk. In Honduras, Economic Constraints, Access to Information Vulnerability, Gender Inequality, and Clean Water Vulnerability are significant determinants of departmental vulnerability in areas with high Multi-Hazard Risk. The Economic Constraints component was conceptualized to represent the limitations on the resources available to invest in mitigation and preparedness measures at the individual, household, and country levels. Access to Information Vulnerability represents the ability to access and comprehend hazard- and disaster-related information before, during, and after an event. Gender Inequality represents gender-based differences in access to resources, services, opportunities, and formal economic and political structures. Finally, Clean Water Vulnerability 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.

Table 3. Vulnerability scores and ranks in Honduras.

Department	Vulnerability	
	Score	Rank
Gracias a Dios	0.639	1
Lempira	0.631	2
El Paraíso	0.598	3
Olancho	0.594	4
Copán	0.573	5
Intibucá	0.570	6
Comayagua	0.564	7
Ocotepeque	0.541	8
Valle	0.537	9
La Paz	0.524	10
Santa Bárbara	0.482	11
Yoro	0.473	12
Choluteca	0.459	13
Colón	0.409	14
Atlántida	0.363	15
Francisco Morazán	0.298	16
Islas de la Bahía	0.280	17
Cortés	0.265	18

[4] World Bank, 2017. http://www.worldbank.org/en/country/honduras/overview.

Areas with higher Vulnerability Index scores are more susceptible to harm from hazards, often lacking the resources to adequately implement preparedness or mitigation measures. Recognizing the sensitivities of vulnerable areas, the Vulnerability Index (illustrated in Figure 8) is an instrument for decision support in comparing and prioritizing disaster mitigation projects and allocating aid following hazard events.

At the department level, vulnerability ranges from very high in Gracias a Dios and Lempira, to very low in Cortés and Islas de la Bahia (see Table 3). Examining the subcomponents of the Vulnerability Index can highlight the drivers of vulnerability within departments. Gracias a Dios has the highest economic constraints, clean water vulnerability, and population pressures in Honduras. The department also ranks second highest in access to information vulnerability. Lempira ranks second highest in overall vulnerability in Honduras. Lempira has the highest access to information vulnerability, and ranks second highest in both economic constraints and gender inequality.

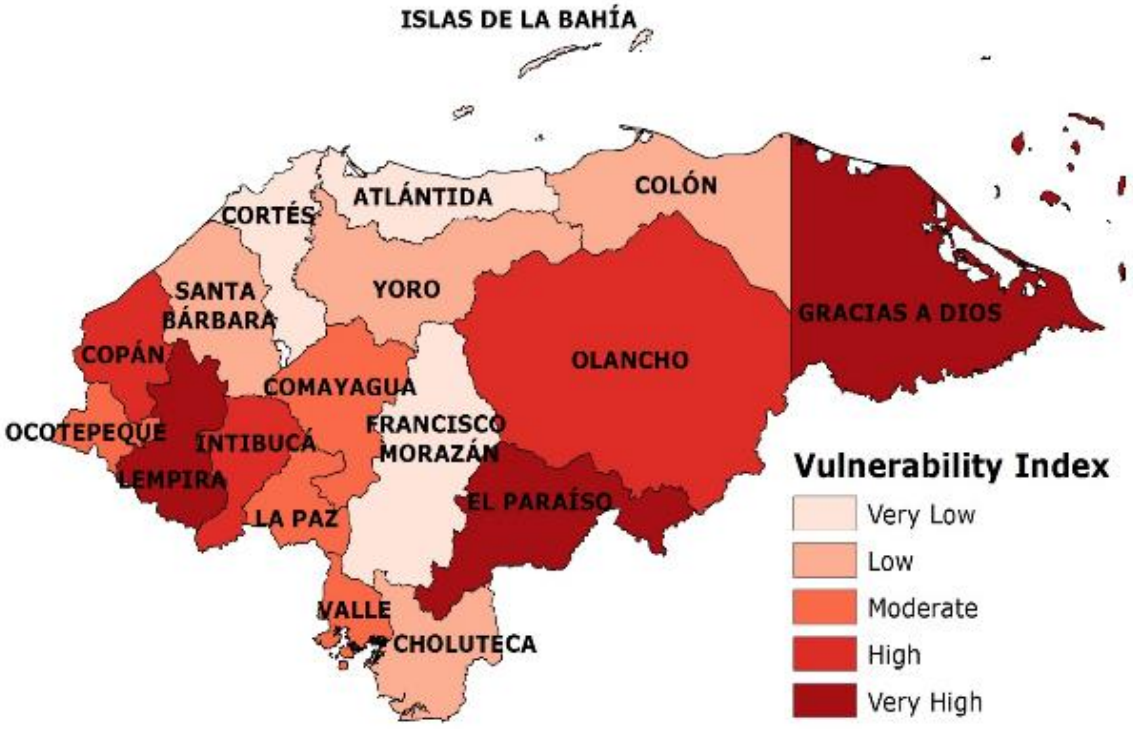


Figure 8. Distribution of Vulnerability Index scores across departments and relative ranking of each department by Vulnerability score.

Vulnerability: Case Study

Examining the subcomponents of the Vulnerability Index can highlight the drivers of vulnerability within departments. In context, these sensitivities translate to increased susceptibility to hazard impacts because of limited economic resources, inability to access and comprehend vital emergency

information, compromised water and sanitation services, rapid changes in urban population, disparities in health and health-care access, and gender-based differences in access to resources, services, and opportunities. Table 4 examines the specific drivers of vulnerability in the three most vulnerable departments.

Table 4. Drivers of Vulnerability in the most vulnerable departments.

Gracias a Dios – Highest Vulnerability (1 of 18 Departments)

Clean Water Vulnerability
Very High (Rank: 1 of 18)

Economic Constraints
Very High (Rank: 1 of 18)

Population Pressures
Very High (Rank: 1 of 18)

Seventy-two percent (72%) of households in Gracias a Dios do not have access to piped water, and 91% are not connected to sewer or septic systems. Investments in public water and sewer infrastructure, combined with poverty reduction and business development, and planning for urban growth, may reduce the vulnerability of the population.

Lempira – 2nd Highest Vulnerability (2 of 18 Departments)

Information Access Vulnerability
Very High (Rank: 1 of 18)

Economic Constraints
Very High (Rank: 2 of 18)

Gender Inequality
Very High (Rank: 2 of 18)

The adult illiteracy rate in Lempira is over 25%. Investments in education and information infrastructure, combined with poverty reduction and business development, and promoting gender equality may reduce the vulnerability of the population.

El Paraíso – 3rd Highest Vulnerability (3 of 18 Departments)

Gender Inequality
Very High (Rank: 4 of 18)

Clean Water Vulnerability
Very High (Rank: 4 of 18)

Environmental Stress
Very High (Rank: 5 of 18)

Promoting gender equality, investments in public water and sewer infrastructure, reforestation, and drought mitigation may reduce the vulnerability of the population.

While the factors of vulnerability are inextricably linked, a single intervention may not reduce all components of vulnerability in all departments. In Gracias a Dios, 72% of households do not have access to piped water, and 91% are not connected to sewer or septic systems. Therefore, interventions that increase the delivery of piped water and sanitation to the department would most certainly serve to reduce overall Vulnerability. In contrast, clean water vulnerability is lower in Lempira, but the department ranks higher on dimensions of gender inequality. Subsequently, interventions aimed at reducing overall vulnerability in Lempira would have to consider issues of gender-based access to resources to have the greatest impact. This illustrates

the utility of the Vulnerability Index in guiding resource allocation, and highlights the importance of a thorough examination of all dimensions of vulnerability to inform decision making at the subnational level.

Coping Capacity

In the Central American Region, Honduras ranks lowest in overall coping capacity, according to PDC's Global RVA. The country's limited coping capacity is driven primarily by constraints on governance, economy, and infrastructure. These indicators are reflected at the subnational level, where coping capacity is largely driven by Governance and Infrastructure. Figure 10 represents Coping Capacity mapped at the subnational level. The CC Index indicates the department's ability to absorb immediate economic losses and mobilize resources during a disaster. By analyzing the different subcomponents of the index, it becomes possible to identify distinct factors that drive a population's or organization's difficulty to cope with hazards. For example, low coping capacity in Gracias a Dios (see Table 5) is attributable to very low economic capacity, weak governance, and limited infrastructure. Gracias a Dios ranks

Figure 9. Distribution of Coping Capacity Index scores across departments and relative ranking of each department by coping capacity score.

lowest in the country for all three dimensions. Lempira and Yoro (ranked 17th

and 16th, respectively) similarly exhibit very low scores across all components of coping capacity, including environmental capacity.

Table 5. Coping capacity scores and ranks in Honduras.

Department	Coping Capacity	
	Score	Rank
Islas de la Bahía	0.726	1
Ocotepeque	0.682	2
Francisco Morazán	0.670	3
Cortés	0.629	4
Copán	0.579	5
Atlántida	0.563	6
Comayagua	0.559	7
Valle	0.557	8
La Paz	0.532	9
Intibucá	0.516	10
Olancho	0.513	11
Choluteca	0.508	12
El Paraíso	0.494	13
Colón	0.468	14
Santa Bárbara	0.465	15
Yoro	0.464	16
Lempira	0.460	17
Gracias a Dios	0.247	18

Weaker governance across the three departments may lead to a range of problems in the management of hazards, including reduced public safety and ineffective disaster planning. Additional support for local police, firefighters, and emergency medical resources may improve public safety, both in normal conditions and during an emergency. 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. Lower Infrastructure scores can indicate a reduction in the exchange of information, and reduced access to vital resources and health services. Example interventions could include fostering national campaigns to improve equity of infrastructure in rural areas, ensuring connectivity to critical services and resources.

Limited economic capacity means that departments may not have financial assets, savings, or reserves to absorb immediate economic impacts, mobilize response and recovery services, or aid in disaster relief. In departments with low economic capacity, disaster management practitioners can leverage mutual-aid agreements and non-traditional partnerships to support disaster preparedness, response, and relief initiatives.

Lack of Resilience

The Lack of Resilience index (mapped in Figure 11) represents the combination of Vulnerability and Coping Capacity. The graduation from two separate components to the larger overarching concept of resilience demonstrates the hierarchical approach of PDC's RVA, whereby results are built upwards to develop indices that have distinct implications for disaster risk reduction. Furthermore, as 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. Table 6 summarizes the results of the Lack of Resilience Index for Honduras.

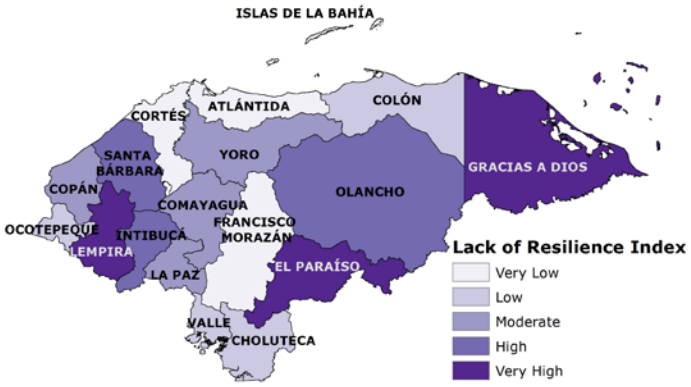


Figure 10. Distribution of Lack of Resilience Index scores across department and relative ranking of each department by lack of resilience score.

Table 6. Honduras Lack of Resilience Index (LR) scores and rankings, by department.

Department	Lack of Resilience		Vulnerability		Coping Capacity		Department Lack of Resilience
	Score	Rank	Score	Rank	Score	Rank	
Atlántida	0.400	15	0.363	15	0.563	6	**Very Low**
Choluteca	0.476	12	0.459	13	0.508	12	**Low**
Colón	0.470	13	0.409	14	0.468	14	**Low**
Comayagua	0.503	8	0.564	7	0.559	7	**Moderate**
Copán	0.497	9	0.573	5	0.579	5	**Moderate**
Cortés	0.318	16	0.265	18	0.629	4	**Very Low**
El Paraíso	0.552	3	0.598	3	0.494	13	**Very High**
Francisco Morazán	0.314	17	0.298	16	0.670	3	**Very Low**
Gracias a Dios	0.696	1	0.639	1	0.247	18	**Very High**
Intibucá	0.527	5	0.570	6	0.516	10	**High**
Islas de la Bahía	0.277	18	0.280	17	0.726	1	**Very Low**
La Paz	0.496	10	0.524	10	0.532	9	**Moderate**
Lempira	0.586	2	0.631	2	0.460	17	**Very High**
Ocotepeque	0.429	14	0.541	8	0.682	2	**Low**
Olancho	0.541	4	0.594	4	0.513	11	**High**
Santa Bárbara	0.508	6	0.482	11	0.465	15	**High**
Valle	0.490	11	0.537	9	0.557	8	**Low**
Yoro	0.504	7	0.473	12	0.464	16	**Moderate**

Multi-Hazard Risk

The Multi-Hazard Risk Index (mapped in Figure 11) provides a high-level tool that supports comparison of risk across Honduras. Though the MHR Index provides a powerful overview of risk conditions, its component indices—Multi-Hazard Exposure, Vulnerability, and Coping Capacity—and their subcomponents provide crucial details on the drivers of risk. These drivers can be used to design focused interventions for overall disaster risk reduction at the departmental level.

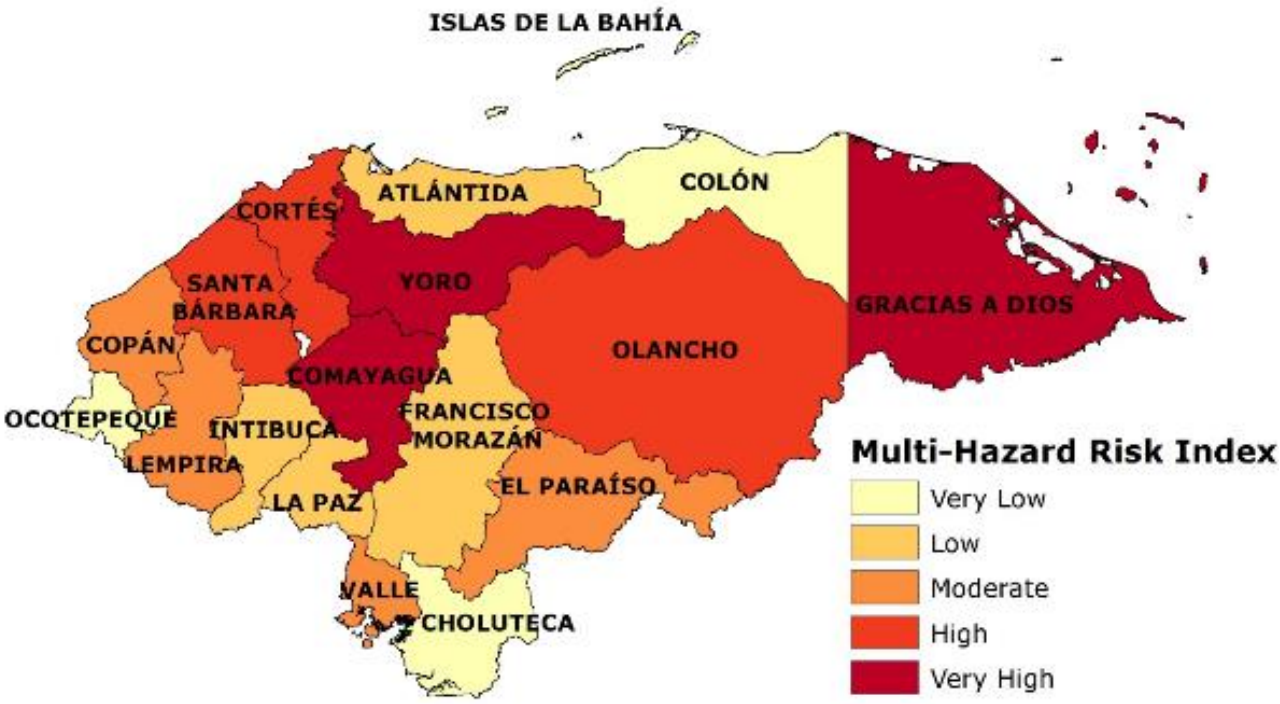


Figure 11. Distribution of Multi-Hazard Risk Index scores across departments and relative ranking of each department by MHR score.

Recommendations

Recommendations are provided for both RVA and CDM sections. Recommendations criteria consist of approximate amount of time required to complete the project, relative complexity of the recommendation based on experience and resources, and relative cost of the project when compared to the annual budget.

Table 7. Recommendation criteria for RVA recommendations.

Recommendations Evaluation Criteria		
Effort	Years  0 5	Estimated length of time (in years) to complete the project once it is started.
Complexity	Low **Medium** High	Overall complexity based on the estimated staff time, resources, and collaboration required to complete the project.
Cost	**$$$**	Estimated annual cost of the project, not including salaries, based on a percentage of the current NDMO annual budget. $ approximates less than 1% of the annual operating budget. $$ approximates between 1% to 10% of annual operating budget. $$$ approximates more than 10% of the annual operating budget.

Based on the overall RVA and challenges identified throughout the course of the project, the following recommendations apply at the national, as well as subnational levels.

01

Develop and strengthen multi-stakeholder partnerships

A. Increase the capacity to conduct and update high-resolution hazard assessments with national coverage by developing partnerships with non-traditional stakeholders.
B. Strengthen strategic multi-stakeholder partnerships to expand disaster risk reduction resources to include non-traditional disaster management partners.

Effort:

Complexity: Low

Cost: **$**

02

Develop and adopt data standards and sharing

A. Ensure that hazards and vulnerability data are consistently defined, documented, updated, and applied in disaster management and disaster risk reduction.
B. Implement strategies to strengthen data sharing and transparency between all organizations active in disaster management to support evidence-based decision making.

Effort:

Complexity: Medium

Cost: $

03

Improve documentation of subnational economic resources

Provide a more comprehensive understanding of economic capacity (e.g., GDP, income, expenditures, remittances) at the department and local levels.

Effort:

Complexity: High

Cost: $$

04

Institutionalize multi-hazard planning

Support and encourage multi-hazard planning at the departmental and local levels, engaging the public in the process. This will reduce risk by both acknowledging hazard exposure and increasing coping capacity, while improving governance in the context of disaster management.

Effort:

Complexity: Low

Cost: $

Comprehensive Disaster Management (CDM)

CDM assessment results highlight aspects of disaster management that may help address issues associated with increased exposure to natural hazards, higher socioeconomic vulnerability, or lower coping capacity. Overall, the CDM assessment helps to:

Identify Disaster Management Capabilities
Provides a contextual overview of disaster management capabilities and identifies the strengths and challenges of Honduras's disaster management system.

Provide Context to RVA Results
Provides context to the RVA results previously discussed by highlighting the larger DRR framework in Honduras.

Successes, challenges, and their implications for the overall effectiveness of Nicaragua's disaster management system are outlined in detail in the following sections based on the five key elements assessed. Recommendations are provided for each CDM element to assist in strengthening disaster management capacities in-country. See Table 8 for the evaluation criteria of CDM recommendations.

Table 8. Evaluation criteria for CDM recommendations

Recommendations Evaluation Criteria		
Effort	Years 0 5	Estimated length of time (in years) to complete the project once it is started.
Complexity	Low **Medium** High	Overall complexity based on the estimated staff time, resources, and collaboration required to complete the project.
Cost	**$$$**	Estimated annual cost of the project, not including salaries, based on a percentage of the current NDMO annual budget. $ approximates less than 1% of the annual operating budget. $$ approximates between 1% to 10% of annual operating budget. $$$ approximates more than 10% of the annual operating budget.

Good Leadership by Professionally Trained Officials

Formalized training and exercise programs increase the professionalization of the disaster management field by increasing knowledge, providing context for decision making, and supplying well-trained disaster management personnel at all levels. Training and exercises also offer opportunities to build leadership capacity in the disaster management field. Survey results illustrated in Figure 12 highlight knowledge as an important quality for leaders in Honduras. Almost 60% of survey respondents believe their organization has strong disaster management leadership; however, less than 18% think their organization has an effective disaster management program. This indicates that while leaders are knowledgeable and trained, the institutionalizing of the disaster management system is weak.

Figure 12. CDM indicators included in the Good Leadership by Professionally Trained Officials component.

Training Programs

According to research and interviews, disaster management training has become a priority in Honduras. Eighty-six percent of those surveyed stated that they had been provided with opportunities for disaster management training, while less than 40% reported experiencing barriers to attending training. Almost 90% agreed that disaster management training has improved their ability to perform their job duties. When asked, “How did your understanding of disaster management improve after completing the selected training courses?” most respondents felt that training broadened their knowledge and allowed them to better institute comprehensive disaster management in Honduras. Finally, when asked to list their organization’s three most effective preparedness activities, training and capacity building were top responses (Figure

Figure 13. Responses to Survey I Question 22, "In your opinion, what qualities make an effective leader?"

13). These results indicate that a culture of support for training is building within Honduras, and that the right type of training is being provided to disaster management personnel.

The Ley del SINAGER (passed in 2010) established the National Center for Research and Training for Contingencies (CENICAC) within COPECO. CENICAC has a staff of six and is in the process of establishing new policies, course requirements, curriculum, and training materials. Currently, CENICAC does not offer any training courses, resulting in limited access to disaster management training opportunities. CENICAC staff has been reviewing courses offered through the Regional Disaster Information Center of Latin America and the Caribbean (CRID) to ensure that the terms and definitions they adopt are aligned with regional standards. CENICAC has a dedicated server to support virtual learning and online courses, but there is recognition that virtual courses will reach only a small percentage of the population due to poor infrastructure (only 9% of households in Honduras had access to internet service[5]). Although CENICAC has offered no training courses to date, COPECO personnel have used USAID Office of Foreign Disaster Assistance (OFDA)-developed courses to meet some of the country's training needs.

Figure 14. Responses to Survey II Question 31, "What are the three most effective preparedness activities that your organization has undertaken?"

With a small staff and a lack of resources, CENICAC has a very limited ability to provide direct training to disaster management personnel. The training rooms lack computers for training attendees to use, and internet access is limited. Interviews reveal that the training staff was exhausted by providing a series of one-day overview briefings to 168 local organizations for the central district of the country. This lack of staff and resources for CENICAC negatively impacts the readiness of the disaster management system.

The director of CENICAC recognizes the Center's limited training capacity and is building capability by training COPECO personnel in regional offices as trainers. There is also an initiative between COPECO and the Universities of

[5] Referenced from the RVA (2013 Census)

Latin America and the Caribbean for Disaster Risk Reduction (REDULAC) to provide training through university extension programs in local communities.

Disaster management training courses have been provided by a variety of external actors, including Joint Task Force Bravo (JTF-Bravo) and USAID. CENICAC also works with the Ministry of Health, private sector, and NGOs to provide training to the municipal and local emergency-response committees (CODEM and CODEL, respectively).

Disaster risk management has been incorporated into grade-school curricula, graduate-level courses, and technical training. New educational materials have been developed and made available to trainers for use in disaster risk-awareness campaigns. COPECO is currently operating two successful public-awareness campaigns focused on disaster preparedness and response – "Prevention is Living" and "COPECO is Us All."

The Ministry of Education, funded by OFDA and in conjunction with COPECO and universities within Honduras, develops and provides a risk management curriculum through all levels of schooling. The risk management curriculum is woven into social studies, math, and science to increase awareness of risks, preparedness, and life-saving steps. According to interviews, all education district-level staff have been trained, and the curriculum has been fully implemented in two education districts. In the rest of the districts, teachers are receiving curriculum implementation.

Training Frequency

Training frequency in Honduras is not documented. CENICAC is in the process of establishing a database to keep a record of training courses conducted throughout the country, but despite a legal requirement to report all disaster management training to CENICAC, REDULAC universities do not share training statistics. Likewise, neither NGOs nor municipalities share their training statistics with CENICAC.

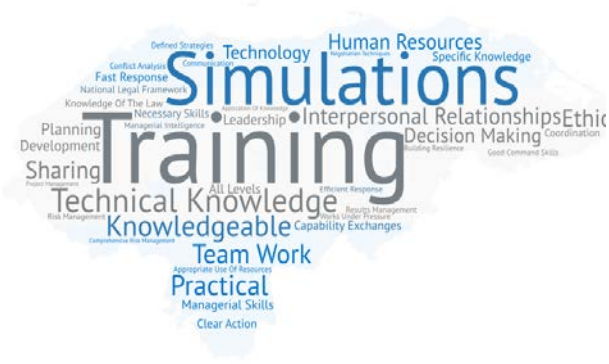


Figure 15. Responses to Survey I Question 23, 'In your opinion, what types of training help strengthen leadership capacity?'.

Interviews with officials from all levels of government indicate that there are no minimum training requirements established for disaster management personnel. Without an established baseline of required training courses, COPECO cannot establish minimum qualifications for disaster management personnel or ensure that all personnel have a common

understanding of the disaster management system. The lack of minimum training requirements for disaster management personnel could result in a lack of foundational knowledge and qualified staff.

Almost half of those surveyed (44%) report that their organizations do not have disaster management training programs. However, 65% of survey respondents reported working in organizations that require them to complete training on disaster management. When asked, "In your opinion, what types of training help strengthen leadership capacity?", several themes emerged (Figure 15), including technical and disaster-simulation training, and training focused on team work, interpersonal relations, decision making, and risk management. This finding indicates that leaders consider training to be important, even without minimum standards being established, but that many organizations rely on other partners to provide training.

Exercise Programs and Frequency

Although there are no specific exercise requirements in law or regulation, COPECO conducts an annual table-top exercise (TTX) in the COEN. The exercise includes all SINAGER organizations plus other governmental and NGO partners. COPECO funds participation in the annual exercise. Interviews indicate that some COPECO Regional Emergency Operating Centers (EOCs) and at least one municipality have participated in past exercises, but participation is not mandatory. The TTX is tied to the U.S. SOUTHCOM-sponsored Fuerzas Aliadas Humanitarias (FAHUM) exercise when it is conducted in Honduras.

National Exercises

In April 2016, Honduras conducted a national level exercise with the support of U. S. SOUTHCOM and United States Army South. The full-scale exercise, known as Fuerzas Aliadas Humanitarias)FAHUM) was a re-enactment of the 1998 Hurricane Mitch that devastated Honduras and other Central American countries. Participants included the armed forces of Honduras, El Salvador, Colombia, Guatemala, and Costa Rica; USAID, OFDA, USSOUTHCOM, U.S. Army South, COPECO, CONRED (Guatemala), CEPREDENAC, representatives of many Honduran government organizations, and several NGOs.

Occurring over a five-day period, the exercise tested not only Honduran internal processes, but international processes as well. The COPECO National EOC was fully operational for the exercise and coordinated all actions. This is the only full-scale national-level exercise conducted by Honduras.

FAHUM is an annual exercise that rotates between Central American or Caribbean countries every two years. Honduras has continued to participate as the host-country changes.

Interviews revealed that at least one COPECO department-level director conducted an internal simulation exercise in 2016. The exercise focused on the department's greatest hazard (flooding) and included activating the Comité Departamental de Emergencias (CODED) and setting up the Centro de Operaciones Emergencias (COE). However, the exercise did not include

Figure 16. Honduras participated in USSOUTHCOM's 2016 FAHUM exercise.

the municipalities or the Regional COE or COEN. By excluding other coordination nodes (local, regional, and national) from the exercise, the opportunity to test and build capacity in coordinating with other COEs was lost.

Other partners, including municipalities and NGOs, reported conducting exercises and drills on a regular basis, and almost 60% of respondents report their organization's disaster plans are tested, drilled, or exercised regularly. However, interviews reveal that CENICAC does not have a mechanism to document exercises conducted by NGOs or organizations at the municipal level, creating a lack of knowledge about the capacity of emergency committees at all levels.

No full-scale exercises are conducted at the national or subnational level, resulting in missed opportunities to fully train the decision-making and response-coordination structures of the disaster-management system, and to fully test plans and SOPs.

Successes

Support for training

A culture of support for training is building within Honduras, and CENICAC is in the process of establishing policies, curriculum, course requirements, and training materials to support training needs.

Risk management curriculum

Risk management curriculum is being built into all education levels.

Annual TTX

COPECO conducts an annual TTX that includes all SINAGER members and other disaster partners.

Challenges Identified

Standardized training curriculum

Lack of a standardized training curriculum reduces disaster management training opportunities.

Minimum training requirements

There are no established minimum training requirements for disaster management personnel, which inhibits the professionalization of the disaster management field.

Training capacity

Staff and resource limitations reduce training capacity within CENICAC and COPECO, impacting the readiness of the disaster management system.

Communication requirement during exercises

Simulation exercises are often conducted without a requirement to communicate or coordinate actions with COPECO or any other disaster coordination node, limiting opportunities to build capacity.

Exercise documentation system

CENICAC does not have a mechanism to document exercises, limiting subnational disaster risk-management capacity.

Full-scale exercises

Full-scale exercises are not consistently conducted, reducing opportunities to train disaster management personnel and test response plans.

Recommendations

01 Develop a standardized training curriculum

Work with partners to provide funding and subject-matter expertise to quickly develop disaster management training courses that are specific to the needs of Honduras.

A. Identify the types of courses needed.
B. Determine courses are available to adapt to the needs of the country.
    a. Adapt the courses or develop new courses as needed.
    b. Training courses may be adapted from the IFRC, Salvation Army, USAID/OFDA, U.S. Federal Emergency Management Agency, regional organizations such as CEPREDENAC, and many national disaster management offices.
C. Establish minimum training requirements for disaster management staff at all administrative levels.
    a. Training requirements could include:
        i. Basic knowledge of laws and regulations;
        ii. The disaster management system;
        iii. Basic and advanced COE operations;
        iv. Information management; and
        v. Basic and advanced disaster management.

Effort:

Complexity: Medium

Cost: $$

02 Increase training capacity

Work with partners to continue current programs and develop new approaches to increase the training capacity of COPECO and CENICAC at all levels of government.

A. New approaches might include developing intern programs with universities, formalizing and recruiting volunteers, and developing closer ties with the private sector.

Effort:

Complexity: Medium

Cost: $

04 Increase communications during exercises

Establish a requirement for all exercises to include communication with all disaster management stakeholders as part of the exercise objectives.

Effort:

Complexity: Simple

Cost: $

05 Exercise documentation

Establish a centralized repository to collect, collate, and maintain exercise data from throughout the country, including exercises conducted at all levels of governmental and by NGOs.

A. Develop and implement an exercise system that collects and maintains data from all exercises conducted in Honduras.
B. Data fields could include: type of exercise, number of exercise participants, names of organizations that participated in the exercise, exercise objectives, and exercise results (lessons learned, after-action review, etc.).

Effort:

Complexity: Simple

Cost: $

06 Conduct full-scale exercises

Work with international partners to develop and implement an exercise program that includes periodic full-scale exercises.

A. Due to the resources and staff support required to support planning for and executing full-scale exercises (FSE), FSEs should only occur once every 3 or 4 years.
B. Implement a national exercise program that includes a cycle of tabletop exercises (TTXs), functional exercises (FE), and FSEs, ensuring basic skills are established and built upon each year of the cycle.
C. Assistance with developing national exercise programs can be requested through UNOCHA and USAID.

Effort:

Complexity: Complex

Cost: $$

Foundation of Supportive Values for Government Action

Figure 17. CDM indicators included in the Foundation of Supportive Values for Government Action component.

Annual Budget

According to the Ley del SINAGER, financial resources are required for the strengthening of SINAGER and its Executive Secretariat. There is no line-item budget for the government to support SINAGER. The overall risk management system is dependent on the budgets of SINAGER member institutions but can be reinforced by international cooperation projects.

Honduras' disaster management budget is the responsibility of the COPECO National Commissioner, who submits the budget to the SINAGER Board of Directors for approval. Ley del SINAGER states that all government agencies are required to include an appropriation for emergencies or disasters in their annual budgets, and almost 60% of those surveyed (Figure 17) stated their organization has a dedicated budget for disaster response. According to interviews, COPECO is currently lobbying the Ministry of Finance to include a small risk management training budget for all ministries. This is a positive sign and would result in developing a greater base of disaster management knowledge across the whole of government.

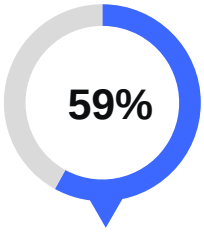


Figure 18. 59% responded YES to Survey I Question 8, "Does your organization have a dedicated budget for disaster response?".

According to the Citizen's Budget - Fiscal Year 2017 (Figure 18), COPECO received an appropriation of 410.5M Lempiras (17.2M USD). Of that amount, L130M (5.5M USD) is from Honduran tax revenues, while loans from the Inter-American Development Bank (IDB) and the World Bank provided the balance of L280.5M (11.7M USD). Interviews indicate the budget covers salaries, equipment purchases and maintenance, stocking warehouses, and building upkeep. There are no funds dedicated for training, exercises, preparedness, or mitigation programs. Only 24% answered "yes" to the question, "In your opinion, is the National Disaster Management budget adequate to meet disaster management requirements?" (Figure 20). The annual budget constrains COPECO across all areas, including implementing preparedness and mitigation programs, conducting exercises, and developing and implementing training programs.

COPECO has 234 employees, which equals 2.89 employees per 100,000 population. Most COPECO employees are centralized at the national headquarters in Tegucigalpa. COPECO maintains seven regional offices, and seven of the 18 departments within Honduras have a COPECO office. Regional and departmental offices consist of an administrative area and small warehouse. The staffs of these offices range from two to seven employees, but they are occasionally augmented by temporary contract employees.

Figure 19. Citizen's Budget-Fiscal Year 2017.

The disaster management system also makes extensive use of volunteers, particularly at the departmental, municipal, and local levels. During a visit to the El Paraíso CODED, volunteers related how they responded to floods and landslides using their own shovels and hand tools, searching by hand for buried victims. Neither transportation nor personal protective equipment was provided to the search team. Interviews indicate that there is no formalized national volunteer program, resulting in a lack of structure, resources, and training for the volunteers. The lack of a formalized national volunteer program means that a willing local resource is being underutilized, leading to less efficient disaster response operations. However, COPECO is looking at adopting the Community Emergency Response Team (CERT) program from the USA to provide structure to their volunteer program.

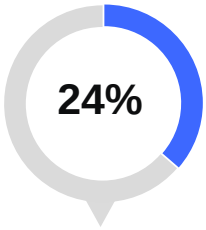


Figure 20. Twenty-four percent responded YES to Survey I Question 19, "In your opinion, is the National Disaster Management budget adequate to meet disaster management requirements?"

Below the national level, there are no budgets provided for disaster management, leading to a lack of disaster response capacity. According to interviews, the municipality of Tegucigalpa is adopting a requirements-based budgeting system for the CODEM, which will include submissions for preparedness and mitigation programs, as well as salaries and disaster response.

Research shows that external funding from international agencies, such as the IDB, the European Commission, and SOUTHCOM, is a substantial component of the country's disaster management budget. Additionally, remittances make a significant contribution to the Honduran economy and, as such, can play a major role in funding disaster response and recovery activities.

National Disaster Fund

Executive Decree No. 45-2009 established a National Emergency Preparedness and Response Fund (FONAPRE). Its purpose is "the acquisition of goods and services of any kind needed for preparedness and proper response in cases of emergencies caused by intense natural phenomena and disasters caused by human actions." FONAPRE consists of "financial resources that will serve exclusively for the preparation of emergency response, activities during the occurrence of any disasters or calamities that happen in the country, and support for recovery" (Ley del SINAGER). FONAPRE can support first responders, including: armed forces, national police, firefighters, Red Cross, Green Cross, Scout Honduras, Municipal Emergency Committees, and other SINAGER members. Up to 50% of FONAPRE can be used for preparedness activities.

The Secretary of Finance establishes the funding mechanism and accumulation of funds for FONAPRE, based on the budgetary needs of the country. By law, the annual FONAPRE budget is to be no less than L5M (211,750 USD). The budget is cumulative – after the fiscal year ends, unexecuted funds are to remain in the FONAPRE account in the Central Bank of Honduras and supplement the budget for the next fiscal year. The Central Bank of Honduras is responsible for the financial management of FONAPRE, ensuring ease of access for COPECO to immediately and appropriately respond in emergencies. COPECO is charged with administering the funds as necessary.

However, interviews indicate that FONAPRE is not functioning. The regulations for providing funding to, and getting funding out of FONAPRE have not been written. Because of this, the annual appropriation to FONAPRE is not being made. The lack of an operational emergency fund forces the government to reprogram annual expenditures to cover disaster costs, impacting day-to-day government activities across the country and long-term infrastructure projects.

The need for Honduras to develop financial resilience has been recognized and is highlighted in the State Policy for Comprehensive Risk Management in Honduras (Política de Estado para la Gestión Integral del Riesgo en Honduras – PEGIRH). PEGIRH Specific Objective 3 is to "establish and develop mechanisms to ensure the reduction of financial vulnerability of state institutions during disasters and increase their capacity to manage comprehensive risk, recovery, and the resilience of Hondurans."

In place of FONAPRE, COPECO receives an annual L10M contingency fund to finance disaster response and recovery costs. According to the Ministry of

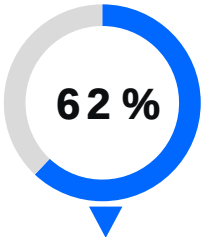


Figure 21. 62% responded NO to Survey I Question 18 "In your opinion, is the National Emergency Preparedness and Response Fund adequate to respond to a major disaster?"

Finance, the COPECO contingency fund for disasters is limited and quickly used up. Once the contingency fund is expended, the Ministry of Finance redirects funds, typically those that have been earmarked for development projects. Over 60% of those surveyed believe this fund is inadequate to meet the needs of a major disaster (Figure 21).

Stakeholders indicate Honduras does not participate in any disaster risk-transfer programs. Risk transfer "is the process of formally or informally shifting the financial consequences of particular risks from one party to another" (United Nations Office for Disaster Risk Reduction - UNISDR). Risk-transfer mechanisms include disaster insurance and reinsurance programs, catastrophe bonds, and contingent-credit facilities. Interviews indicate that the country considered using the Catastrophic Risk Insurance Facility (CRIF), however it was determined to be too expensive. Honduras has pre-approved loans with IDB (100M USD) and the World Bank (10M USD) for disaster response and recovery. The lack of participation in a risk-transfer program exposes Honduras to the full financial impacts of disasters.

Appointed/Cabinet-Level Position

The national commissioner of COPECO is appointed by the President of Honduras and has direct access to the head of state when needed. There are no established knowledge, experiential, or training requirements for any positions within the disaster management system. COPECO Regional Sub-Commissioners have access to the governors of the departments in their regions. COPECO departmental office directors have access to the governor of their departments and the mayors of the municipalities.

Successes

Established operating budget

The COPECO operating budget is appropriated annually.

National disaster fund

There is an established national disaster fund (FONAPRE).

Access to authority

The COPECO National Commissioner is appointed by the President and has access when needed.

Challenges Identified

National volunteer program

The absence of a formalized national volunteer program means that a willing local resource is being underutilized, leading to less efficient disaster response operations.

Operationalizing FONAPRE

A non-operationalized national disaster fund (FONAPRE) forces the government to reprogram annual expenditures for disaster costs, impacting day-to-day government activities across the country.

Risk-transfer mechanism

The lack of a risk-transfer mechanism exposes Honduras to the full financial impacts of disasters.

Recommendations

01 Develop national volunteer system

Work with national and international partners to develop a national volunteer system, including processes for intake, registration, training, equipping, managing, and maintaining contact with volunteers.

A. Develop a system to: identify needs; advertise for volunteers with needed skills; register, train, equip, and incorporate volunteers into operations; and document all volunteers.
B. Explore existing resources:
    a. Organizations with robust volunteer programs include many NGOs, such as the Red Cross and Salvation Armies, and national disaster management offices, including Defensa Civil in the Dominican Republic.
    b. The Community Emergency Response Team (CERT) program is available through http://www.ready.gov.

Effort:

Complexity: Complex

Cost: $$

02 Operationalize FONAPRE

Develop and implement regulations to operationalize FONAPRE.

A. Identify required mechanisms to implement regulations.
B. Procure subject-matter expertise to formulate regulations, circulate them for collaboration, and ensure they are approved.

Effort:

Complexity: Complex

Cost: $

03

Explore risk-transfer mechanism

Explore and consider implementing or joining a risk-transfer mechanism such as implementing an insurance program, catastrophe bond, or contingent-credit facility.

A. Work with partners to determine the need for implementing risk-transfer mechanisms.
B. If needed, work with international experts to determine the best type of risk-transfer mechanism to implement.
C. Work with partners to fund and implement.
D. Assistance with implementing risk-transfer mechanisms can be provided by the IDB, the World Bank, and the IMF.

Effort:

Complexity: Complex

Cost: $$$

Legal Authority to Act

Figure 22. CDM indicators included in the Legal Authority to Act component.

Disaster Management Legislation

On December 18, 1990, the Honduran legislature passed Decree No. 9-90E—the Law of National Contingencies—authorizing the creation of the Permanent Commission for Contingencies (COPECO). As the national disaster management organization for Honduras, COPECO was tasked with the development of preparedness activities, response, rehabilitation, and reconstruction responsibilities. Decree No. 9-90E was revised in 1993 by Decree No. 217-93, which enhanced coordination among all stakeholders, expanded the COPECO executive body, and established COPECO representation at the municipal level.

SINAGER was established under Decree 151-2009 (Ley del SINAGER) on December 26, 2009. As the foundation for the country's formal disaster management structure, the Ley del SINAGER builds upon and expands the role of COPECO. Ley del SINAGER promotes the implementation of disaster-awareness campaigns, as well as a proactive risk management policy, which requires the integration of disaster risk management into all regular planning activities for government agencies, the private sector, and civil society.

Figure 23. Ley del SINAGER is the law governing disaster management in Honduras.

SINAGER is hierarchical and includes all sectors of society, both public and private. It is a participatory system for state, private enterprise, and civil society organizations to protect lives and livelihoods, and to ensure environmental sustainability. Community participation is encouraged in the SINAGER system.

Ley del SINAGER requires that each SINAGER member institution and municipality appoint a prevention officer (Article 34). However, the role of the prevention officer is one of oversight and investigation into wrongdoing or faults within the institutions, not the disaster management system.

The State Policy for Comprehensive Risk Management in Honduras (Política de Estado para la Gestión Integral del Riesgo en Honduras – PEGIRH) was approved on November 26, 2013, and is "the

guiding framework for short-, medium-, and long-term comprehensive risk management in Honduras….” The guiding principles of PEGIRH include:

- Respect for human rights;
- Human security, safety, and sustainable management of the territory;
- Equality and gender equity;
- Multicultural integration;
- Taking risk into consideration prior to beginning construction on projects; and
- Autonomy and decentralization.

Together, Ley del SINAGER and PEGIRH provide a strong foundation for the comprehensive disaster management system in Honduras.

There is widespread belief that DRR laws are not being adequately implemented at national and subnational levels (Figure 25). This belief was corroborated through a moderated discussion during the midterm knowledge exchange. When participants were asked why they thought this was, general themes emerged:

- Ley del SINAGER is broad and generally good, but it was recently passed (2010) and has not been implemented throughout national, departmental, and municipal institutions; and
- Funding to the municipalities is tied to implementing the Ley del SINAGER, but this is not enforced.

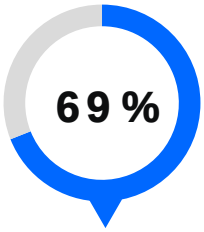


Figure 24. 69% Responded NO to Survey I questions regarding the implementation of risk-reduction laws at the national and subnational levels in Honduras.

The lack of implementation of DRR laws at the national and subnational level leads to continued development in unsuitable areas and a less efficient disaster management system.

Designated Authorities

Clarity regarding roles and responsibilities for all stakeholders engaged in a country’s disaster management system is essential to minimize duplication of effort, and maximize the utilization of limited resources. Ley del SINAGER establishes a clear structure for Honduras’ disaster management system. COPECO is designated as the coordinator of the disaster management structure. Ley del SINAGER “recognizes and endorses” the existing emergency committees at the departmental and municipal levels, and for local communities, schools, and industrial centers (Article 14). It authorizes COPECO to establish the national emergency operations center (COEN) and to direct disaster response operations. Disaster response starts at the local level

and moves upward as the capacity of the emergency committee at each level is exceeded.

The lowest level emergency committees are Comité de Emergencias Local (CODEL), Comité de Emergencia Escolar (CODECE), and Comité de Emergencia Centro Laboral (CODECEL), which are volunteer groups in the local communities, schools, and industrial centers, respectively. These committees have very few resources, little capacity or formal structure, and focus on immediate response activities (first aid, immediate rescue activities, etc.). The fabric industry (maquila) in San Pedro Sula has the most organized and integrated CODECEL in Honduras. They were established to focus on disaster response for the individual factories, but recognizing that the factories are dependent on a resilient city, the CODECEL expanded their role and provide support to the CODEM. COPECO is attempting to expand this model nationwide, which would provide much-needed support and resources to CODEM.

CODEM (Municipal Emergency Committee)

Each municipality is required to establish a CODEM (via a charter) under the mayor to receive funding. If the municipality does not have a CODEM then all disaster response duties default to the mayor. The CODEM includes members of the municipal government, leaders of central government institutions operating within the municipality (such as Ministry of Education, Policía Nacional, armed forces, etc.) who are authorized to commit their resources in support of the municipality, and representatives of NGOs and other organizations. The CODEM is the first level of organized response activity. During a disaster, the CODEM forms in the municipal situation room and coordinates disaster response activities. Once the emergency or disaster exceeds the capacity the CODEM, the CODEM requests assistance from the CODED.

108 of 298 municipalities have established CODEMs. However, officials stated that some CODEMs were established and trained with international funding and assistance and have since stopped functioning. COPECO is working with the World Food Program (WFP) to verify and geo-reference active CODEMs.

The lack of a formal disaster management structure in over 60% of the municipalities results in slower response times and greater suffering and loss of property. Because many rural municipalities do not have the required capacity or funding, senior officials stated that they are trying to group municipalities together under one larger CODEM to manage disaster response activities. This is an effective solution to the reality that not all municipalities can afford to operate a CODEM.

CODED (Departmental Emergency Committee)

Each department has established a CODED under direction of the governor. The CODED consists of SINAGER institutions and other partners, including NGOs, that operate within the boundaries of the department. However, since department-level governments are all extremely small, with no central government resources dedicated to them, there is not much capability at the departmental level. This is exacerbated by COPECO maintaining offices in only seven of the departments, resulting in 11 departments having no professional emergency-management personnel above the municipal level. COPECO is attempting to place personnel and warehouses in each department to increase capacity. Lack of capability at the departmental level is borne out by survey respondents, who overwhelmingly feel that departments do not have the capacity to effectively respond to disasters or actively support disaster management (Figure 25). Although COPECO has a presence in seven departments, only two (Gracias a Dios and El Paraíso) have disaster-supply warehouses.

CODED members can provide support using assets they control within the department, including moving resources from one municipality to another. However, interviews reveal that the CODEDs tend to rely on using construction companies for emergency clearance and road repairs during disasters. Interviews revealed that most construction contracts include emergency clauses that allow the equipment to be used during disasters. These pre-existing contracts for disaster response are a best practice, which can be modeled at all levels of response. When the needs of the disaster exceed the capacity of the CODED, the CODED requests support from the COPECO region.

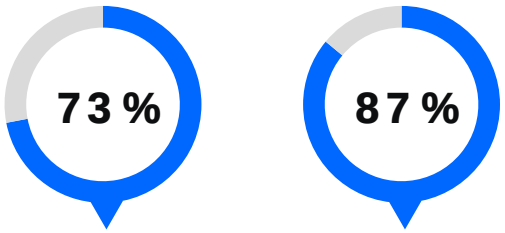


Figure 25. 73% responded NO to Survey I Question 13, "In your opinion, do departments actively support disaster management?" and 87% responded NO to Question 15, "In your opinion, do departments currently have the capacity to respond to local disaster?

COPECO Region

COPECO has established seven regions across the country, grouping them by transportation routes and accessibility. They are:

- Region 1 – Atlántida, Colón, Gracias a Dios, Islas de la Bahía
- Region 2 – Cortés, Santa Bárbara, Yoro
- Region 3 – Copán, Ocotepeque, Lempira
- Region 4 – Intibucá, Comayagua, La Paz
- Region 5 – Olancho

- Region 6 – Choluteca, Valle
- Region 7 – Francisco Morazán, El Paraíso

Each COPECO region is headed by a sub-commissioner who has a small staff and warehouse. The regions provide support to the departments and municipalities as requested. If requested support exceeds the capabilities of the region, requests are forwarded to the COEN.

Disaster Management Documentation Availability

The coordination of disaster activities across a broad range of partner organizations is most successful when partners are encouraged to engage throughout the planning process, from the initial drafting of plans to the sharing of relevant plans between organizations. Ley del SINAGER places responsibility for updating the National Risk Management Plan (NRMP) with COPECO. The NRMP is based on the five objectives of the national risk management policy:

- Risk management in planning;
- Risk management in policy making for sustainable development;
- Funding risk management;
- Capacity building; and
- Response and recuperation.

NRMP consists of three sections – one outlining the requirements of the SINAGER members, a second with seven sectoral plans, and a third section containing each municipal plan. Seven sectors are included in the NRMP:

- Agriculture and Agro-Industry
- Environment and Climate Change
- Health
- Education
- Tourism
- Infrastructure
- Land Use

The NRMP is being drafted with the help of UNISDR by gathering the SINAGER institutions and relying on each institution to draft its portion of the plan. Interviews reveal that the private sector was not consulted as part of the NRMP drafting process. The NRMP is in draft form now, and COPECO is conducting workshops to socialize the plan and receive feedback. Until the plan is finalized, COPECO is conducting disaster management operations using the COEN basic functions manual. The lack of a national risk management plan could lead to disjointed, slow responses to disasters and emergencies.

The COPECO planning unit is responsible only for long-term work plans. There is no disaster management-related planning element within COPECO, which interviews have identified as a serious capacity shortfall.

Surveys reveal a general lack of plans among disaster management organizations in Honduras. Only 35% of respondents report that their organization has a comprehensive disaster management or disaster mitigation plan, while only 47% reported having a response, preparedness, or recovery plan (Figure 26).

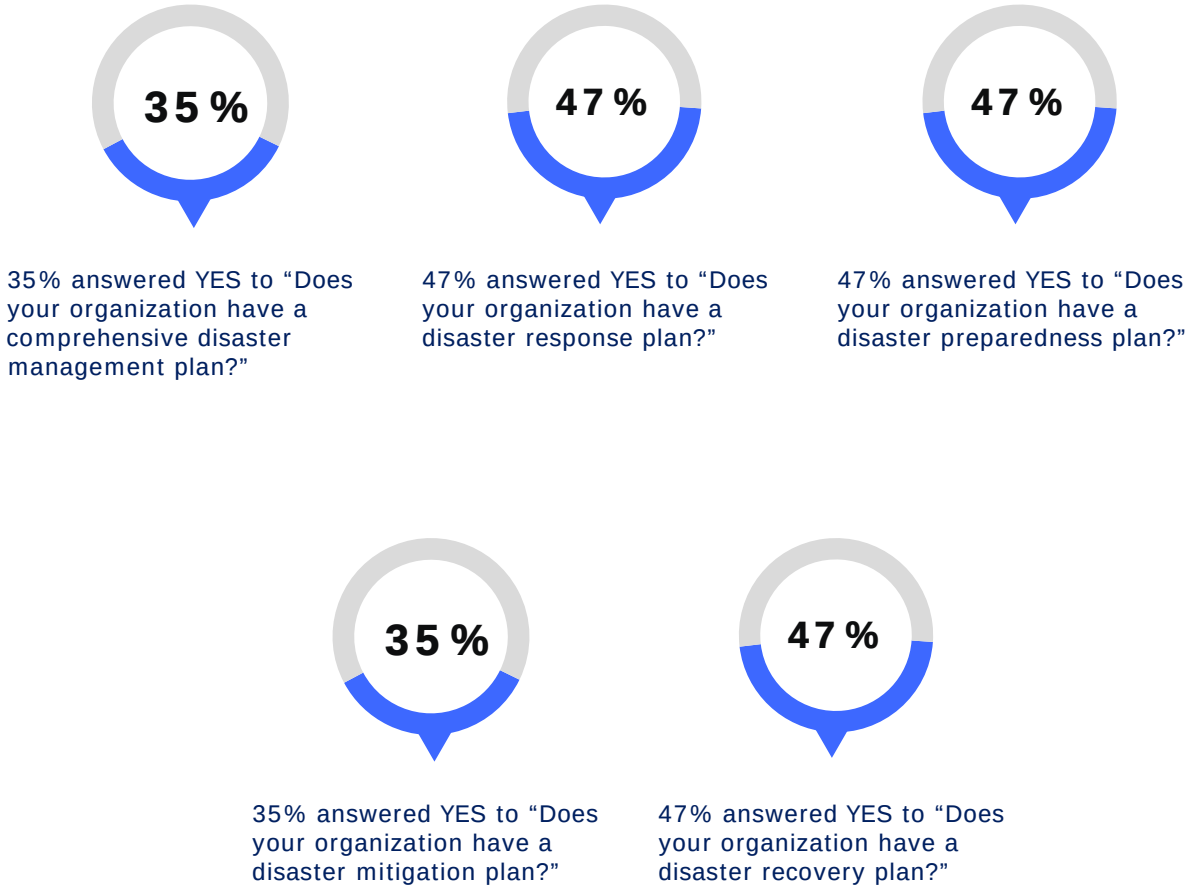


Figure 26. Survey II responses on the availability of disaster plans.

Research and interviews indicate that neither ministries nor any COPECO regions or departments are required to produce disaster response plans, which is a gap in the planning system tying municipal disaster response actions to national disaster response actions. Lack of response plans for ministries, regions, and departments could lead to a disjointed response effort. The plans that are completed often lack critical elements, as reported during surveys (Table 9).

Interviews with stakeholders highlight that few organizations share their disaster plans. This is supported by survey results showing that only 29% of

respondents reported that their organizations have shared their disaster management plans with other agencies or organizations active in disaster management. Not sharing plans indicates less than optimal collaboration between agencies, which could lead to slow or ineffective response and recovery operations.

Table 9: Frequency of responses to questions regarding specific elements of disaster management plans.

Does plan include information on:	Yes	No	Other
	%	%	%
All hazard types	35	35	30
Public outreach	30	24	46
Early warning	47	29	24
Evacuation	30	35	35
Logistics	42	29	29
Shelter operations	29	35	36
EOC activation	35	29	36
Separate SOP for EOC activation	29	41	30
Transportation	35	35	30
Communications	35	35	30
Public works and engineering	29	36	35
Public health and medical services	24	47	29
Search and rescue	35	35	30
Hazardous materials	6	64	30
Agricultural and natural resources	29	47	24
Public safety	6	65	29
Long-term community recovery	24	47	29

*The *Other* category includes “I Do Not Know” and “Does Not Apply,” as well as missing answers.

COPECO maintains an archive and has disaster plans for 107 of the 298 municipalities. As the municipalities are envisioned by SINAGER to provide the primary response actions during any emergency, the lack of plans at the municipal level results in inefficient response operations.

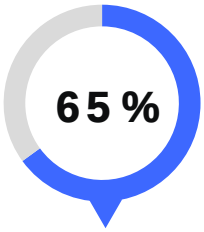


Figure 27. 65% update their SOPS at least every two years, according to responses for Question #30 of Survey II.

Documentation/SOP Update Frequency

Effective disaster management is dependent upon the entire disaster management community working together to develop, revise, practice, and execute disaster plans in a coordinated manner.

There are no nationally established standards for updating plans or SOPs. However, almost two-thirds of those surveyed reported they update their SOPs at least every two years (Figure 28). This was supported during interviews with a number of officials stating they have established their own update requirements.

Successes

Ley del SINAGER

Ley del SINAGER establishes a clear and hierarchical disaster response structure, including the establishment of COPECO as the coordinating body for disaster management.

Construction contracts

Many construction contracts include clauses that allow equipment to be used during an emergency.

Plans updated

Most organizations update their plans at least every two years.

Plans archive

COPECO maintains an archive of plans.

Challenges Identified

Prevention officers

Prevention officers within SINAGER institutions have no role in the disaster management system. This is a missed opportunity to provide disaster management support and expertise within the SINAGER institutions and municipalities.

DRR law implementation

Disaster risk reduction laws are not adequately implemented at the national and subnational levels, resulting in continued development in unsuitable areas and a less efficient disaster management system.

Resources and capacity at local level

Local emergency committees have very few resources and little capacity or formal structure, leading to little response capability or support below the municipal level.

Municipal disaster management structure

60% of municipalities lack a formal disaster management structure, which leads to slower response times during disasters.

COPECO presence

COPECO maintains offices in only 11 of 18 departments, reducing capacity at the departmental level.

National Risk Management Plan

The NRMP is only in draft form, which could lead to disjointed, slow responses to disasters and emergencies.

Private-sector engagement in NRMP development

The private sector was not included as part of the planning process for the NRMP, weakening the NRMP and the entire disaster response system in Honduras.

COPECO disaster planning element

There is no disaster management-related planning element within COPECO, resulting in a serious capacity shortfall.

Response plan requirements

There is no requirement for ministries, regions, and departments to have response plans, which could lead to inefficiencies and duplication of effort during response.

Plan sharing

Few organizations share their disaster plans, which could lead to slow or ineffective response and recovery operations.

Municipal disaster plans

Only 108 of 298 municipalities have disaster plans, resulting in slow and inefficient response operations.

Recommendations

01 Prevention officers

Amend Ley del SINAGER to ensure prevention officers are responsible for disaster management functions within their organizations.

A. Establish new responsibilities for the prevention officers that support CDM efforts.
B. Include in latest amendment to the Ley del SINAGER.
C. Work with appropriate personnel experts to insert new requirements into the job descriptions of the incumbents.
D. Train the prevention officers on their new duties.

Effort:

Complexity: Medium

Cost: $

02 Socialize Ley del SINAGER

Work with partners to develop and fund a program to socialize and implement Ley del SINAGER.

A. Identify shortfalls in the implementation of Ley del SINAGER across all levels of government.
B. Develop strategies (including training, resources, etc.) to fill the shortfalls.
C. Implement the strategies to ensure all levels of government understand the requirements of Ley del SINAGER.

Effort:

Complexity: Medium

Cost: $$

03 Support local CODEs

Work with international partners to organize, train, and provide continuing support to local CODEs.

A. Identify the need for local CODEs (including CODELEs, CODECEs, and CODECELs).
B. Develop a strategy to establish, equip, and train local COSEs.
C. Implement and sustain the strategy for at least five years.

Effort:

Complexity: Medium

Cost: $$

04 Support CODEMs

Continue to work with partners to group municipalities and to develop, train, and provide resources to CODEMs responsible for multiple municipalities.

A. Identify municipalities that have insufficient resources to establish and maintain a CODEM.
B. Work with municipal leaders to group neighboring municipalities.
C. Develop and implement a strategy to train and equip the CODEMs.
D. Assist the CODEM to develop, test, and implement a comprehensive disaster management plan.

Effort:

Complexity: Medium

Cost: $$

05 Increase COPECO presence

Work with international partners to provide stand-alone facilities, equipment, and supplies in all departments.

A. Provide logistical and administrative areas (including an EOC) to the departments that lack COPECO resources.
    a. Utilize the RVA's multi-hazard risk index to prioritize departments.

Effort:

Complexity: Medium

Cost: $

06 Complete the NRMP

Prioritize completing the national risk management plan and socialize the plan with all disaster management partners.

A. Develop a strategy to receive comments on the draft NRMP from partner organizations (including those discovered during exercises).
B. Review and include valid comments in the plan.
C. Work with the private sector.
    a. Develop and implement a strategy to include the private sector in the planning process for the national response management plan.
    b. The private sector could be represented by Consejo Hondureño de la Empresa Privada (COHEP), or by a combination of COHEP and other trade organizations.
D. Publish, socialize, and implement the NRMP.
    a. Create incentives for organizations to implement the NRMP in a timely manner.

Effort:

Complexity: Simple

Cost: $

07 Create a disaster management planning unit at COPECO

Organize and provide staffing and resources for a disaster management planning unit within COPECO.

A. Determine the requirements for disaster management planning within COPECO.
B. Identify resource needs for the office (personnel, space, and equipment).
C. Identify resource providers from within the organization.
D. Establish the planning function.
E. Provide training to members of the organization.

Effort:

Complexity: Medium

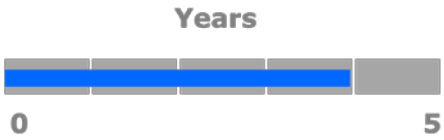
Cost: $$

08 Develop ministry, region, and department response plans

Work with international partners to develop response plans at the ministry, region, and department level.

A. Establish a requirement for ministries, as well as COPECO regions and departments, to develop and implement disaster response plans based on the national plan.
B. Develop and implement a strategy to train personnel on planning requirements and processes, and assist with developing response plans at the ministry, region, and department levels.
    a. Provide a template to stakeholders to assist with plan development.

Effort:



Complexity: Medium

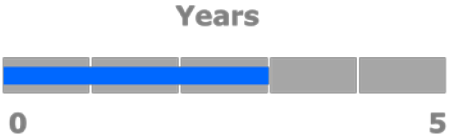
Cost: $

09 Develop a repository for plans

Develop and make available a central repository where all organizations active in disaster management can post their plans and receive copies of other organizations' plans.

A. Establish a central archive for disaster management plans that is available to all partners.
B. Allow organizations to post and download plans as needed.

Effort:



Complexity: Simple

Cost: $

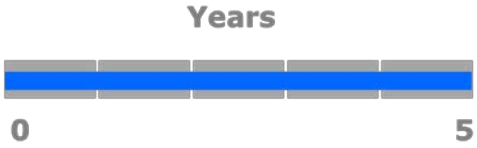
10

Develop municipal disaster plans

Identify municipalities without disaster plans and work with partners and the international community to develop a strategy to complete required plans.

A. Develop and implement a strategy to identify municipalities without adequate disaster response plans.
B. Train personnel on planning requirements and processes.
C. Assist with developing needed municipal disaster response plans.

Effort:



Complexity: Medium

Cost: $$

Advocacy Supporting Action

Advocacy supporting action explores the entire community's involvement in the disaster management system. The Ley del SINAGER calls for the decentralization of disaster management in Honduras, thereby encouraging the participation of all sectors of society in SINAGER.

Figure 28. CDM indicators included in the Advocacy Supporting Action component.

Recent Disaster Events

An organization's ability to respond adequately to a disaster event is indicative of the broader commitment to, and support for, disaster management activities by communities and the government. Communities recently impacted by major disaster events are generally more supportive of DRR initiatives.

The United Nations recently identified Honduras as the most hurricane-vulnerable country in the world[6]. Over a 30 period, from the 1980s to the 2000s, 12 hurricanes greatly impacted the country. Those hurricane events totaled nearly $4 billion in losses, with an average of 1,300 deaths per event. Additionally, the country ranks twenty-fourth among countries with the highest economic risk exposure from two or more hazards.

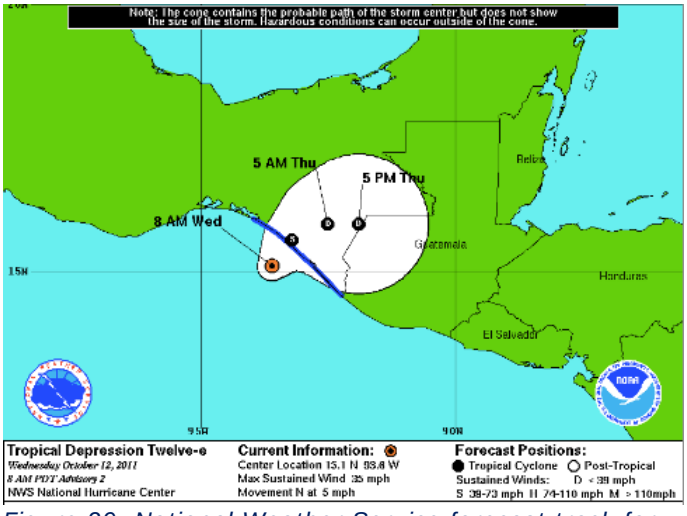


Figure 29. National Weather Service forecast track for Tropical Depression 12E, October 2011.

The three most recent disaster events at the national level include tropical cyclone 16E in 2008, tropical depression 12E (Agatha) in 2011 (Figure 29), and drought from 2015-2016. Due to buildings being constructed in unsuitable areas and squatter settlements established on marginal ground, relatively minor amounts of rainfall will often cause excessive loss of life and damage to buildings through localized flooding and landslides.

Surveys indicate that the disaster response system is effective in Honduras. Only 22% of those surveyed feel the national response to the last major

[6] GFDRR. (n.d.). *Disaster Risk Management in Central America: GFDRR Country Notes: Honduras*

disaster was effective, and 33% reported feeling that the disaster alert messaging was not used effectively. However, interviews reveal that there is frustration at all levels due to lack of resources and staffing.

Figure 30. Responses to Survey II question "How do you define effective disaster response?".

Disaster Declarations

Major disaster declarations are made by the President of the Republic or by the National Commissioner of COPECO. However, according to Article 25 of Decree No. 134-90, municipalities may also declare a state of emergency for their respective jurisdictions, although the declaration must be justifiable. When a municipality issues a state of emergency, the mayor must immediately inform the National Commissioner of COPECO. All disaster declarations must be made within 24 hours of a disaster event.

According to officials at COPECO, disaster declarations occur about once per year and are usually declared for one or more departments, not nationwide. COPECO has an obligation to support all disaster declarations, as well as to coordinate with members of SINAGER to carry out the necessary actions for disaster response. All disaster declarations carry the same weight whether issued by COPECO or another authorized agency.

Government ministries have a responsibility for issuing disaster declarations pertaining to their specific ministerial focus:

- The Secretary of Health is responsible for declaring epidemiological emergencies;
- The Ministry of Natural Resources and the Environment makes declarations on environmental disasters;
- The Office of Agriculture and Livestock makes phytological and zoological disaster declarations; and
- The National Committee on Forest Protection, Protected Areas, and Wildlife declares disasters in forested areas.

The disaster declaration process is clearly understood by all partners. The benefits of declaring a disaster include: access to funding, including Finance Ministry reallocation of funding from other areas; more flexible auditing procedures; increased authority; eased administrative functions; and enabling the reception of international aid.

For the Honduran Red Cross (Cruz Roja Hondureña – CRH), a national disaster declaration carries both requirements and opportunities. The Ley del SINAGER requires CRH to provide staff to the COEN and regional, departmental, and municipal COEs. However, the disaster declaration also allows access to national and international funding sources for CRH.

Recent Disaster Legislation

Ley del SINAGER was enacted in 2009, and COPECO is drafting changes to relate the Ley del SINAGER more closely to the NRMP and current national policy. COPECO would like to establish prevention activities, develop requirements for risk assessments prior to any construction, and implement tools for decision making. The draft changes also address FONAPRE funding, including: increasing appropriations to FONAPRE to L10M (423,400 USD) per year; sweeping two percent of the unexpended national budget into FONAPRE at the end of each fiscal year; and allowing international aid to be deposited into the FONAPRE account. The next step is to submit the draft to congress through the Secretariat of the Presidency.

Political Approval Ratings

Revelations of widespread government corruption led to mass protests throughout the summer of 2015. The protests represented a social revolution against the cynicism of Honduran politicians and the national government at large. While the protests called for the resignation of President Hernandez, he remained in office and proposed “a Honduran ’anti-corruption system’ to crack down on graft in politics and in the judiciary”[7]. Protests erupted again in early 2018 following President Hernandez’s re-election.

Number of NGOs with a Disaster Management Focus

Effective disaster response requires the participation of multiple agencies and organizations, including non-traditional partners. NGOs are an integral component of SINAGER. Survey results indicate that NGOs support the country’s disaster management goals and are actively engaged in preparedness activities at the local level (Figure 31). COPECO serves as the key coordinator for the roles and responsibilities of NGOs in the country’s disaster management system.

[7] The Economist 2015

66% answered YES to "Are NGOs effectively supporting national disaster management goals?"

76% answered YES to "Are NGOs actively engaged in disaster preparedness at local level?"

Figure 31. Survey I responses to questions regarding NGO support in Honduras.

Stakeholder interviews confirm that NGOs are actively engaged in preparedness and response for disasters in Honduras. NGO activities include: emergency food programs; preparedness and response training for municipal and local work committees; community-based mitigation activities emphasizing environmental awareness; and emergency ambulance services.

NGOs working in the disaster management field include: Honduran Red Cross (CRH), Oxfam Honduras, International Federation of Red Cross/Red Crescent Societies, World Vision, GOAL, Trocaire, Help in Action, Adventist Disaster Relief Agency, Pan-American Health Organization, World Food Program, Caritas, Plan International, Save the Children, UNICEF, Catholic Relief Services, and OCHA.

Surveys indicate that coordination among the humanitarian actors could be improved. In a survey commissioned by Oxfam, only 46% (33/71) responded "very good" or "adequate" when asked to describe, "The level of coordination and complementarity between the different humanitarian actors (the government, public institutions, NGOs, United Nations, etc.)." Lack of adequate coordination among NGOs could lead to poor provision of relief during disasters and poor coordination of pre-disaster mitigation projects.

Case Study: Red Cross (CRH)

CRH has 320 paid staff and about 4,000 volunteers organized in 52 branches covering 15 departments. CRH operates 120 ambulances and provides emergency assistance nationwide. The CRH maintains a nationwide radio system and a 195-telephone number for people to call with medical emergencies, all funded through donations.

CRH also provides community training programs under a project to strengthen prevention and response capabilities at the municipal and community level. Efforts include analyzing vulnerability and capability, reforestation (a goal of planting 1 million trees), and conducting micro-projects, including building retaining walls. CRH personnel assist with conducting local simulation drills and disseminating information in the high schools. Local CRH units provide search and rescue support, shelter management, psychological and social support, and limited community-alert systems. CRH has a national COE and four regional COEs that are activated as needed during disasters. CRH personnel also support the COEN and COPECO regional COEs when activated. CRH coordinates with COPECO to provide humanitarian relief during disasters, including food, hygiene kits, clothing, and mattresses.

Oxfam Honduras

Oxfam Honduras has 35 employees, but has no in-country volunteers and does not usually provide assistance directly to individuals. Oxfam connects projects in local communities with funding sources or provides resources to community-based organizations. Oxfam projects include: strengthening response capacity and modifying risk through mitigation; and providing lobbying activities in support of certain laws, including gender equality. During disasters, Oxfam sends a representative to the COEN and can provide rapid assessments, particularly in the arid regions of the country where their presence is strongest.

Private Sector Engagement

Article 2 of the Ley del SINAGER states that "SINAGER be regulated in an interinstitutional framework, which will comprise all sectors of society…without any exclusion. These are the public and private sectors…as well as autonomous entities, [and] private enterprise…"

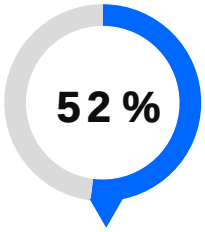


Figure 32. 52% responded NO to Survey I Question 16, "In your opinion, is there strong support of public-private partnerships in disaster management at the local level?"

At the national level, the private sector is represented on the SINAGER board of directors by the Council of Honduran Private Enterprise (COHEP). At the departmental and municipal levels, however, there are no private sector representatives on the CODEDs and CODEMs. Only 39% of those surveyed stated that their organizations engage with the private sector to support disaster response, and over half reported a lack of strong support of public-private partnerships at the local level (Figure 33). The survey results were validated by numerous interviews with officials at all levels. Many said that the private sector is generally not involved in disaster management. Critical resource providers, such as the power, water, and telecommunications companies operating in Honduras, are not engaged in the SINAGER system. The lack of private sector engagement at all levels of disaster management leads to missed opportunities for cooperation and support, and a less efficient disaster response system.

Case Study: San Pedro Sula

One highly successful example of private sector engagement in Honduras is occurring in San Pedro Sula. An EU-funded initiative[8], devised a multi-faceted program to develop "a culture of prevention" in the municipality of San Pedro

[8] in partnership with Disaster Preparedness Program, Department of Humanitarian Aid and Civil Protection (DIPECHO), Trocaire and the Honduran Association of Maquilas (AHM)

Sula. The program established emergency committees in factories (maquilas) that receive and conduct training courses in the handling of hazardous materials, evacuation procedures, CPR, the use of rescue equipment, etc. Each maquila has its own emergency brigade, and these regularly compete against each other in drills as a way of publicizing and socializing the program. While the program initially focused on the management of industrial-related hazards internal to each factory, it was soon recognized that with 40% of workers living in vulnerable areas, a disaster occurrence had the potential to significantly interrupt production. The program now attempts to engage surrounding communities and is developing a hazard monitoring capability as an extension of COPECO. Interviews indicate that this program has been very successful in San Pedro Sula, and COPECO is conducting workshops in Tegucigalpa to try and expand the program nationwide.

Successes

Disaster declaration process

The disaster declaration process is used appropriately and clearly understood by all stakeholders.

Partners included in legislation drafting

COPECO included partners when drafting changes to legislation.

NGOs engagement

NGOs are actively engaged in disaster preparedness and response activities.

Challenges Identified

NGO coordination

Lack of adequate coordination among NGOs could lead to poor provision of relief and duplication of effort during disasters.

Private-sector engagement

The lack of private sector engagement at all levels of disaster management leads to missed opportunities for cooperation and support and a less efficient disaster response system.

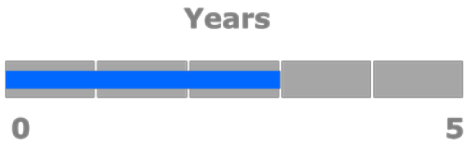
Recommendations

01 Increase NGO coordination

Work with government and NGO partners to increase coordination among NGOs throughout the disaster management system.

A. Develop a strategy to bring all partners together on an annual basis.
   a. Develop a centralized repository that documents NGO activities, including roles and responsibilities during different phases of disaster management.
   b. Identify resource locations and potential mutual-aid agreements.
B. Conduct a disaster response/relief exercise.

Effort:



Complexity: Medium

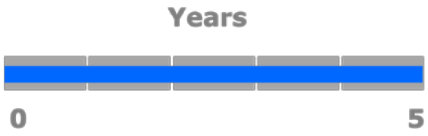
Cost: $

02 Encourage private sector and critical resource provider engagement

Work with national and international partners to develop programs to encourage engagement of the private sector and critical resource providers (power, water, sewer, telecommunications, etc.) in emergency committees at all levels.

A. Develop and implement a strategy to identify private sector groups and critical resource providers that should be integrated into the disaster management system at all levels of government.
   a. Incorporate the representatives into the CODEs.
   b. Include the private sector and critical resource representatives in all phases of disaster management.
B. Example: The Stephenson Disaster Management Institute at Louisiana State University (SDMI.LSU.edu) runs the Center for Disaster Preparedness, a leader in incorporating the private sector in disaster management.

Effort:



Complexity: Complex

Cost: $

Necessary Institutional Resources

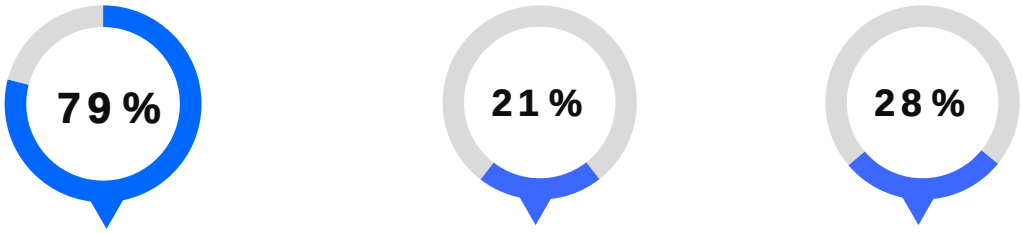
Adequate resourcing for the disaster management system is critical for effective preparedness, response, and recovery programs. The assessment considers key components of resourcing, including resources designated for use during disasters, resource inventories, mutual-aid agreements, and emergency operations centers.

Figure 33. CDM indicators included in the Advocacy Supporting Action component.

Resources Designated for Disaster Management

Resources designated for disaster management provide an indication that a country has invested in and supports disaster management activities. This can include equipment and personnel assigned to government ministries, specialized disaster response supplies, and shelters.

Surveys identify resource shortfalls as a significant challenge to effective disaster management, with almost 80% believing there is insufficient government inventory to respond to a large-scale disaster and only 21% believing their organization has sufficient inventory to respond to a large-scale disaster (Figure 34). Additionally, only 28% reported that their organization had a budget allocated to disaster response, and not a single person answered yes to the question, "Was the budget adequate for the last disaster response your organization conducted?" When asked, "In your opinion, what is the greatest challenge to effective disaster response?" the most common response was lack of resources. These results indicate a widespread belief that there are insufficient resources to support the population during a large-scale disaster.



79% answered NO to "Is there sufficient government inventory to respond to a large-scale disaster?"

21% answered YES to "Does your organization have sufficient inventory to respond to a large-scale disaster?"

28% answered YES to "Does your organization have a disaster response budget?"

Nobody answered YES to "Was the budget adequate for the last disaster response your organization conducted?"

66% answered YES to "Does your organization have mutual-aid agreements in place?"

Figure 34. Response to questions regarding resourcing from Surveys I and III.

Interviews support the survey findings, with numerous stakeholders discussing the lack of resources. Sixty-six percent reported their organizations have mutual-aid agreements in place to help balance this lack of inventory.

COPECO does have resources to support operations. These include: ambulances (and staff trained in providing services); 24/7 first response (fire/first aid); wildland fire-fighting trucks; collapsed structure, swift water, and vertical rescue units; two mobile command centers (Figure 35); three mobile kitchens with a combined capacity of 10,000 plates per hour; three mobile shelter units complete with tents, cots, and showers; sewage and water trucks; and generators.

According to stakeholder interviews with government officials, government resources are generally available for use during disaster operations. However, when a resource is needed from another ministry, COPECO must send a letter to the ministry requesting support, but the ministries can refuse to send requested resources. This process, combined with the lack of local resources and disaster supply warehouses noted earlier, results in critical shortfalls during disaster operations. COPECO reimburses costs for support if funding is available.

Figure 35. COPECO has two mobile COEs.

Emergency Communications System

Honduras operates a nationwide emergency radio communications system that links the COEN with CRH and some municipalities. However, due to upgrades to the system, the Ministry of Health's communications equipment

is not compatible with the emergency radio system. Additionally, many departmental or municipal COEs lack the proper equipment needed to access the emergency radio communications system. These shortfalls result in critical communications interruptions during disaster operations.

Shelter System

Honduras does not have a national shelter system. Each municipality is responsible for designating, activating, and providing supplies and staff for emergency shelters. Community centers, gyms, churches, and sports facilities are preferred over the use of schools as emergency shelters, although schools are heavily relied upon as emergency shelters. Municipalities identify shelters but generally do not maintain shelter lists or identify the number of people each shelter can hold. The only shelter list available is for Roatán (Figure 36). The lack of information about shelter locations, capacity, and availability can severely hamper national disaster relief efforts and result in undue suffering for the population.

Roatan

Emergency Shelter List Roatan, Honduras

submitted by:

Joseph Romeo Solomon - Director de Justicia - Municipalidad De Roatan

No.	Albergues	Ubicacion	Capacidad de Alojamiento	Centro de Acopio
1	Iglesia de Dios	Coxen Hole	500	Iglesia del Dios
2	Iglesis Cataolica	Coxen Hole	300	Iglesia Catolica
3	Iglesia Catolica	Coxen Hole	500	Iglesia Universal of God
4	Iglesia de los Mormones	Coxen Hole		
5	Iglesia Adventista	Coxen Hole	300	Iglesia Adventista
6	Iscuela Methodista	Coxen Hole	2000	
7	Inst. Jose Santos G.	Coxen Hole	2000	
8	Iglesia Methodista	Bo. La Punta	600	Iglesia Methodista
9	Jardin Maria Montessori	Bo. La Punta	100	
10	Escula Ruben Barahona	French Harbor		
	Escula Adventista	French Harbor	1000	
12	Esc. Children Palace	French Harbor	600	
13	Campo de Sun Water	French Harbor	500	
14	Liberia (Biblioteca)	French Harbor		
15	Iglesia Carmelo	Los Ruertes	200	Iglesia Carmelo
16	Iglesia Adventista	Los Ruertes	300	Iglesia Adventista
17	Iglesia Embajadores de Dios	Los Ruertes		
18	Puerto Cortes Express	Los Ruertes	500	
19	Area de Monte Placenters	Los Ruertes	500	
20	Campo de Foot Ball	Los Ruertes	3000	
21	Campo del Taller Jackson	Los Ruertes	500	
22	Centro Salud	Los Ruertes		
23	Iglesia Testigos de Jehova	Bo. Los Fuertes	400	Iglesia Testigos de Jehova
24	Hotel Ejecutivo	Bo. Los Fuertis	50	
25	Esc. Arovia A. Welcome	Bo. Los Fuertes	800	
26	Escula Dale Jackson	Sandi Bay		
27	Iglesia de Dios	Sandi Bay		
28	Jardin de Ninos Policarop G	Sandy Bay		
29	Iglesia Methodista	Flower Bay		
30	Social Center	Flower Bay		
31	Miguel Paz Barahona	West End		
31	Escuela Arnulfo Auld	Grabes Bat		
33	Bomberos	Dixon Cove		
34	Escuela Guaymuras			

Roatan Emergency Shelter List

Figure 36. Roatán emergency shelter list, the only shelter list available in Honduras (http://www.roatan.ws/roatan-weather/emergency-shelters.html).

Disaster Relief Supplies

COPECO maintains warehouses with disaster response equipment and humanitarian relief supplies. Most stocks are kept in the central warehouses at COPECO, but each of the seven regional offices and two departmental offices have warehouses. The regional and departmental warehouses are stocked prior to the rainy season based on population (Figure 37). Different regions receive different types of food and humanitarian supplies based on hazards, demography, and climate. Several officials noted that SOUTHCOM has provided great support over the years.

Figure 37. El Paraíso Department Director for COPECO, Bruno Barahona, with *food for about 200 families in the COPECO warehouse in Danli.*

Food is purchased by COPECO for 10,000 families nationwide at the beginning of the rainy season (May). Food stocks come from vendors prepackaged in bags for five people for 15 days, and include rice, beans, corn, spaghetti, vegetable oil, coffee, sugar, salt, and different types of flour for different regions in the country. Each food bag is put together using Pan-American Health Organization (PAHO) nutritional guidelines.

COPECO has the capability to receive bulk grains and water and process them into bags for distribution. This is a critical capability, as international food aid is delivered in bulk and must be bagged into smaller increments for efficient distribution.

COPECO also stocks relief supplies, such as kitchen kits, blankets, hygiene kits, cots, mattresses, vertical- and collapsed-structure rescue supplies, and medical supplies for their ambulances. During interviews, officials stated that they inventory the warehouse every six months, However there is no inventory system that monitors supplies in all COPECO warehouses, which could result in supply shortfalls during disaster operations.

The municipality of Tegucigalpa maintains a warehouse for disaster relief supplies (Figure 38). Stocks are purchased by the municipality or provided by COPECO or UNDP. The municipality usually stocks food for 1,000 families, as well as basic equipment, such as shovels, axes, and chainsaws. It must be noted that during the assessment team's visit, the warehouse was empty, with supplies and equipment being used to support an ongoing landslide event.

CRH maintains a main central warehouse and four regional warehouses. The main warehouse has emergency supplies for 1,000 families that includes a hygiene kit, basic cooking utensils, a basic home-repair tool kit, six blankets, a tent, refillable water containers, and mosquito netting. Each regional warehouse has stocks for 200 families. CRH does not stock food but buys it as needed to support relief efforts. CRH provides 100 pounds of food per family, enough to last roughly 20 days (depending on family size).

Article 17 of the Ley del SINAGER designates COPECO as the International Humanitarian Aid Coordination Center (CCAHI). The CCAHI is responsible for

receiving and distributing all international aid and is supported by the Office of the Secretary of State for Foreign Affairs and CRH. There is no nationwide inventory of relief supplies held by municipalities or NGOs, which could hinder the ability of the CCAHI to efficiently provide international relief supplies to those in need.

Figure 38. The COPECO warehouse in Tegucigalpa is well organized and inventoried every six months.

Inventory of Available Resources

Inventories provide an indication of available resources that can be utilized in the event of a disaster response. Although select items are mentioned for disaster management use in Honduras, a complete up-to-date inventory list of available resources has not been identified for the country. There is no requirement for government institutions to identify resources to be used during disaster response operations, nor is there a requirement to maintain a list of those resources. This lack of knowledge about the resources available for use during a disaster could lead to slow or inefficient response.

Mutual-aid Agreements

Mutual-aid agreements facilitate sharing resources across jurisdictional boundaries during emergencies and disasters. Over 60% of survey respondents stated their organizations have pre-established agreements for support during times of disaster (Figure 39). Interviews confirm that mutual-aid agreements exist between COPECO and the Center for the Prevention of Natural Disasters in Central America (CEPREDENAC), World Food Program, World Vision, and Oxfam.

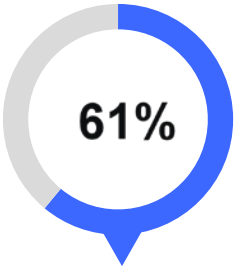


Figure 39. 61% responded YES to Question 5 of Survey III, "Does your organization have pre-established agreements for support during times of disaster (i.e., mutual-aid agreements)?"

CEPREDENAC established operational preparedness and response procedures for Central American countries, including activation protocols and operating procedures for mutual assistance, along with a host of specific capabilities for each country. In addition, CEPREDENAC coordinated with the Central American Integration

System to develop Regional Mechanisms of Mutual Assistance in Case of Disasters.

Emergency Operations Centers

Having a dedicated location from which to conduct disaster response operations allows for more successful and comprehensive disaster management at the national and subnational levels. Article 17 of the Ley del SINAGER establishes the COEN as the organization responsible "for the adequate administration of emergencies." Coordinated by COPECO, the structure and organization for the COEN is altered depending on the intensity and severity of a disaster event. Fire, police, and military representatives are permanently assigned to the COEN, and each SINAGER member must designate a COEN representative. The Ley del SINAGER requires participation by the 21 SINAGER members when the COEN is activated. Interviews reveal, however, that not all institutions send representatives to the COEN. Some send representatives with no disaster management experience or decision-making authority.

Figure 40. National EOC (COEN), Tegucigalpa, Honduras.

Surveys reveal that although 39% of stakeholders' organizations had COEs, only 6% believe their COE has adequate resources to perform its responsibilities effectively. Shortage of resources in COEs could lead to slow and inefficient disaster response operations.

COEN is a modern facility (Figure 40) staffed 24/7, and it has backup food, water, and power for about 20 days. It also has breakout rooms and a suite of offices for the President of the Republic. Computers, phones, and supplies are available at workstations throughout the COEN, providing immediate access to the nationwide emergency radio communications system. Interviews reveal the greatest concern for the COEN staff is the lack of disaster management software and equipment, which restricts their ability to efficiently manage disasters. COPECO is seeking funding to obtain servers and buy WebEOC licenses to enhance their operations. There is no alternate COEN, creating critical coordination issues if the COEN is impacted by a disaster.

COPECO regional and departmental offices also have COEs. However, at least one departmental COE had no equipment of any kind, greatly limiting the CODEDs ability to coordinate disaster response activities.

The municipality of Tegucigalpa has a room designated as the COE with backup generators and fuel for 24 hours, but no phones or computers (Figure 41). The room is mostly used for training; CODEM does not conduct COE activation drills. The lack of equipment in the COE for the largest city in Honduras puts a great number of people at risk during disasters. During the fire season (January to June), the Tegucigalpa CODEM uses the COE at the Instituto Conservación Forestal (ICF) to coordinate firefighting activities and other emergencies and disasters.

Figure 41. Tegucigalpa municipal COE.

Successes

Emergency communication network

Honduras has established a nationwide emergency communications system.

Designated relief supplies

Disaster relief supplies are maintained throughout the country based on the hazards and dietary differences of the regions.

Designated COEN

Honduras has a modern and sole-use COEN with backup power, water, and food.

Challenges Identified

Equipment in ministry, department, and municipality COEs

Some ministry, department, and municipality COEs lack the proper equipment needed to access the national emergency radio communications system, resulting in critical communications interruptions during disaster operations.

Emergency shelter information

Little information is available about emergency shelter locations, capacity, and status, which can severely hamper national disaster relief efforts.

Resource and relief supply inventory system

Honduras lacks a documentation system for disaster response and relief supplies, impacting COPECO warehouses and municipality- and NGO-held relief supplies.

COEN support

Some SINAGER institutions do not provide required staffing to the COEN, or send staff that are not in a position to make decisions.

COE resourcing

Shortage of resources in COEs could lead to slow and inefficient disaster response operations.

COEN disaster management software and hardware

Lack of disaster management software and equipment (servers) restricts the ability of the COEN to efficiently manage disasters.

Alternate COEN

There is no alternate COEN, possibly creating serious coordination issues if the COEN is impacted by a disaster.

Tegucigalpa COE

Tegucigalpa COE lacks computers, phones, and other necessary equipment, putting a great number of people at risk during a disaster.

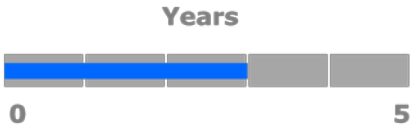
Recommendations

01 Increase equipment in ministry, department, and municipality COEs

Work with international partners to procure, install, and maintain the proper radio equipment to ensure that critical communications nodes – including government institutions, and departmental and municipal COEs – are connected by the national emergency radio communications system.

A. Identify the communication equipment required to connect to the national system.
B. Procure, install, and maintain the appropriate communications equipment through engagement with non-traditional disaster management partners.
C. Train personnel on use of the equipment. Possible sources include Japan International Cooperation Agency (JICA) and USAID.

Effort:



Complexity: Medium

Cost: $

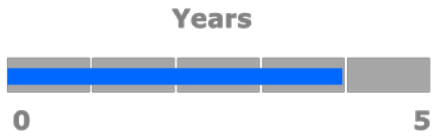
02 Develop national shelter system

Work with international partners to develop and implement a national shelter system documenting shelter location and information.

A. Identify information requirements and provide a geo-coded software solution to identify and monitor all emergency shelters in the country.
B. Information to be documented for each shelter should include (as a minimum): name; physical location (street address and/or latitude/longitude); type of building (school, church, government building, etc.); contact information for person responsible for the building; capacity of shelter; activated (yes/no); number of people staying at the shelter; and critical information about the shelter (in a flood zone, needs repair, etc.).

C. Examples of shelter reporting systems include the Dominican Republic (Defensa Civil) and the American Red Cross National Shelter System (NSS).

Effort:



Complexity: Medium

Cost: $

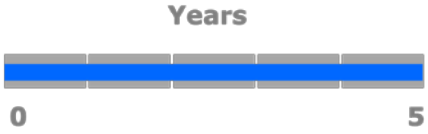
03

Develop a resource and relief supply inventory system

Develop and implement a nationwide resource and supply reporting system, to include: an integrated warehouse inventory system for all COPECO warehouses; a relief supply inventory system for all municipalities and NGOs; and requirements for government institutions at all levels to develop and maintain a list of resources to be utilized during disaster response operations.

A. Determine the needs of, procure, and implement an integrated inventory ordering and monitoring system for COPECO. The system should include the ability to barcode and scan all items in the inventory.
B. Develop and implement a web-based resource reporting system to track disaster relief supplies held by the central government, municipalities, and NGOs.
C. Establish a requirement and implement a strategy for all government institutions to identify resources that can be used in disaster response operations and submit the lists to COEN.
    a. The resource lists should include both disaster-specific resources (i.e., search and rescue equipment) and equipment normally used for other purposes (i.e., cargo trucks, earth-moving equipment, traffic-control helicopters, etc.). The goal is to identify government resources that can be diverted as needed to assist during a disaster.

Effort:



Complexity: Complex

Cost: $

04 Encourage organizations to support the COEN

Amend Ley del SINAGER to require all government institutions to provide support to the COEN during a disaster.

A. Identify all organizations active in disaster management.
B. Work with partners to amend Ley del SINAGER to ensure support requirements for organizations are clearly outlined.

Effort:

Complexity: Complex

Cost: $

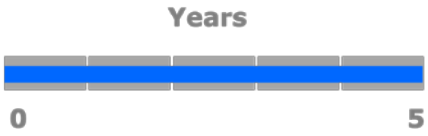
05 Increase COE resources

Work with partners to increase COE resources at all levels of government. Develop a standardized set of supplies required in each COE, then procure and store them securely until needed during a disaster.

A. Identify COE resource requirements at each administrative level and develop a standardized list.
B. Obtain equipment and funding to access and host disaster management software to increase COE efficiency and ensure access to the latest information.
    a. Train personnel to use and maintain software and hardware.
C. Designate an alternate COEN and ensure that procedures to activate the backup COEN is integrated into SOPs and exercises.
    a. Determine the requirements of the alternate COEN (size, internet capacity, resources needed (including backup power, water, and food).
D. Increase the capacity of the Tegucigalpa COE

a. Identify the resource requirements of the Tegucigalpa COE (particularly computers, phones, monitors, displays, plotters, and copiers).
b. Procure the equipment by working with partners.
c. Train COE personnel on their use.

Effort:



Complexity: Medium

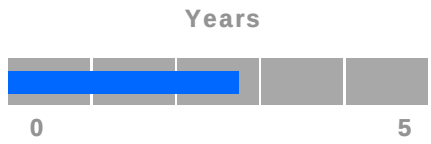
Cost: $$$

Recommendations

Recommendations

The following recommendations have been developed based on the RVA and CDM findings described in the previous sections. Refer to Table 8 for additional information on the evaluation criteria.

Table 10. Evaluation criteria for CDM recommendations.

Recommendations Evaluation Criteria		
Effort		Estimated length of time (in years) to complete the project once it is started.
Complexity	Low **Medium** High	Overall complexity based on the estimated staff time, resources, and collaboration required to complete the project.
Cost	$$$	Estimated annual cost of the project, not including salaries, based on a percentage of the current NDMO annual budget. $ approximates less than 1% of the annual operating budget. $$ approximates between 1% to 10% of annual operating budget. $$$ approximates more than 10% of the annual operating budget.

01 Develop and strengthen multi-stakeholder partnerships

A. Increase the capacity to conduct and update high-resolution hazard assessments with national coverage by developing partnerships with non-traditional stakeholders.
B. Strengthen strategic multi-stakeholder partnerships to expand disaster risk reduction resources to include non-traditional disaster management partners.

Effort:

Complexity: Low

Cost: $

02 Develop and adopt data standards and sharing

A. Ensure that hazards and vulnerability data are consistently defined, documented, updated, and applied in disaster management and disaster risk reduction.
B. Implement strategies to strengthen data sharing and transparency between all organizations active in disaster management to support evidence-based decision making.

Effort:

Complexity: Medium

Cost: $

03 Improve documentation of subnational economic resources

Provide a more comprehensive understanding of economic capacity (e.g., GDP, income, expenditures, remittances) at the department and local levels.

Effort:

Complexity: High

Cost: $$

04 Institutionalize multi-hazard planning

Support and encourage multi-hazard planning at the departmental and local levels, engaging the public in the process. This will reduce risk by both acknowledging hazard exposure and

increasing coping capacity, while improving governance in the context of disaster management.

Effort:

Complexity: Low

Cost: $

05 Develop a standardized training curriculum

Work with partners to provide funding and subject-matter expertise to quickly develop disaster management training courses that are specific to the needs of Honduras.

A. Identify the types of courses needed.
B. Determine courses are available to adapt to the needs of the country.
    a. Adapt the courses or develop new courses as needed.
    b. Training courses may be adapted from the IFRC, Salvation Army, USAID/OFDA, U.S. Federal Emergency Management Agency, regional organizations such as CEPREDENAC, and many national disaster management offices.
C. Establish minimum training requirements for disaster management staff at all administrative levels.
    a. Training requirements could include:
        i. Basic knowledge of laws and regulations;
        ii. The disaster management system;
        iii. Basic and advanced COE operations;
        iv. Information management; and
        v. Basic and advanced disaster management.

Effort:

Complexity: Medium

Cost: $$

06 Increase training capacity

Work with partners to continue current programs and develop new approaches to increase the training capacity of COPECO and CENICAC at all levels of government.

A. New approaches might include developing intern programs with universities, formalizing and recruiting volunteers, and developing closer ties with the private sector.

Effort:

Complexity: Medium

Cost: $

07 Increase communications during exercises

Establish a requirement for all exercises to include communication with all disaster management stakeholders as part of the exercise objectives.

Effort:

Complexity: Simple

Cost: $

08 Exercise documentation

Establish a centralized repository to collect, collate, and maintain exercise data from throughout the country, including exercises conducted at all levels of governmental and by NGOs.

A. Develop and implement an exercise system that collects and maintains data from all exercises conducted in Honduras.
B. Data fields could include: type of exercise, number of exercise participants, names of organizations that participated in the exercise, exercise objectives, and exercise results (lessons learned, after-action review, etc.).

Effort:

Complexity: Simple

Cost: $

09 Conduct full-scale exercises

Work with international partners to develop and implement an exercise program that includes periodic full-scale exercises.

A. Due to the resources and staff support required to support planning for and executing full-scale exercises (FSE), FSEs should only occur once every 3 or 4 years.
B. Implement a national exercise program that includes a cycle of tabletop exercises (TTXs), functional exercises (FE), and FSEs, ensuring basic skills are established and built upon each year of the cycle.
C. Assistance with developing national exercise programs can be requested through UNOCHA and USAID.

Effort:

Complexity: Complex

Cost: $$

10 Develop national volunteer system

Work with national and international partners to develop a national volunteer system, including processes for intake, registration, training, equipping, managing, and maintaining contact with volunteers.

A. Develop a system to: identify needs; advertise for volunteers with needed skills; register, train, equip, and incorporate volunteers into operations; and document all volunteers.
B. Explore existing resources:
    a. Organizations with robust volunteer programs include many NGOs, such as the Red Cross and Salvation Armies, and national disaster management offices, including Defensa Civil in the Dominican Republic.
    b. The Community Emergency Response Team (CERT) program is available through http://www.ready.gov.

Effort:

Complexity: Complex

Cost: $$

11 Operationalize FONAPRE

Develop and implement regulations to operationalize FONAPRE.

A. Identify required mechanisms to implement regulations.
B. Procure subject-matter expertise to formulate regulations, circulate them for collaboration, and ensure they are approved.

Effort:

Complexity: Complex

Cost: $

12 Explore risk-transfer mechanism

Explore and consider implementing or joining a risk-transfer mechanism such as implementing an insurance program, catastrophe bond, or contingent-credit facility.

A. Work with partners to determine the need for implementing risk-transfer mechanisms.
B. If needed, work with international experts to determine the best type of risk-transfer mechanism to implement.
C. Work with partners to fund and implement.
D. Assistance with implementing risk-transfer mechanisms can be provided by the IDB, the World Bank, and the IMF.

Effort:

Complexity: Complex

Cost: $$$

13 Prevention officers

Amend Ley del SINAGER to ensure prevention officers are responsible for disaster management functions within their organizations.

A. Establish new responsibilities for the prevention officers that support CDM efforts.
B. Include in latest amendment to the Ley del SINAGER.
C. Work with appropriate personnel experts to insert new requirements into the job descriptions of the incumbents.
D. Train the prevention officers on their new duties.

Effort:

Complexity: Medium

Cost: $

14 Socialize Ley del SINAGER

Work with partners to develop and fund a program to socialize and implement Ley del SINAGER.

A. Identify shortfalls in the implementation of Ley del SINAGER across all levels of government.
B. Develop strategies (including training, resources, etc.) to fill the shortfalls.
C. Implement the strategies to ensure all levels of government understand the requirements of Ley del SINAGER.

Effort:

Complexity: Medium

Cost: $$

15 Support local CODEs

Work with international partners to organize, train, and provide continuing support to local CODEs.

A. Identify the need for local CODEs (including CODELEs, CODECEs, and CODECELs).
B. Develop a strategy to establish, equip, and train local COSEs.
C. Implement and sustain the strategy for at least five years.

Effort:

Complexity: Medium

Cost: $$

16 Support CODEMs

Continue to work with partners to group municipalities and to develop, train, and provide resources to CODEMs responsible for multiple municipalities.

A. Identify municipalities that have insufficient resources to establish and maintain a CODEM.
B. Work with municipal leaders to group neighboring municipalities.
C. Develop and implement a strategy to train and equip the CODEMs.
D. Assist the CODEM to develop, test, and implement a comprehensive disaster management plan.

Effort:

Complexity: Medium

Cost: $$

17 Increase COPECO presence

Work with international partners to provide stand-alone facilities, equipment, and supplies in all departments.

A. Provide logistical and administrative areas (including an EOC) to the departments that lack COPECO resources.
    a. Utilize the RVA's multi-hazard risk index to prioritize departments.

Effort:

Complexity: Medium

Cost: $

18 Complete the NRMP

Prioritize completing the national risk management plan and socialize the plan with all disaster management partners.

A. Develop a strategy to receive comments on the draft NRMP from partner organizations (including those discovered during exercises).
B. Review and include valid comments in the plan.
    a. Work with the private sector.
    b. Develop and implement a strategy to include the private sector in the planning process for the national response management plan.
C. The private sector could be represented by Consejo Hondureño de la Empresa Privada (COHEP), or by a combination of COHEP and other trade organizations.
D. Publish, socialize, and implement the NRMP.
E. Create incentives for organizations to implement the NRMP in a timely manner.

Effort:

Complexity: Simple

Cost: $

19 Create a disaster management planning unit at COPECO

Organize and provide staffing and resources for a disaster management planning unit within COPECO.

A. Determine the requirements for disaster management planning within COPECO.
B. Identify resource needs for the office (personnel, space, and equipment).

C. Identify resource providers from within the organization.
D. Establish the planning function.
E. Provide training to members of the organization.

Effort:

Complexity: Medium

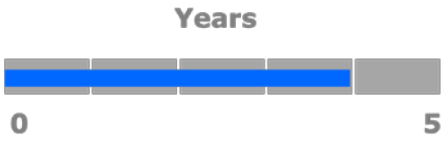
Cost: $$

20 Develop ministry, region, and department response plans

Work with international partners to develop response plans at the ministry, region, and department level.

A. Establish a requirement for ministries, as well as COPECO regions and departments, to develop and implement disaster response plans based on the national plan.
B. Develop and implement a strategy to train personnel on planning requirements and processes, and assist with developing response plans at the ministry, region, and department levels.
    a. Provide a template to stakeholders to assist with plan development.

Effort:



Complexity: Medium

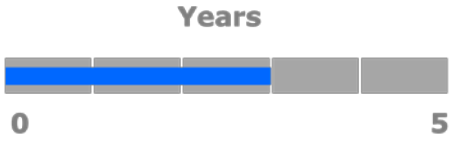
Cost: $

21 Develop a repository for plans

Develop and make available a central repository where all organizations active in disaster management can post their plans and receive copies of other organizations' plans.

A. Establish a central archive for disaster management plans that is available to all partners.
B. Allow organizations to post and download plans as needed.

Effort:



Complexity: Simple

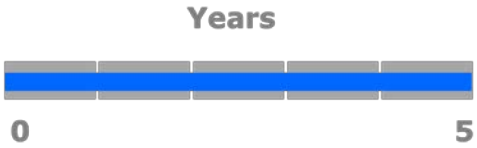
Cost: $

22 Develop municipal disaster plans

Identify municipalities without disaster plans and work with partners and the international community to develop a strategy to complete required plans.

A. Develop and implement a strategy to identify municipalities without adequate disaster response plans.
B. Train personnel on planning requirements and processes.
C. Assist with developing needed municipal disaster response plans.

Effort:



Complexity: Medium

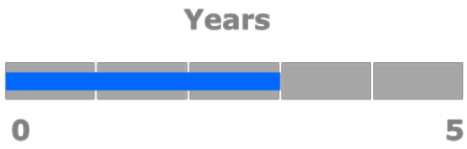
Cost: $$

23 Increase NGO coordination

Work with government and NGO partners to increase coordination among NGOs throughout the disaster management system.

A. Develop a strategy to bring all partners together on an annual basis.
    a. Develop a centralized repository that documents NGO activities, including roles and responsibilities during different phases of disaster management.
    b. Identify resource locations and potential mutual-aid agreements.
B. Conduct a disaster response/relief exercise.

Effort:



Complexity: Medium

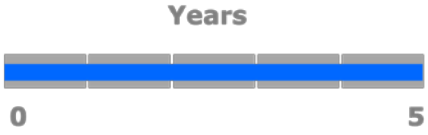
Cost: $

24 Encourage private sector and critical resource provider engagement

Work with national and international partners to develop programs to encourage engagement of the private sector and critical resource providers (power, water, sewer, telecommunications, etc.) in emergency committees at all levels.

A. Develop and implement a strategy to identify private sector groups and critical resource providers that should be integrated into the disaster management system at all levels of government.
    a. Incorporate the representatives into the CODEs.
    b. Include the private sector and critical resource representatives in all phases of disaster management.
B. Example: The Stephenson Disaster Management Institute at Louisiana State University (SDMI.LSU.edu) runs the Center for Disaster Preparedness, a leader in incorporating the private sector in disaster management.

Effort:



Complexity: Complex

Cost: $

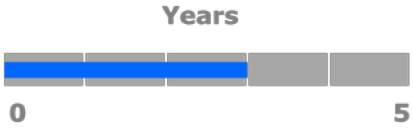
25 Increase equipment in ministry, department, and municipality COEs

Work with international partners to procure, install, and maintain the proper radio equipment to ensure that critical communications nodes – including government institutions,

and departmental and municipal COEs – are connected by the national emergency radio communications system.

A. Identify the communication equipment required to connect to the national system.
B. Procure, install, and maintain the appropriate communications equipment through engagement with non-traditional disaster management partners.
C. Train personnel on use of the equipment. Possible sources include Japan International Cooperation Agency (JICA) and USAID.

Effort:



Complexity: Medium

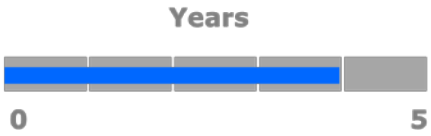
Cost: $

26 Develop national shelter system

Work with international partners to develop and implement a national shelter system documenting shelter location and information.

A. Identify information requirements and provide a geo-coded software solution to identify and monitor all emergency shelters in the country.
B. Information to be documented for each shelter should include (as a minimum): name; physical location (street address and/or latitude/longitude); type of building (school, church, government building, etc.); contact information for person responsible for the building; capacity of shelter; activated (yes/no); number of people staying at the shelter; and critical information about the shelter (in a flood zone, needs repair, etc.).
C. Examples of shelter reporting systems include the Dominican Republic (Defensa Civil) and the American Red Cross National Shelter System (NSS).

Effort:



Complexity: Medium

Cost: $

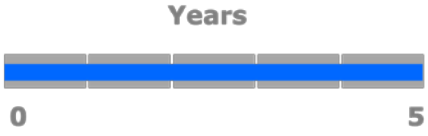
27

Develop a resource and relief supply inventory system

Develop and implement a nationwide resource and supply reporting system, to include: an integrated warehouse inventory system for all COPECO warehouses; a relief supply inventory system for all municipalities and NGOs; and requirements for government institutions at all levels to develop and maintain a list of resources to be utilized during disaster response operations.

A. Determine the needs of, procure, and implement an integrated inventory ordering and monitoring system for COPECO. The system should include the ability to barcode and scan all items in the inventory.
B. Develop and implement a web-based resource reporting system to track disaster relief supplies held by the central government, municipalities, and NGOs.
C. Establish a requirement and implement a strategy for all government institutions to identify resources that can be used in disaster response operations and submit the lists to COEN.
    a. The resource lists should include both disaster-specific resources (i.e., search and rescue equipment) and equipment normally used for other purposes (i.e., cargo trucks, earth-moving equipment, traffic-control helicopters, etc.). The goal is to identify government resources that can be diverted as needed to assist during a disaster.

Effort:



Complexity: Complex

Cost: $

28 Encourage organizations to support the COEN

Amend Ley del SINAGER to require all government institutions to provide support to the COEN during a disaster.

A. Identify all organizations active in disaster management.
B. Work with partners to amend Ley del SINAGER to ensure support requirements for organizations are clearly outlined.

Effort:

Complexity: Complex

Cost: $

29 Increase COE resources

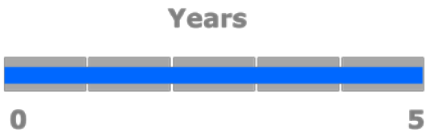
Work with partners to increase COE resources at all levels of government. Develop a standardized set of supplies required in each COE, then procure and store them securely until needed during a disaster.

A. Identify COE resource requirements at each administrative level and develop a standardized list.
B. Obtain equipment and funding to access and host disaster management software to increase COE efficiency and ensure access to the latest information.
    a. Train personnel to use and maintain software and hardware.
C. Designate an alternate COEN and ensure that procedures to activate the backup COEN is integrated into SOPs and exercises.
    a. Determine the requirements of the alternate COEN (size, internet capacity, resources needed (including backup power, water, and food).
D. Increase the capacity of the Tegucigalpa COE
    a. Identify the resource requirements of the Tegucigalpa COE (particularly computers, phones, monitors, displays, plotters, and copiers).

b. Procure the equipment by working with partners.

E. Train COE personnel on their use.

Effort:



Complexity: Medium

Cost: $$$

Conclusion

The goal of the Honduras NDPBA was to develop and conduct a baseline assessment focused on risk and vulnerability identification, and evaluation of existing disaster management capacities, leading to enhanced resilience to future hazards. Using two concurrent, stakeholder-driven analyses, Risk and Vulnerability Assessment (RVA) and Comprehensive Disaster Management (CDM), the Honduras NDPBA results provide a comprehensive understanding of the strengths and challenges for managing and reducing disaster risk in Honduras. Emerging from these results are actionable recommendations to increase disaster management capabilities and guide investments with an aim to strengthen overall resilience.

The goal of the RVA was to characterize the elements of multi-hazard risk and estimate the likelihood of a negative occurrence given exposure to natural hazards. RVA results describe the collective characteristics of each department that predispose it to detrimental hazard impacts, including an examination of Multi-Hazard Exposure, Vulnerability, and Coping Capacity.

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 subnational level. In summarizing the results of the RVA across Honduras, prevalent drivers of risk included Clean Water Vulnerability, Economic Constraints, Access to Information, Health Vulnerabilities, Infrastructure, and Gender Inequality. Furthermore, Honduras' geographic location makes it susceptible to numerous significant hazards.

The goal of disaster management is to create safer communities and implement programs that protect human life, reduce losses, and promote rapid recovery. Using a mixed-methods approach, the CDM assessment examines preparedness and response capacities and capabilities in Honduras. CDM provides actionable recommendations that draw on existing strengths and address possible gaps that affect the delivery of effective disaster management.

Honduras has a strong disaster management system with competent leadership and an awareness of their limitations and challenges. CENICAC has taken an active role in identifying training and exercise programs. By addressing these training gaps, along with improving emergency communication systems and increasing capacity at the departmental and municipal levels, Honduras can make great strides in comprehensive disaster management.

The RVA and CDM components of the NDPBA are complementary, providing valuable context for increasing resilience in Honduras. The RVA helps disaster managers decide where and how to focus limited resources, and enables them to anticipate the severity of impacts and the need for response activities, such as evacuation and sheltering. The CDM assessment characterizes the structure and capacity of the country's disaster management system through which DRR activities will take place.

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

CDM Recommendations – Sample 5-Year Plan

Recommendations were prioritized for implementation over a five-year period based on feedback received from stakeholders at the Final Workshop and Knowledge Exchange (see Figure 44).

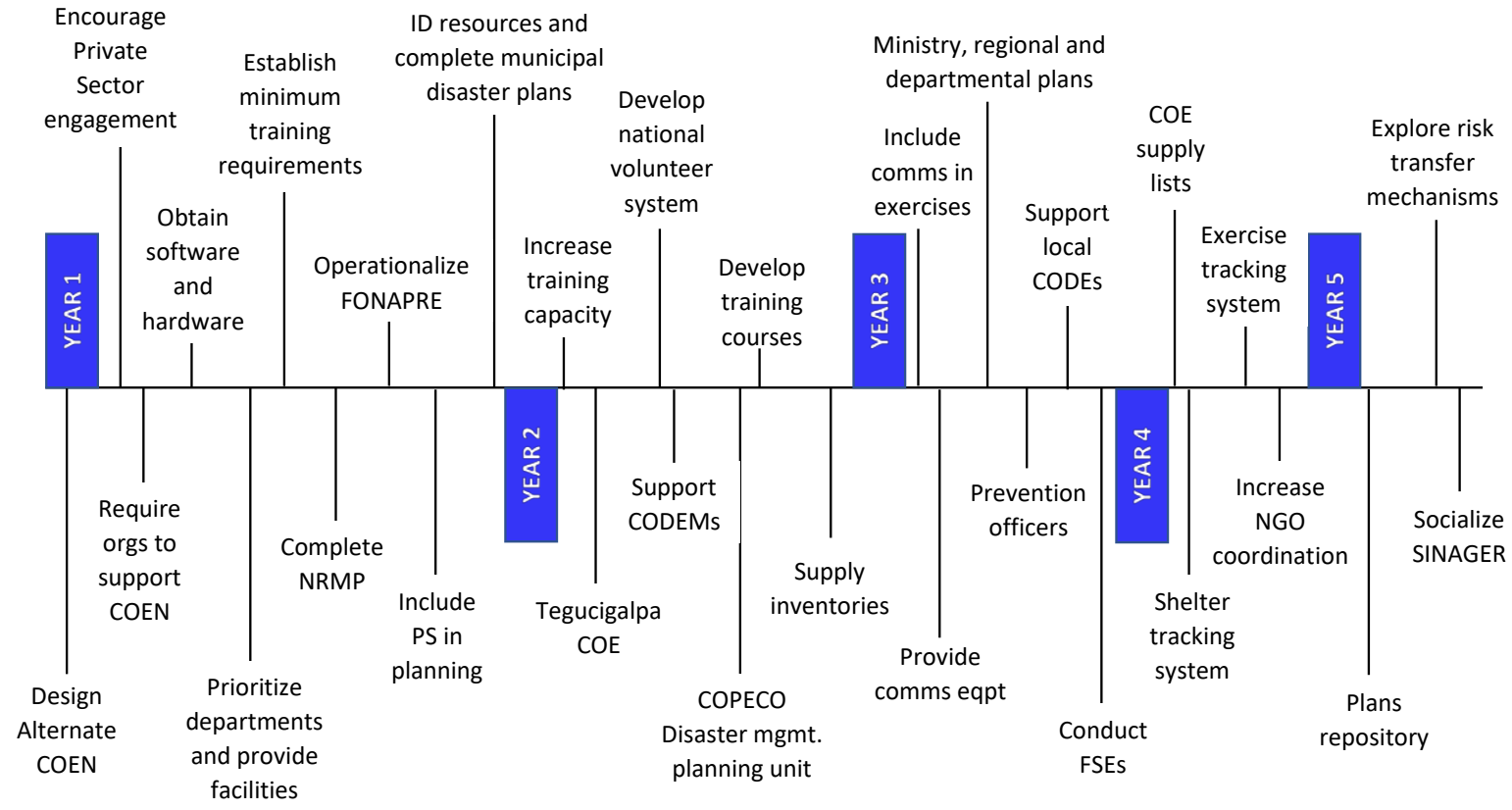


Figure 44. Sample 5-year CDM plan.

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Atlántida

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Atlántida

Department Capital: La Ceiba
Area: 4,372 km^2
Atlántida is located on the northern Caribbean coast of Honduras. Atlántida's economy is primarily agriculture, livestock, commerce, and tourism. Historically, agricultural production in Atlántida is linked to the Standard Fruit Company (now Dole), which has a significant role in the exportation of produce, primarily bananas.

464,288
Population (2017)

47.9%
Population in Poverty

10.5%
Illiterate Adult Population

74.8 yrs
Average Life Expectancy

91.7%
Household Access to Piped Water

Municipality	Population
Arizona	24,578
El Porvenir	24,228
Esparta	19,364
Jutiapa	36,207
La Ceiba	211,327
La Másica	31,034
San Francisco	15,531
Tela	102,018

Multi-Hazard Risk Rank: Low (12 of 18)

Lack of Resilience Rank: Very Low (15 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Very Low		High		Very Low		High	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.446	12	0.400	15	0.539	6	0.363	15	0.563	6

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 6 of 18 Departments (Score: 0.539)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

100%
Cyclone
445,515 People

5%
Seismic
21,639 People

0%
Drought
0 People

67%
Inland Flood
298,325 People

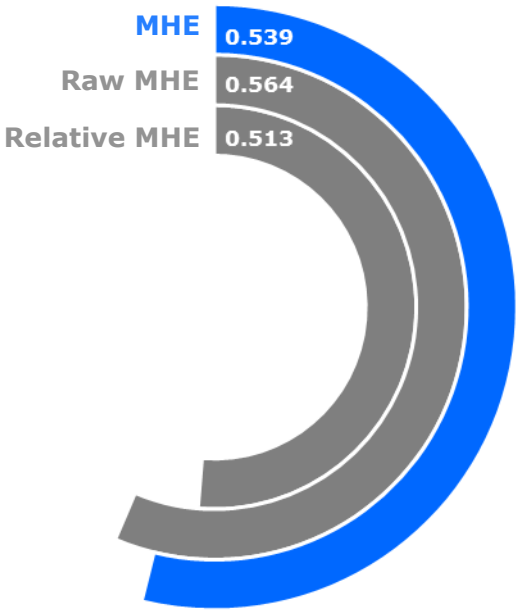
Atlántida has the highest percentage of residents exposed to inland flooding in the country

5%
Landslide
21,106 People

45%
Coastal Flood
202,593 People

Case Study Significant Flooding in Atlántida

Atlántida has experienced significant flooding four times in the last five years, and most recently in early 2017 when The Permanent Commission of Contingencies (COPECO) reported that at least 7,500 people were affected by heavy rains. Many people became isolated in the communities of Urraco, Esparta, Jutiapa, and La Ceiba. At least 44 houses were affected. Accumulated rainfall reached average values of 150-200 mm near the coast and 300 mm in the mountains near the coast.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 15 of 18 Departments (Score: 0.363) Vulnerability in Atlántida is influenced by moderate scores in Vulnerable Health Status and Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

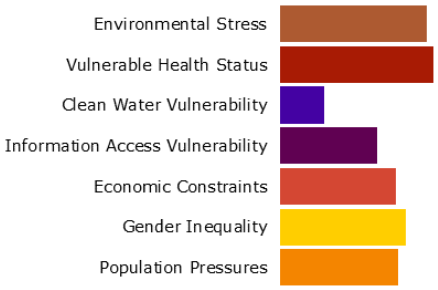


Table 3. Component scores for each vulnerability subcomponent.

Environmental Stress	**36.1%** Forest Loss Due to Pine Beetle Plague	**0%** Water Shortage Area						
Vulnerable Health Status	**21** Infant Mortality Rate	**187.4** Maternal Mortality Ratio	**74.8** Life Expectancy (years)	**0.3%** Acute Malnutrition Rate	**2.1%** Population Disabled	**0.561** Communicable Disease Sub-Index[4]	**0.516** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**91.7%** Households Access to Piped Water	**83.2%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**10.5%** Adult Illiteracy	**6.5** Average Years of Schooling	**94.1%** Enrollment in Basic Education	**87.5%** Households without Internet	**24.8 %** Households without TV	**32.1%** Households without Radio	
Economic Constraints	**0.69** Economic Dependency Ratio	**47.9%** Population in Poverty	**0.29** GINI Coefficient				
Gender Inequality	**0.82** Ratio of Female to Male Land Ownership Rate	**0.86** Ratio of Female to Male Home Ownership Rate	**0.32** Ratio Female to Male Economic Activity	**1.06** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**2.2%** Average Annual Population Change	**4.6%** Average Annual Urban Population Change					

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

[4] **Sub-indexes:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 6 of 18 Departments (Score: 0.563) Atlántida exhibits weaker Coping Capacity in the areas of Economic Capacity and Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

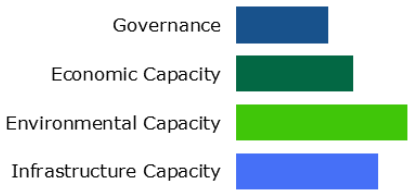


Table 4. Component scores for each coping capacity subcomponent.

Governance	**88.3** Homicides per 100k Persons	**308.6** Sexual Violence and Assault per 100k Persons	**30.1%** Households with Public Garbage Collection	**55.9%** Voter Participation (2013 Election)		
Economic Capacity	**33.2%** Economic Activity Rate	**97.1%** Employment Rate	**26.6%** Population in Highest Wealth Quintile			
Environmental Capacity	**43.0%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**5.1** Hospital Beds per 10,000 Persons	**3.2** Physicians per 10,000 Persons	**9.5** Nurses per 10,000 Persons	**23.7 km** Average Distance to Nearest Hospital	**88.9%** Children Completed Immunization Schedule	
Communications Capacity	**18.7%** Households with Access to Fixed Phone Line	**70.5%** Households with Access to Mobile Phone				
Transportation Capacity	**22.5 km** Average Distance to Nearest Port or Airport	**15.5 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 15 of 18 Departments (Score: 0.400)

Atlántida's Lack of Resilience score and ranking are due to very low Vulnerability combined with high Coping Capacity scores.

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

Governance	**Economic Capacity**	**Vulnerable Health Status**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 12 of 18 Departments (Score: 0.446)

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

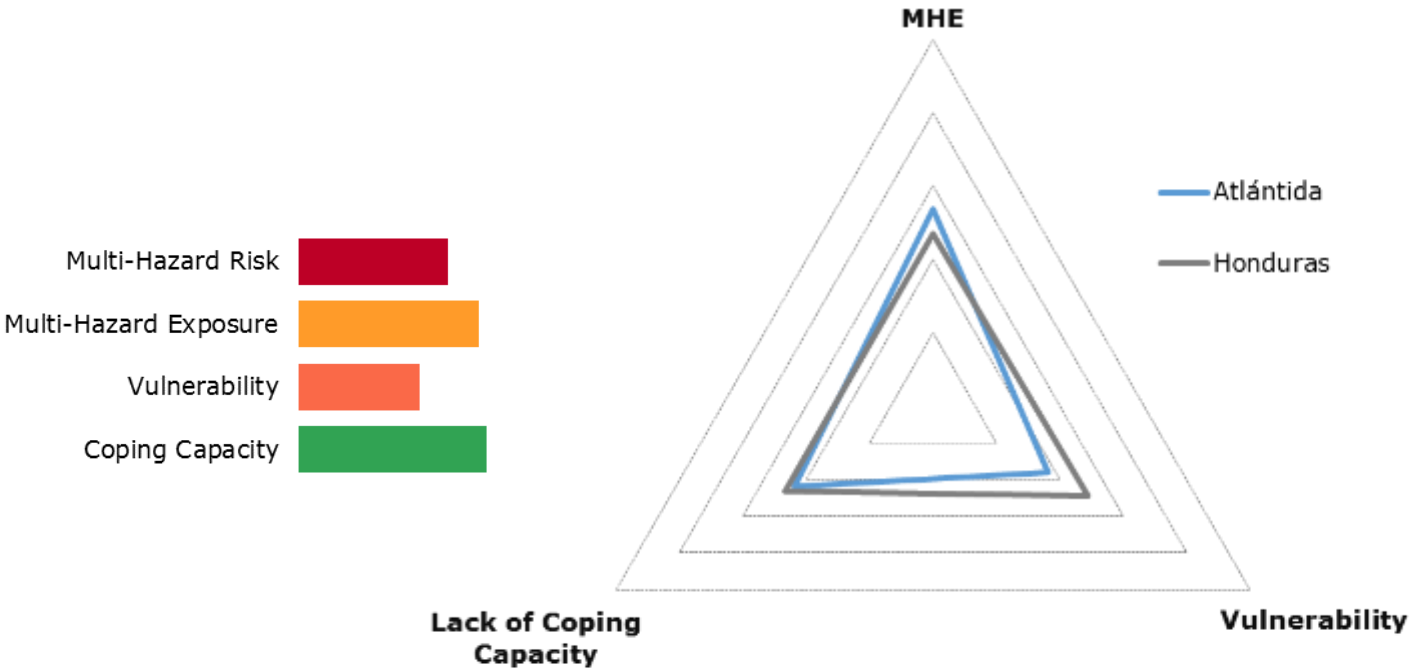


Figure 45. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

Low clean water vulnerability

Ranked 16 of 18 departments, low clean water vulnerability indicates that the population has access to high water quality and good containment systems, reducing susceptibility to disaster.

Low overall vulnerability

Ranked 15 of 18 departments, low overall vulnerability indicates that Atlántida department is less susceptible to the negative impacts of a disaster and will likely recover faster after an event.

Recommendations

01

Increase governance

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

02

Increase business development

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

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Choluteca

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Choluteca

Department Capital: Choluteca
Area: 4,360 km^2
Choluteca is the southernmost department of Honduras, with its coast on the Gulf of Fonseca, sharing a border with the Republic of Nicaragua to the east and south. Economic activity is based in agriculture, livestock, fishing, and trade. The department has the second highest Clean Water Vulnerability in Honduras.

458,871 Population (2017)

61.9% Population in Poverty

17.7% Illiterate Adult Population

75.3 yrs Average Life Expectancy

76.1% Household Access to Piped Water

Municipality	Population
Apacilagua	9,093
Choluteca	162,125
Concepción de María	27,687
Duyure	3,537
El Corpus	25,591
El Triunfo	46,490
Marcovia	47,113
Morolica	5,012
Namasigue	32,096
Orocuina	18,676
Pespire	24,063
San Antonio de Flores	5,470
San Isidro	3,793
San José	4,633
San Marcos de Colón	28,679
Santa Ana de Yusguare	14,813

Multi-Hazard Risk Rank: Very Low (15 of 18)

Lack of Resilience Rank: Low (12 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Very Low		Very Low		Low		Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.422	15	0.476	12	0.315	15	0.459	13	0.508	12

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 15 of 18 Departments (Score: 0.315)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone
0%
0 People

Seismic
100%
522,611 People

Drought
16%
81,554 People

Inland Flood
18%
92,647 People

Choluteca experienced 190mm of rain in 24 hours from 10-11 June 2017, resulting in 2 deaths and 250 people forced from their homes.

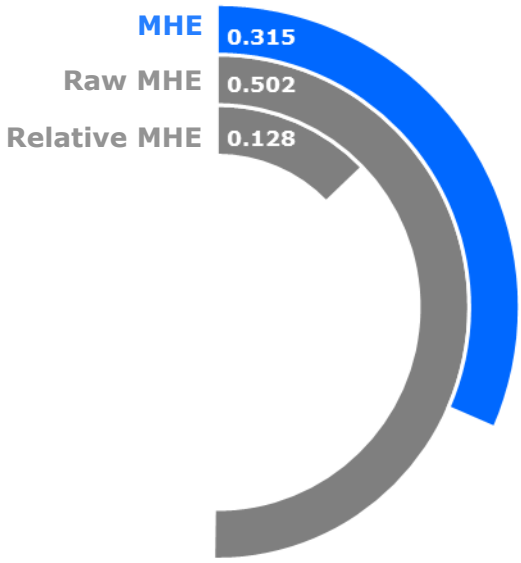
Landslide
10%
51,326 People

In July 2014, landslides caused a mine to collapse, killing 8 miners.

Coastal Flood
8%
43,066 People

Case Study: Pan American Highway

The department's capital city, Choluteca, is well-connected to the rest of Central America via the Pan American Highway, which passes directly through the city. The Pan American Highway is a 30,000-km road along the Pacific coast, stretching from Peru to Canada. Access to the highway increased the department's ability to receive goods and services during response and recovery activities.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 13 of 18 Departments (Score: 0.459) Vulnerability in Choluteca is strongly influenced by Clean Water Vulnerability, Economic Constraints, and Information Access Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

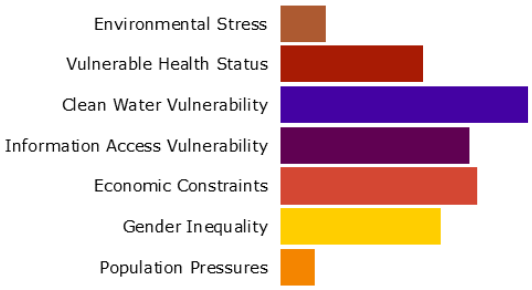


Table 3. Component scores for each vulnerability subcomponent.

Environmental Stress	**0.6%** Forest Loss Due to Pine Beetle Plague	**17.4%** Water Shortage Area						
Vulnerable Health Status	**18.7** Infant Mortality Rate	**95.1** Maternal Mortality Ratio	**75.3** Life Expectancy (years)	**2.3%** Acute Malnutrition Rate	**2.6%** Population Disabled	**0.500** Communicable Disease Sub-Index[4]	**0.313** Non-Communicable Disease Sub-Index [4]	
Clean Water Vulnerability	**76.1%** Households Access to Piped Water	**41.5%** Households Connected to Sewer or Septic System						
Information Access Vulnerability	**17.7%** Adult Illiteracy	**6.1** Average Years of Schooling	**93.2%** Enrollment in Basic Education	**95.2%** Households without Internet	**44.6%** Households without TV	**39.9%** Households without Radio		
Economic Constraints	**0.69** Economic Dependency Ratio	**61.9%** Population in Poverty	**0.41** GINI Coefficient					
Gender Inequality	**0.44** Ratio of Female to Male Land Ownership Rate	**0.92** Ratio of Female to Male Home Ownership Rate	**0.23** Ratio Female to Male Economic Activity	**1.03** Ratio of Female to Male Secondary Enrollment				
Population Pressures	**1.0%** Average Annual Population Change	**4.6%** Average Annual Urban Population Change						

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 12 of 18 Departments (Score: 0.508) Choluteca exhibits weaker Coping Capacity in the areas of Economic Capacity, Environmental Capacity, and Communications Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

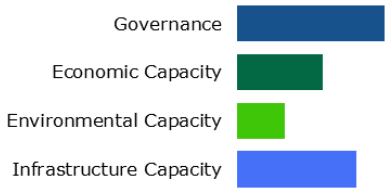


Table 4: Component scores for each coping capacity subcomponent.

Governance	**22.3** Homicides per 100k Persons	**165.0** Sexual Violence and Assault per 100k Persons	**17.1%** Households with Public Garbage Collection	**73.6%** Voter Participation (2013 Election)		
Economic Capacity	**32.5%** Economic Activity Rate	**97.6%** Employment Rate	**9.7%** Population in Highest Wealth Quintile			
Environmental Capacity	**11.4%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**4.2** Hospital Beds per 10,000 Persons	**2.5** Physicians per 10,000 Persons	**9.1** Nurses per 10,000 Persons	**26.8 km** Average Distance to Nearest Hospital	**92.4%** Children Completed Immunization Schedule	
Communications Capacity	**12.3%** Households with Access to Fixed Phone Line	**54.2%** Households with Access to Mobile Phone				
Transportation Capacity	**23.1 km** Average Distance to Nearest Port or Airport	**23.1 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 12 of 18 Departments (Score: 0.476)

Choluteca's Lack of Resilience score and ranking are due to low Vulnerability combined with low Coping Capacity scores.

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

Clean Water Vulnerability	**Economic Constraints**	**Economic Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 15 of 18 Departments (Score: 0.422)

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

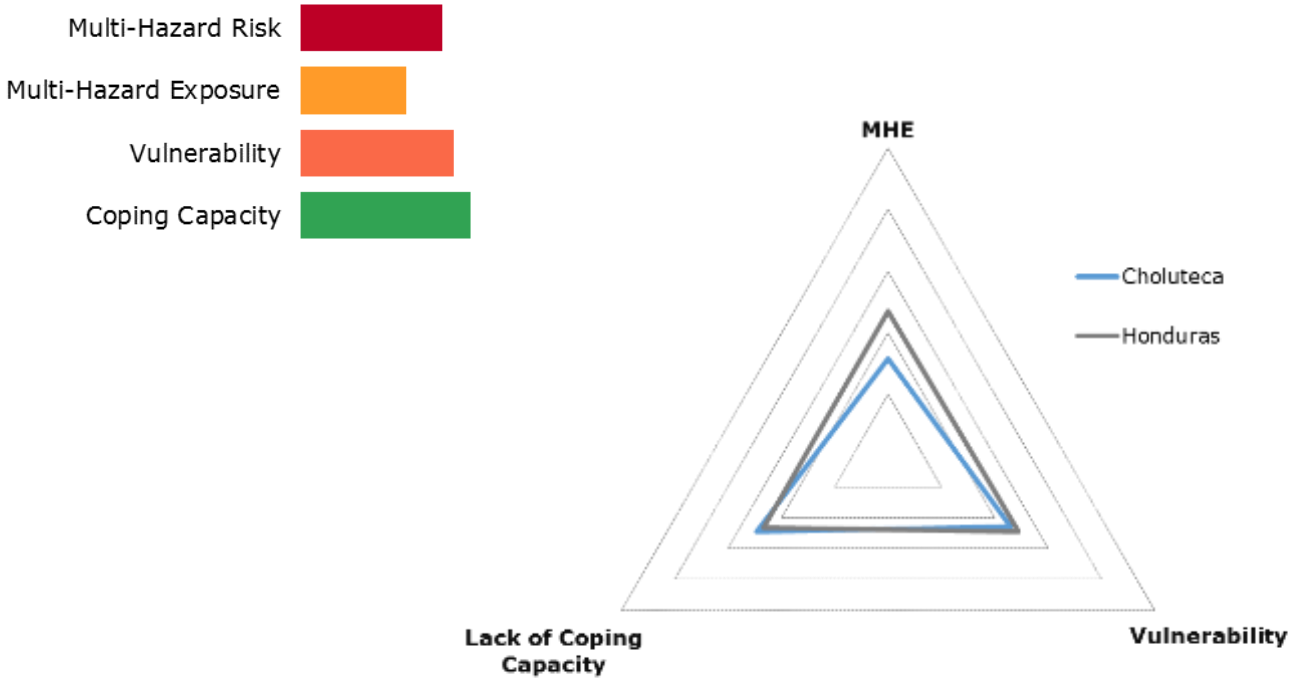


Figure 46. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

Lowest population pressures

Ranked 18 of 18 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

High overall governance

Ranked 4 of 18 departments, high governance could facilitate the implementation of disaster-management initiatives into departmental and municipal communities.

Recommendations

01

Invest in water infrastructure

Increased availability of clean water sources and proper sanitation services will decrease vulnerability and allow for quicker recovery in the event of disaster.

02

Provide business opportunities and education

Institute programs to provide independent economic opportunities in the department. Increased economic capacity will decrease vulnerability in emergencies.

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Colón

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Colón

Department Capital: Trujillo
Area: 8,249 km^2
Colón is located on the northern Caribbean coast of Honduras, west of Gracias a Dios. The department is home to a substantial Garifuna population. Colón's economy is based primarily in cattle ranching and agriculture.

330,105
Population (2017)

54.4%
Population in Poverty

15.4%
Illiterate Adult Population

75.4 yrs
Average Life Expectancy

90.6%
Household Access to Piped Water

Municipality	Population
Balfate	13,326
Bonito Oriental	29,313
Iriona	21,716
Limón	15,112
Sabá	31,402
Santa Fe	5,376
Santa Rosa de Aguán	5,498
Sonaguera	45,073
Tocoa	98,602
Trujillo	64,688

Multi-Hazard Risk Rank: Very Low (16 of 18)

Lack of Resilience Rank: Low (13 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Low		Low		Low		Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.422	16	0.470	13	0.325	13	0.409	14	0.468	14

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 13 of 18 Departments (Score 0.325)

Table 2. Estimated ambient population[2] exposed to each hazard (2014)

Cyclone
100%
308,180 People

Seismic
0%
0 People

Drought
0%
0 People

Inland Flood
59%
180,692 People

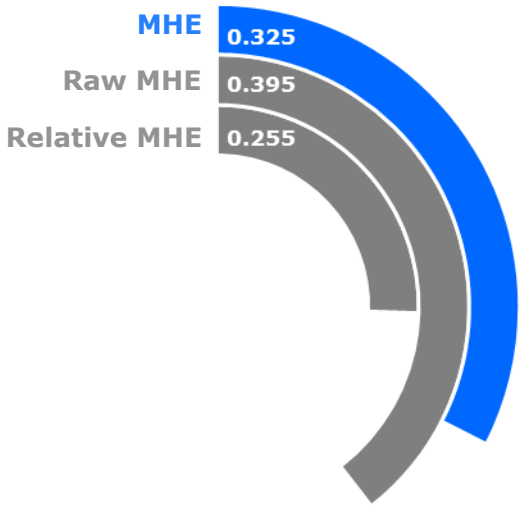
Heavy rainfall in January 2014 caused thousands of people in the town of Santa Fe to be stranded.

Landslide
5%
16,527 People

Coastal Flood
11%
32,913 People

Case Study: Santa Fe Evacuation Plan

The municipality of Santa Fe has a well-rehearsed disaster-evacuation plan. Coordinators are assigned to warn homes in case evacuation is required. They have posted signs with escape routes and warnings to not cross the river based on water levels. They have built an evacuation center up the mountain from the town to escape flood waters.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 14 of 18 Departments (Score: 0.409) Vulnerability in Colón is influenced by Information Access Vulnerability, Vulnerable Health Status, Population Pressures, and Gender Inequality. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

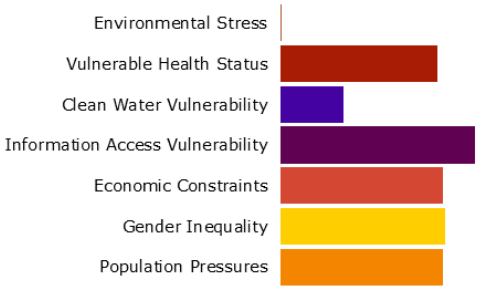


Table 3: Component scores for each vulnerability subcomponent.

Environmental Stress	**0.1%** Forest Loss Due to Pine Beetle Plague	**0%** Water Shortage Area					
Vulnerable Health Status	**16.5** Infant Mortality Rate	**249** Maternal Mortality Ratio	**75.4** Life Expectancy (years)	**1.3%** Acute Malnutrition Rate	**2.6%** Population Disabled	**0.404** Communicable Disease Sub-Index[4]	**0.454** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**90.6%** Households Access to Piped Water	**77.8%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**15.4%** Adult Illiteracy	**6.0** Average Years of Schooling	**90.7%** Enrollment in Basic Education	**95.2%** Households without Internet	**35.9%** Households without TV	**42.2%** Households without Radio	
Economic Constraints	**0.77** Economic Dependency Ratio	**54.4%** Population in Poverty	**0.29** GINI Coefficient				
Gender Inequality	**0.58** Ratio of Female to Male Land Ownership Rate	**0.91** Ratio of Female to Male Home Ownership Rate	**0.25** Ratio Female to Male Economic Activity	**1.07** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**2.1%** Average Annual Population Change	**7.8%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 14 of 18 Departments (Score: 0.468) Colón exhibits weaker Coping Capacity in the areas of Economic Capacity, Governance, and Infrastructure (especially Transportation and Health Care). The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

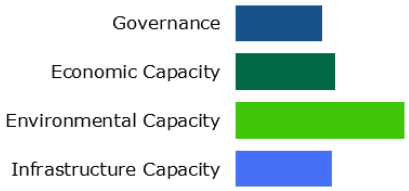


Table 4: Component scores for each coping capacity subcomponent.

Governance	**65.0** Homicides per 100k Persons	**129.1** Sexual Violence and Assault per 100k Persons	**7.8%** Households with Public Garbage Collection	**60.5%** Voter Participation (2013 Election)		
Economic Capacity	**32.7%** Economic Activity Rate	**97.8%** Employment Rate	**14.5%** Population in Highest Wealth Quintile			
Environmental Capacity	**42.3%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**4.3** Hospital Beds per 10,000 Persons	**2.0** Physicians per 10,000 Persons	**9.0** Nurses per 10,000 Persons	**50.1 km** Average Distance to Nearest Hospital	**86.1%** Children Completed Immunization Schedule	
Communications Capacity	**12.8%** Households with Access to Fixed Phone Line	**65.8%** Households with Access to Mobile Phone				
Transportation Capacity	**36.6 km** Average Distance to Nearest Port or Airport	**7.7 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 13 of 18 Departments (Score: 0.470)

Colón's Lack of Resilience score and ranking are due to low Vulnerability combined with low Coping Capacity scores.

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

Governance	**Economic Capacity**	**Infrastructure (Transportation and Health Care)**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 16 of 18 Departments (Score: 0.422)

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

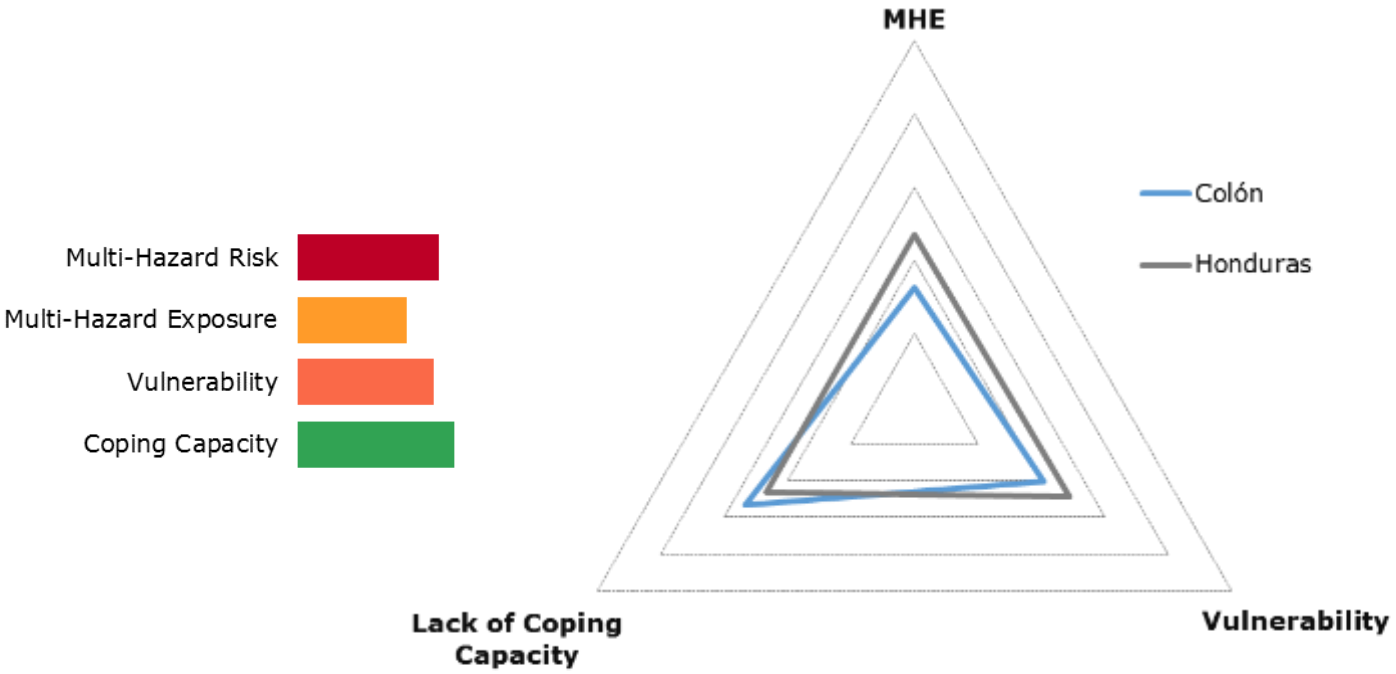


Figure 47. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

Low overall vulnerability

Ranked 14 of 18 departments, low overall vulnerability indicates that Colón department is less susceptible to the negative impacts of a disaster and will likely recover faster after an event.

Low clean water vulnerability

Ranked 15 of 18 departments, low clean water vulnerability indicates that a population has access to high water quality and good containment systems, reducing susceptibility to disaster.

Low environmental stress

Ranked 16 of 18 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Increase government services

Investments in public services such as garbage collection, fire, and police will increase coping capacity and the department's ability to handle crises.

02

Invest in transportation infrastructure

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

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Comayagua

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Comayagua

Department Capital: Comayagua
Area: 5,124 km^2
Comayagua is located in central Honduras. The economy is based primarily in livestock and agriculture. Between the 2001 and 2013 censuses, Comayagua exhibited the second largest population growth rate (40%) in the country. Soto Cano Air Base is located within the department.

531,676 Population (2017)

56.2% Population in Poverty

14.8% Illiterate Adult Population

76.5 yrs Average Life Expectancy

86.6% Household Access to Piped Water

Municipality	Population
Ajuterique	11,655
Comayagua	159,904
El Rosario	31,339
Esquías	21,514
La Libertad	28,275
La Trinidad	4,755
Lamaní	7,239
Las Lajas	15,284
Lejamaní	5,883
Meámbar	13,287
Minas de Oro	13,548
Ojos de Agua	10,873
San Jerónimo	22,441
San José de Comayagua	7,909
San José del Potrero	7,125
San Luis	11,718
San Sebastián	3,629
Siguatepeque	103,506
Taulabé	25,158
Villa de San Antonio	25,234

Multi-Hazard Risk Rank: Very High (3 of 18)

Lack of Resilience Rank: Moderate (8 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Moderate		High		Moderate		Moderate	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.554	3	0.503	8	0.658	4	0.564	7	0.559	7

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 4 of 18 Departments (Score: 0.658)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

99%
Cyclone
466,696 People

95%
Seismic
448,414 People

45%
Drought
211,757 People

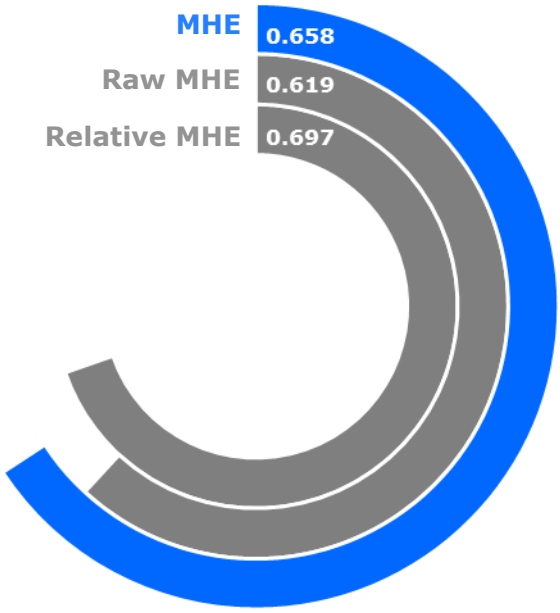
11%
Inland Flood
52,337 People

5%
Landslide
23,548 People

0%
Coastal Flood
0 People

Case Study: Comayagua Farm Penitentiary

In February 2012, a fire broke out in the Comayagua Farm Penitentiary killing 366 inmates and injuring hundreds of others. IFRC Disaster Relief Emergency Funds were released to the Honduran Red Cross to assist in providing pre-hospital care to the injured and psychosocial support to the relatives of deceased inmates. This was the third penitentiary fire in the last 10 years in Honduras. Overall, Honduras has 24 prisons with the capacity of 8,280 persons, however, in 2011 the system had approximately 15,000 inmates, 80 percent over its limit.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 7 of 18 Departments (Score: 0.564) Vulnerability in Comayagua is strongly influenced by Population Pressures and Gender Inequality. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

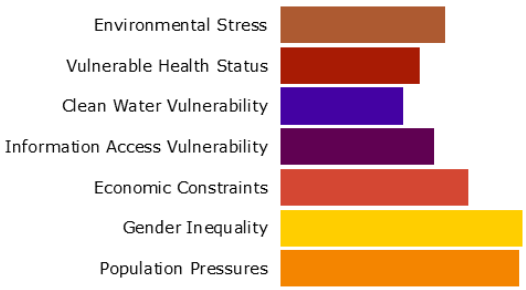


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**26.3%** Forest Loss Due to Pine Beetle Plague	**23.5%** Water Shortage Area						
Vulnerable Health Status	**18.3** Infant Mortality Rate	**201.2** Maternal Mortality Ratio	**76.5** Life Expectancy (years)	**1.5%** Acute Malnutrition Rate	**2.4%** Population Disabled	**0.405** Communicable Disease Sub-Index[4]	**0.448** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**86.6%** Households Access to Piped Water	**63.2%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**14.8%** Adult Illiteracy	**6.0** Average Years of Schooling	**90.2%** Enrollment in Basic Education	**91.8%** Households without Internet	**35.1%** Households without TV	**30.8%** Households without Radio	
Economic Constraints	**0.75** Economic Dependency Ratio	**56.2%** Population in Poverty	**0.36** GINI Coefficient				
Gender Inequality	**0.31** Ratio of Female to Male Land Ownership Rate	**0.86** Ratio of Female to Male Home Ownership Rate	**0.25** Ratio Female to Male Economic Activity	**1.11** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**3.3%** Average Annual Population Change	**7.4%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 7 of 18 Departments (Score: 0.559)

Comayagua exhibits weaker Coping Capacity in the areas of Environmental Capacity and Health Care Capacity. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

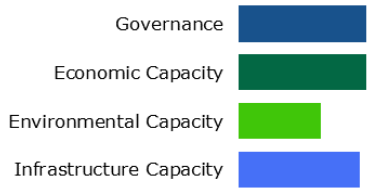


Table 4. Component scores for each coping capacity subcomponent

Governance	**51.0** Homicides per 100k Persons	**155.9** Sexual Violence and Assault per 100k Persons	**25.1%** Households with Public Garbage Collection	**63.1%** Voter Participation (2013 Election)		
Economic Capacity	**35.2%** Economic Activity Rate	**98.4%** Employment Rate	**15.1%** Population in Highest Wealth Quintile			
Environmental Capacity	**18.2%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**3.2** Hospital Beds per 10,000 Persons	**2.1** Physicians per 10,000 Persons	**7.8** Nurses per 10,000 Persons	**29.5 km** Average Distance to Nearest Hospital	**86.4%** Children Completed Immunization Schedule	
Communications Capacity	**19.2%** Households with Access to Fixed Phone Line	**64.1%** Households with Access to Mobile Phone				
Transportation Capacity	**27.4 km** Average Distance to Nearest Port or Airport	**15.9 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 8 of 18 Departments (Score: 0.503)

Comayagua's Lack of Resilience score and ranking are due to moderate Vulnerability combined with moderate Coping Capacity scores.

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

Gender Inequality	**Population Pressures**	**Environmental Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 3 of 18 Departments (Score: 0.554)

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

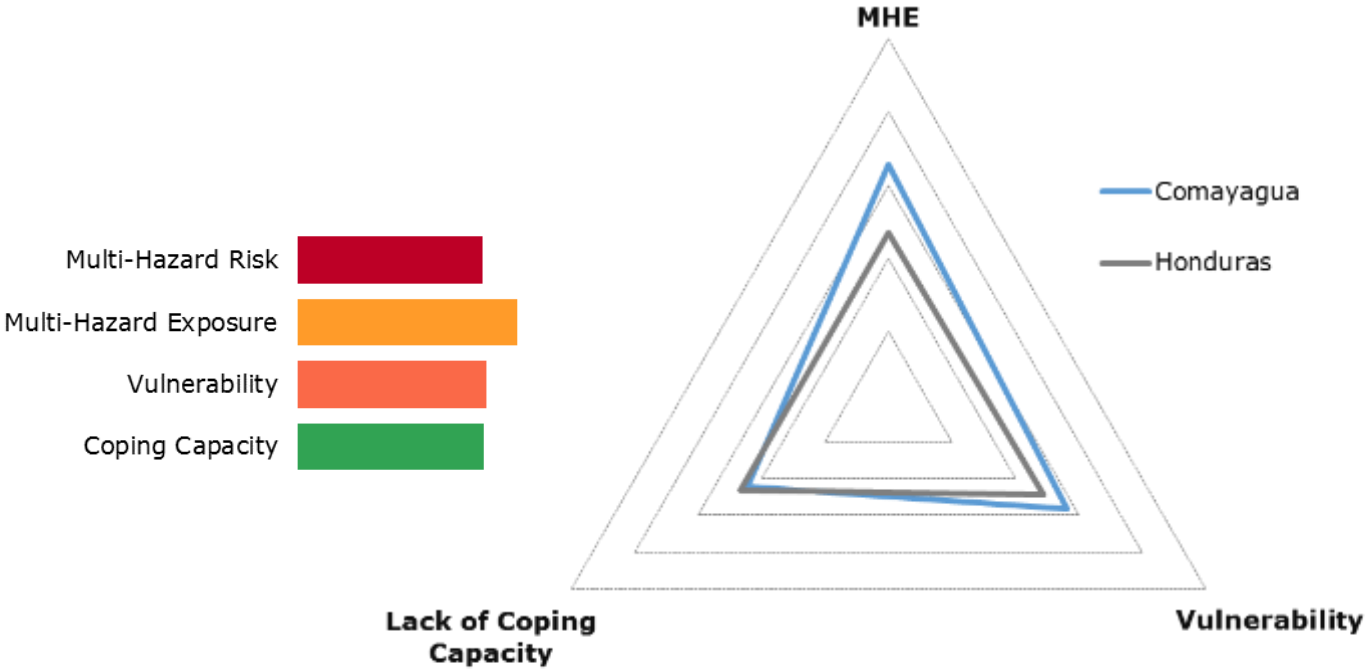


Figure 48. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

High information access

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

Low vulnerable health status

Ranked 13 of 18 departments, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Recommendations

01

Provide opportunities for women

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

02

Monitor and manage population influx

Invest in a program to manage population influx into the region. Comayagua's vast (protected) resources have caused an increase in corporate and individual farming and logging operations. Population-control measures must be enacted to control the influx in personnel as the infrastructure is not designed to handle it.

03

Invest in communication infrastructure

Increase access to communications for the population through investments in infrastructure and education. By increasing citizen access to information, disaster managers can provide disaster-related information to a greater percentage of the population.

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Copán

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Copán

Department Capital: Santa Rosa de Copán
Area: 3,242 km^2
Copán is located in western Honduras, sharing a border with the Republic of Guatemala. The department is known for its tobacco production and the pre-Columbian ruins of Copán. Copán has the lowest life expectancy in the country.

394,890
Population (2017)

58.6%
Population in Poverty

23.7%
Illiterate Adult Population

73.6 yrs
Average Life Expectancy

86.8%
Household Access to Piped Water

Municipality	Population
Cabañas	15,082
Concepción	8,524
Copán Ruinas	40,952
Corquín	17,940
Cucuyagua	17,379
El Paraíso	20,104
Florida	29,400
La Jigua	9,677
La Unión	16,612
Nueva Arcadia	43,346
San Agustín	5,801
San Antonio	10,185
San José	7,218
San Juan de Opoa	9,788
San Nicolás	8,068
San Pedro	7,772
Santa Rita	31,455
Santa Rosa de Copán	66,629
Trinidad de Copán	7,215

Multi-Hazard Risk Rank: Moderate (9 of 18)

Lack of Resilience Rank: Moderate (9 of 18)

RVA Component Scores

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Moderate		**Moderate**		**Moderate**		**High**		**High**	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.489	9	0.497	9	0.472	9	0.573	5	0.579	5

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 9 of 18 Departments (Score: 0.472)

Table 1. Estimated ambient population[2] exposed to each hazard (2014).

64%
Cyclone
252,141 People

100%
Seismic
394,095 People

32%
Drought
126,217 People

4%
Inland Flood
15,404 People

7%
Landslide
29,305 People

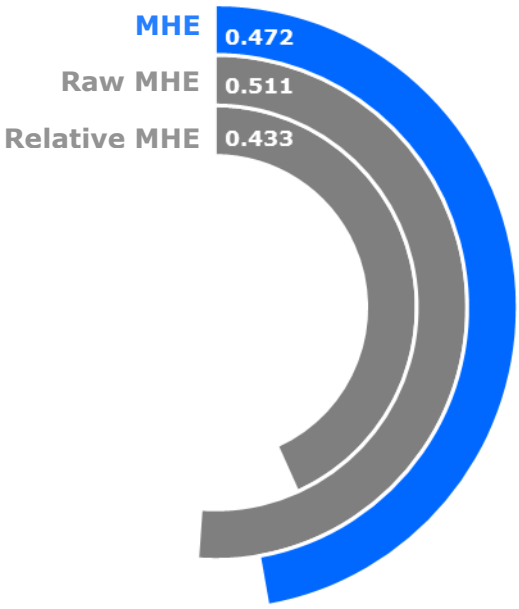
0%
Coastal Flood
0 People

Case Study: SOUTHCOM Community Center

In 2016, U.S. Southern Command financed and constructed a community center to benefit the Chorti Commonwealth within the Department of Copán. The center will support the preparation for disaster relief in vulnerable communities in the west of Honduras.

The facility will function as a storage facility, alternate emergency-operations center, staging for medical brigades, and hosting cultural and community events.

The center consists of a conference room and a warehouse with a storage capacity of 10 metric tons of supplies. It also has sanitation facilities, an electrical power generator, a water tank, and an office. The property can shelter approximately 300 people.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 5 of 18 Departments (Score: 0.573) Vulnerability in Copán is strongly influenced by Information Access Vulnerability, Gender Inequality, Economic Constraints, and Vulnerable Health Status. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

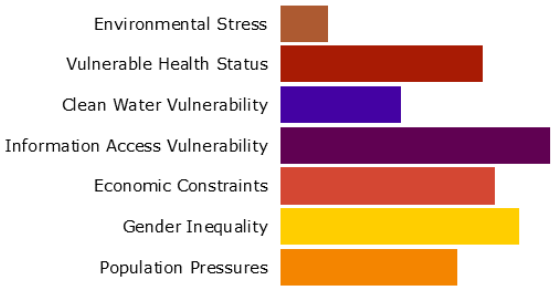


Table 2. Component scores for each vulnerability subcomponent

Environmental Stress	**0.2%** Forest Loss Due to Pine Beetle Plague	**18.8%** Water Shortage Area						
Vulnerable Health Status	**24** Infant Mortality Rate	**209.2** Maternal Mortality Ratio	**73.6** Life Expectancy (years)	**1.2** Acute Malnutrition Rate	**3.2%** Population Disabled	**0.319** Communicable Disease Sub-Index[4]	**0.408** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**86.8%** Households Access to Piped Water	**63.4%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**23.7%** Adult Illiteracy	**5.4** Average Years of Schooling	**85.2%** Enrollment in Basic Education	**96.2%** Households without Internet	**44.4%** Households without TV	**45.5%** Households without Radio	
Economic Constraints	**0.75** Economic Dependency Ratio	**58.6%** Population in Poverty	**0.41** GINI Coefficient				
Gender Inequality	**0.38** Ratio of Female to Male Land Ownership Rate	**0.84** Ratio of Female to Male Home Ownership Rate	**0.23** Ratio Female to Male Economic Activity	**1.10** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**2.4%** Average Annual Population Change	**7.6%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 5 of 18 Departments (Score: 0.579) Copán exhibits weaker Coping Capacity in the areas of Environmental Capacity and Communications Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

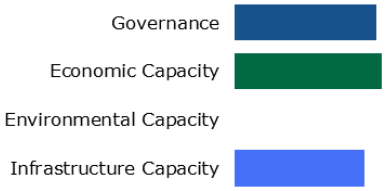


Table 3. Component scores for each coping capacity subcomponent

Governance	**58.8** Homicides per 100k Persons	**154.4** Sexual Violence and Assault per 100k Persons	**24.4%** Households with Public Garbage Collection	**72.2%** Voter Participation (2013 Election)		
Economic Capacity	**37.2%** Economic Activity Rate	**98.6%** Employment Rate	**15.5%** Population in Highest Wealth Quintile			
Environmental Capacity	**4.6%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**18.2** Hospital Beds per 10,000 Persons	**3.4** Physicians per 10,000 Persons	**10.3** Nurses per 10,000 Persons	**29.2 km** Average Distance to Nearest Hospital	**87.1%** Children Completed Immunization Schedule	
Communications Capacity	**11.2%** Households with Access to Fixed Phone Line	**56.9%** Households with Access to Mobile Phone				
Transportation Capacity	**20.1 km** Average Distance to Nearest Port or Airport	**22.3 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 9 of 18 Departments (Score: 0.497)

Copán's Lack of Resilience score and ranking are due to high Vulnerability combined with high Coping Capacity scores.

Table 4. The three thematic areas with the weakest relative scores.

Information Access Vulnerability	**Vulnerable Health Status**	**Environmental Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 9 of 18 Departments (Score: 0.489)

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

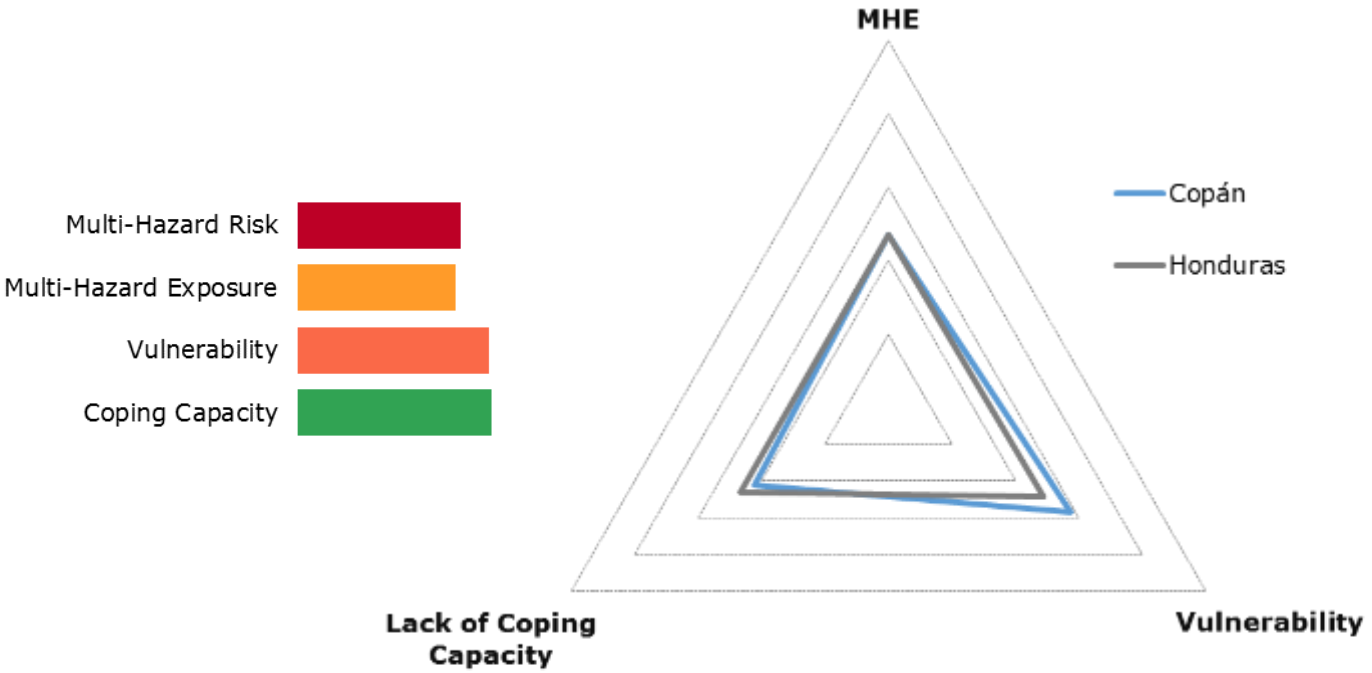


Figure 49. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

High transportation capacity

Ranked 5 of 18 departments, well-developed transportation networks facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

High economic capacity

Ranked 5 of 18 departments, high economic capacity indicates that Copán may be able to invest in additional mitigation and preparedness measures at the local and community level.

Recommendations

01

Increase information accessibility

Increase access to information for the population through investments in infrastructure and education. By increasing citizen access to information, disaster managers can provide disaster-related information to a greater percentage of the population.

02

Provide health education and access

Increased early health education and access for special-needs populations and new/expectant mothers can decrease health vulnerability. Additional health-care infrastructure (doctors and nurses) will increase access to critical services before, during, and after disaster events.

Better solutions.
Fewer disasters.
Safer world.

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Cortés

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Cortés

Department Capital: San Pedro Sula
Area: 3,923 km^2
Cortés is located west of Atlántida on the Caribbean coast of Honduras. It is the most populous department in Honduras, and is home to the city of San Pedro Sula, the nation's primary industrial center. The fertile Sula Valley provides ideal conditions for the cultivation of bananas, citrus, pineapple, sugar cane, coffee, and rice.

1,686,094 Population (2017)

43.1% Population in Poverty

8.6% Illiterate Adult Population

75.9 yrs Average Life Expectancy

95.5% Household Access to Piped Water

Municipality	Population
Choloma	255,625
Omoa	49,749
Pimienta	20,394
Potrerillos	24,958
Puerto Cortés	129,961
San Antonio de Cortés	22,498
San Francisco de Yojoa	23,499
San Manuel	61,159
Santa Cruz de Yojoa	88,054
Villanueva	165,602
La Lima	78,596
San Pedro Sula	765,999

Multi-Hazard Risk Rank: High (4 of 18)

Lack of Resilience Rank: Very Low (16 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		Very Low		Very High		Very Low		High	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.545	4	0.318	16	1.000	1	0.265	18	0.629	4

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 1 of 18 Departments (Score: 1.000)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

100%
Cyclone
1,523,236 People

100%
Seismic
1,523,236 People

82%
Drought
1,253,414 People

Cortés has more than twice as many people living in water shortage areas than any other Department

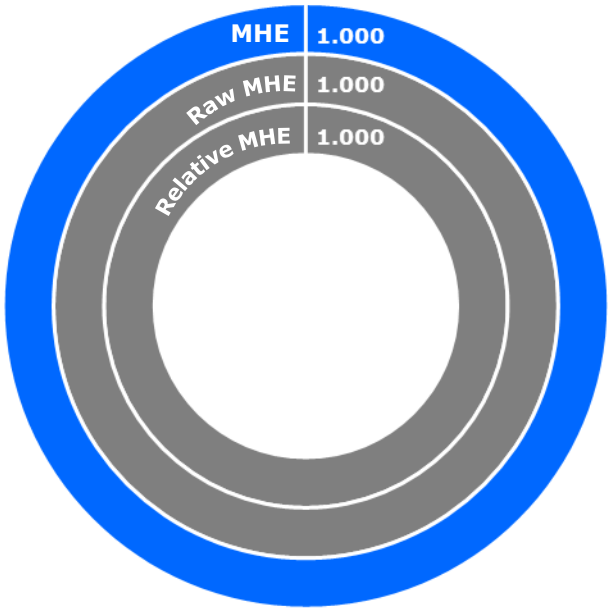
11%
Inland Flood
164,150 People

10%
Landslide
151,177 People

9%
Coastal Flood
129,632 People

Case Study: Association of Honduran Maquilas (AHM)

El Valle de Sula is the economic engine of the country, producing 35% of the country's GDP through the textile manufacturing industry. The area is also considered to be very vulnerable to natural hazards. Recognizing this vulnerability, an EU-funded initiative in partnership with DIPECHO-TROCAIRE and the Honduran Association of Maquilas (AHM) devised a program to develop "a culture of prevention." The program established local emergency committees that receive and conduct trainings in the handling of HAZMAT, evacuation procedures, CPR, use of rescue equipment, etc. While the program initially focused on industrial-related hazards "internal" to factories, it was soon recognized that with 40% of workers living in vulnerable areas, a disaster occurrence had the potential to significantly interrupt production. The program now engages surrounding communities, and is developing a hazard-monitoring capability as an extension (redundant capability) of COPECO.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 18 of 18 Departments (Score: 0.265) Despite having relatively low vulnerability overall, Cortés ranks 7th in Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

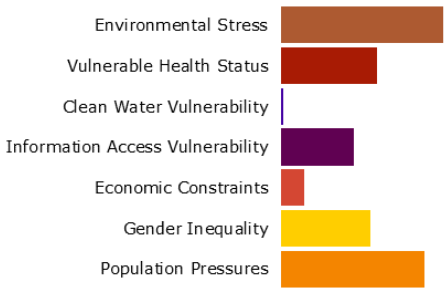


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**16.2%** Forest Loss Due to Pine Beetle Plague	**39.1%** Water Shortage Area						
Vulnerable Health Status	**13.7** Infant Mortality Rate	**238.8** Maternal Mortality Ratio	**75.9** Life Expectancy (years)	**1.1%** Acute Malnutrition Rate	**1.4%** Population Disabled	**0.307** Communicable Disease Sub-Index[4]	**0.164** Non-Communicable Disease Sub-Index[4]	
Clean Water Vulnerability	**95.5%** Households Access to Piped Water	**89.1%** Households Connected to Sewer or Septic System						
Information Access Vulnerability	**8.6%** Adult Illiteracy	**6.9** Average Years of Schooling	**93.6%** Enrollment in Basic Education	**86.5%** Households without Internet	**13.0%** Households without TV	**31.2%** Households without Radio		
Economic Constraints	**0.61** Economic Dependency Ratio	**43.1%** Population in Poverty	**0.17** GINI Coefficient					
Gender Inequality	**0.57** Ratio of Female to Male Land Ownership Rate	**1.11** Ratio of Female to Male Home Ownership Rate	**0.44** Ratio Female to Male Economic Activity	**1.00** Ratio of Female to Male Secondary Enrollment				
Population Pressures	**2.5%** Average Annual Population Change	**5.0%** Average Annual Urban Population Change						

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] **Rank: 4 of 18 Departments (Score: 0.629)** Cortés exhibits weaker Coping Capacity in the areas of Governance and Health Care Capacity. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

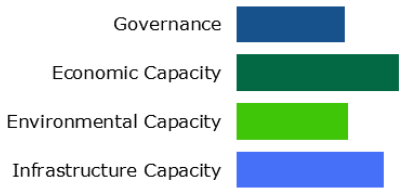


Table 4. Component scores for each coping capacity subcomponent

Governance	**90.4** Homicides per 100k Persons	**238.8** Sexual Violence and Assault per 100k Persons	**39.8%** Households with Public Garbage Collection	**53.5%** Voter Participation (2013 Election)		
Economic Capacity	**37.8%** Economic Activity Rate	**96.9%** Employment Rate	**32.9%** Population in Highest Wealth Quintile			
Environmental Capacity	**25.3%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**4.8** Hospital Beds per 10,000 Persons	**2.3** Physicians per 10,000 Persons	**5.5** Nurses per 10,000 Persons	**22.1 km** Average Distance to Nearest Hospital	**75.6%** Children Completed Immunization Schedule	
Communications Capacity	**22.6%** Households with Access to Fixed Phone Line	**73.8%** Households with Access to Mobile Phone				
Transportation Capacity	**22.1 km** Average Distance to Nearest Port or Airport	**26.6 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 16 of 18 Departments (Score: 0.318)

Cortés' Lack of Resilience score and ranking are due to very low Vulnerability combined with high Coping Capacity scores.

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

Governance	**Health Care Capacity**	**Environmental Stress**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 4 of 18 Departments (Score: 0.545)

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

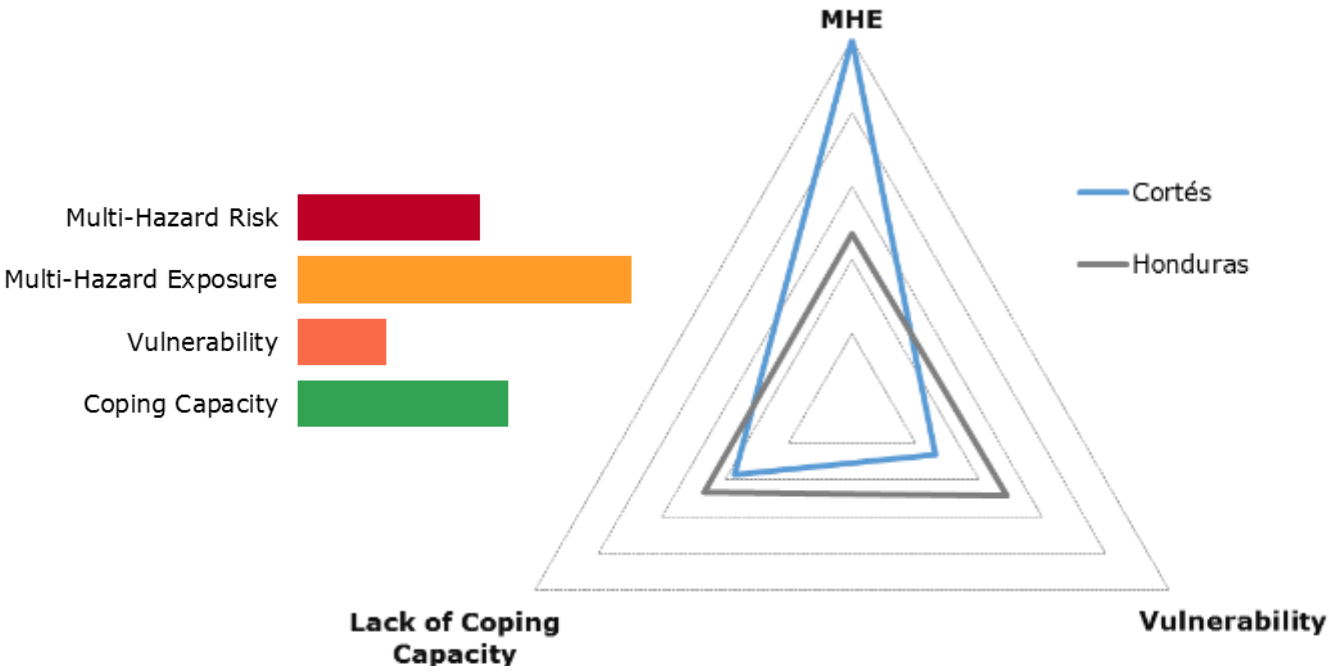


Figure 50. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

Lowest vulnerable health status
Ranked 18 of 18 departments, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Lowest economic constraints
Ranked 18 of 18 departments, low economic constraints indicate that Cortés may be able to invest in additional mitigation and preparedness measures at the local and community level.

Lowest overall vulnerability
Ranked 18 of 18 departments, low overall vulnerability indicates that Cortés is less susceptible to the negative impacts of a disaster and will likely recover faster after an event.

Recommendations

01

Promote drought-resistant farming methods
A high percentage of the department is at risk of drought. Programs that promote drought-resistant crops and farming methods will decrease vulnerability to drought in the department.

02

Increase government services
Like Atlántida and Colón, investments in public services such as garbage collection, fire, and police will increase coping capacity and the department's ability to handle crises.

03

Provide health education and access
Increased early health education and access for special-needs populations and new/expectant mothers can decrease health vulnerability. Additional health-care infrastructure (doctors and nurses) will increase access to critical services before, during, and after disaster events.

Better solutions.
Fewer disasters.
Safer world.

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El Paraíso

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: El Paraíso

Department Capital: Yuscarán
Area: 7,489 km^2
El Paraíso is located in eastern Honduras, south of Olancho. The department shares a border with Nicaragua. The economy of El Paraíso is based on livestock and agriculture, producing corn, coffee, sugar cane, watermelon, sorghum, tomato, beans, and tobacco.

473,277
Population (2017)

61.4%
Population in Poverty

18.5%
Illiterate Adult Population

74.4 yrs
Average Life Expectancy

75.6%
Household Access to Piped Water

Municipality	Population
Alauca	9,433
Danlí	210,742
El Paraíso	45,920
Guinope	9,107
Jacaleapa	4,186
Liure	10,852
Morocelí	17,764
Oropolí	6,090
Potrerillos	4,663
San Antonio de Flores	5,783
San Lucas	8,057
San Matías	5,321
Soledad	9,352
Teupasenti	45,417
Texiguat	8,841
Trojes	51,011
Vado Ancho	4,071
Yauyupe	1,394
Yuscarán	15,271

Multi-Hazard Risk Rank: Moderate (7 of 18)

Lack of Resilience Rank: Very High (3 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Moderate		Very High		Low		Very High		Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.514	7	0.552	3	0.438	11	0.598	3	0.494	13

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 11 of 18 Departments (Score: 0.438)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

69%
Cyclone
327,284 People

31%
Seismic
145,577 People

76%
Drought
356,985 People

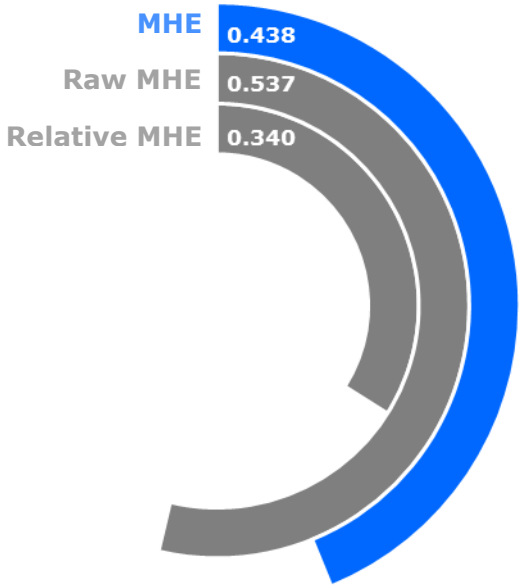
11%
Inland Flood
51,580 People

3%
Landslide
15,717 People

0%
Coastal Flood
0 People

Case Study: Disaster-Management Facility in Danlí

SOUTHCOM funded the construction of a facility in Danlí (El Paraíso Department) that provides warehouse and office space for COPECO. The facility was completed in 2015 and provides space for an EOC and communications room, meeting space for the CODED, as well secure storage for relief supplies and rescue equipment.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 3 of 18 Departments (Score: 0.598) Vulnerability in El Paraíso is strongly influenced by Gender Inequality, Clean Water Vulnerability, and Information Access Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

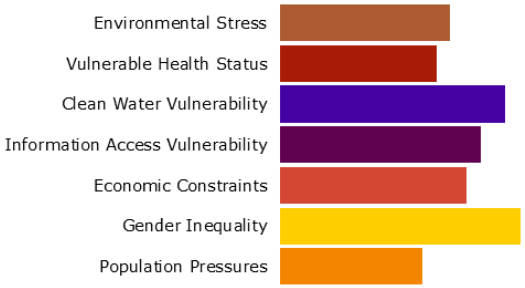


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**15.3%** Forest Loss Due to Pine Beetle Plague	**43.8%** Water Shortage Area						
Vulnerable Health Status	**21.3** Infant Mortality Rate	**146.2** Maternal Mortality Ratio	**74.4** Life Expectancy (years)	**1.3%** Acute Malnutrition Rate	**2.8%** Population Disabled	**0.341** Communicable Disease Sub-Index[4]	**0.291** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**75.6%** Households Access to Piped Water	**55.1%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**18.5%** Adult Illiteracy	**5.9** Average Years of Schooling	**88.5%** Enrollment in Basic Education	**95.9%** Households without Internet	**51.9%** Households without TV	**31.7%** Households without Radio	
Economic Constraints	**0.69** Economic Dependency Ratio	**61.4%** Population in Poverty	**0.39** GINI Coefficient				
Gender Inequality	**0.39** Ratio of Female to Male Land Ownership Rate	**0.86** Ratio of Female to Male Home Ownership Rate	**0.20** Ratio Female to Male Economic Activity	**1.11** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**2.2%** Average Annual Population Change	**5.9%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 13 of 18 Departments (Score: 0.494) El Paraíso exhibits weaker Coping Capacity in the areas of Environmental Capacity and Infrastructure (Health Care and Transportation). The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

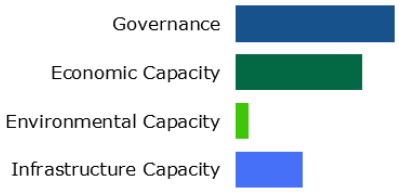


Table 4. Component scores for each coping capacity subcomponent

Governance	**23.8** Homicides per 100k Persons	**129.8** Sexual Violence and Assault per 100k Persons	**22.0%** Households with Public Garbage Collection	**72.8%** Voter Participation (2013 Election)		
Economic Capacity	**36.4%** Economic Activity Rate	**98.5%** Employment Rate	**9.4%** Population in Highest Wealth Quintile			
Environmental Capacity	**6.2%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**2.9** Hospital Beds per 10,000 Persons	**1.4** Physicians per 10,000 Persons	**5.5** Nurses per 10,000 Persons	**37.1 km** Average Distance to Nearest Hospital	**86.8%** Children Completed Immunization Schedule	
Communications Capacity	**10.7%** Households with Access to Fixed Phone Line	**55.2%** Households with Access to Mobile Phone				
Transportation Capacity	**72.7 km** Average Distance to Nearest Port or Airport	**20.4 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 3 of 18 Departments (Score: 0.552)

El Paraíso's Lack of Resilience score and ranking are due to very high Vulnerability combined with low Coping Capacity scores.

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

Gender Inequality	**Clean Water Vulnerability**	**Infrastructure**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 7 of 18 Departments (Score: 0.514)

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

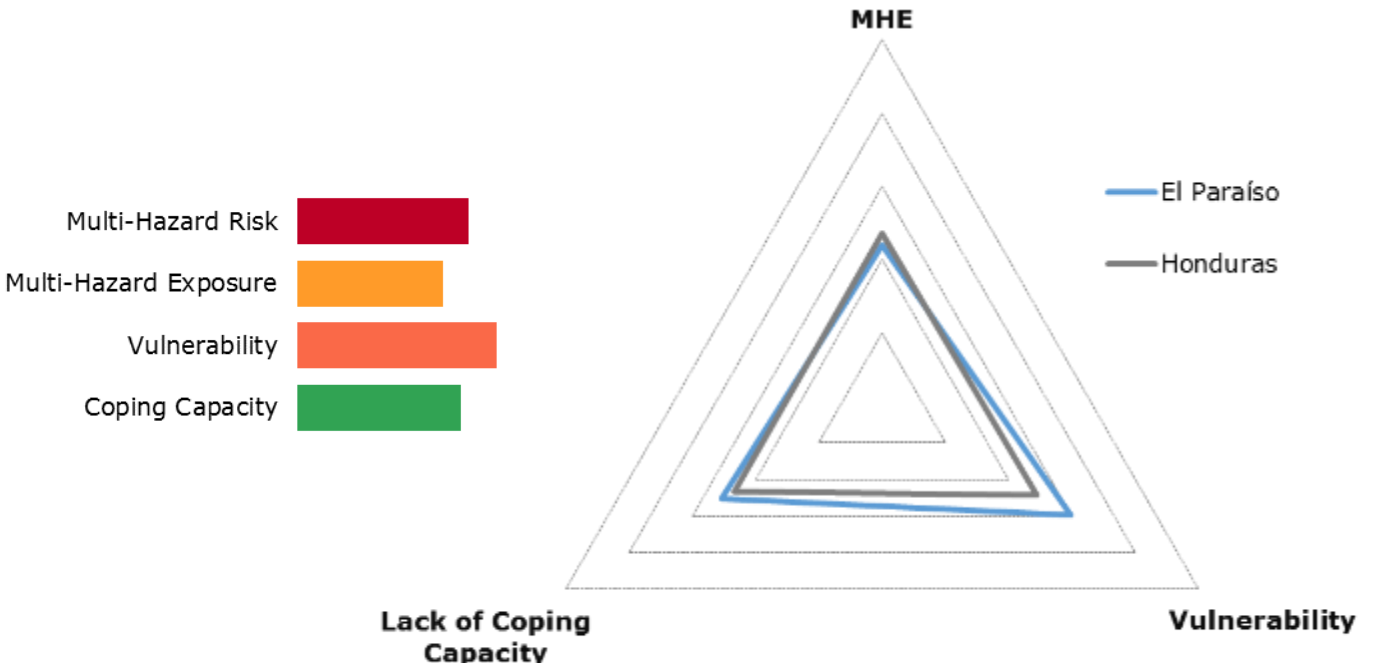


Figure 51. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

High overall governance

Ranked 2 of 18 departments, high governance could facilitate the implementation of disaster-management initiatives into departmental and municipal communities.

Recommendations

01

Provide opportunities for women

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

02

Increase government water services

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

02

Invest in communication infrastructure

Invest in communication infrastructure to support coordinated action among local, municipal, and regional actors.

Better solutions.
Fewer disasters.
Safer world.

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Francisco Morazán

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Francisco Morazán

Department Capital: Tegucigalpa
Area: 8,619 km^2
Francisco Morazán is located in central Honduras. The department capital of Tegucigalpa is also the national capital and home to the central government. Tegucigalpa is Honduras' largest and most populous city as well as the nation's political and administrative center.

1,601,291
Population (2017)

47.0%
Population in Poverty

8.7%
Illiterate Adult Population

77.1 yrs
Average Life Expectancy

87.4%
Household Access to Piped Water

Municipality	Population
Alubarén	5,576
Cedros	26,003
Curarén	20,924
Distrito Central	1,225,043
El Porvenir	23,655
Guaimaca	29,923
La Venta	6,421
Lepaterique	21,767
Maraita	6,927
Marale	9,199
Ojojona	11,017
Orica	14,604
Reitoca	10,761
Sabanagrande	21,781
San Antonio de Oriente	15,598
San Buenaventura	3,029
San Ignacio	9,119
San Juan de Flores	16,857
Santa Ana	16,889
Santa Lucía	14,065
Talanga	36,733
Tatumbla	8,018
Valle de Angeles	18,476
Vallecillo	8,542

Multi-Hazard Risk Rank: Low (11 of 18)

Lack of Resilience Rank: Very Low (17 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Very Low		Very High		Very Low		Very High	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.458	11	0.314	17	0.747	2	0.298	16	0.670	3

Multi-Hazard Exposure (MHE)

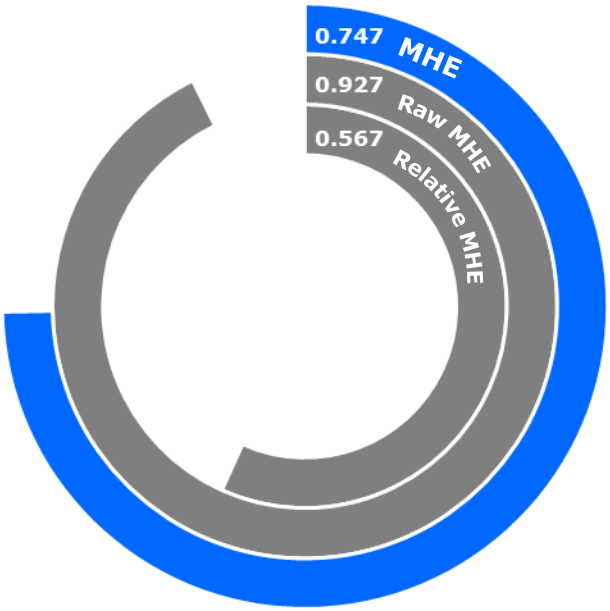
Multi-Hazard Exposure[1] Rank: 2 of 18 Departments (Score: 0.747)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone	**88%**	Seismic	**91%**
	1,375,448 People		**1,430,584 People**
Drought	**35%**	Inland Flood	**12%**
	555,314 People		**190,437 People**
Landslide	**6%**	Coastal Flood	**0%**
	90,938 People		**0 People**

Case Study: Tegucigalpa CODEM

The Tegucigalpa CODEM maintains an emergency communications center staffed 24/7, has a designated Emergency Operations Center, and stores relief supplies on site. The CODEM supports 160 local emergency-management committees or CODELs, which are comprised of 11 volunteers who are trained to respond during emergencies. The CODELs are provided with basic tools and uniforms and participate in training at COPECO. Tegucigalpa also maintains the Sistema de Información Municipal sobre Riesgos y Estudios Territoriales (SIMRET), an information system being designed to serve as a central repository for risk-management information among numerous agencies within Tegucigalpa.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 16 of 18 Departments (Score: 0.298). Despite having very low vulnerability overall, Francisco Morazán ranks 4th in Environmental Stress. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

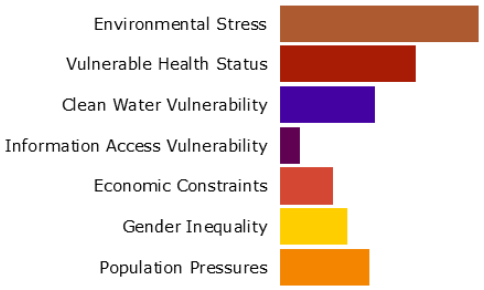


Table 3. Component scores for each vulnerability subcomponent

	Environmental Stress	**30.8%** Forest Loss Due to Pine Beetle Plague	**30.2%** Water Shortage Area					
	Vulnerable Health Status	**16.1** Infant Mortality Rate	**206.9** Maternal Mortality Ratio	**77.1** Life Expectancy (years)	**1.5%** Acute Malnutrition Rate	**2.4%** Population Disabled	**0.590** Communicable Disease Sub-Index[4]	**0.491** Non-Communicable Disease Sub-Index [4]
	Clean Water Vulnerability	**87.4%** Households Access to Piped Water	**74.6%** Households Connected to Sewer or Septic System					
	Information Access Vulnerability	**8.7%** Adult Illiteracy	**7.9** Average Years of Schooling	**95.9%** Enrollment in Basic Education	**82.4%** Households without Internet	**16.8%** Households without TV	**25.8%** Households without Radio	
	Economic Constraints	**0.57** Economic Dependency Ratio	**47.0%** Population in Poverty	**0.26** GINI Coefficient				
	Gender Inequality	**0.61** Ratio of Female to Male Land Ownership Rate	**1.00** Ratio of Female to Male Home Ownership Rate	**0.48** Ratio Female to Male Economic Activity	**1.05** Ratio of Female to Male Secondary Enrollment			
	Population Pressures	**2.3%** Average Annual Population Change	**3.2%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 3 of 18 Departments (Score: 0.670) Francisco Morazán exhibits weaker Coping Capacity in the areas of Environmental Capacity and Transportation Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

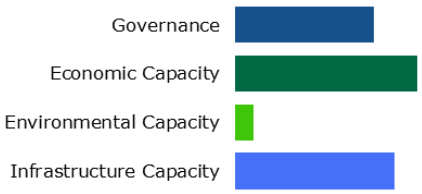


Table 4. Component scores for each coping capacity subcomponent

Governance	**65.5** Homicides per 100k Persons	**373.4** Sexual Violence and Assault per 100k Persons	**38.5%** Households with Public Garbage Collection	**67.1%** Voter Participation (2013 Election)		
Economic Capacity	**39.7%** Economic Activity Rate	**96.8%** Employment Rate	**35.8%** Population in Highest Wealth Quintile			
Environmental Capacity	**6.8%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**13.0** Hospital Beds per 10,000 Persons	**6.2** Physicians per 10,000 Persons	**15.0** Nurses per 10,000 Persons	**33.1 km** Average Distance to Nearest Hospital	**85.2%** Children Completed Immunization Schedule	
Communications Capacity	**40.6%** Households with Access to Fixed Phone Line	**74.5%** Households with Access to Mobile Phone				
Transportation Capacity	**38.2 km** Average Distance to nearest Port or Airport	**18.2 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 17 of 18 Departments (Score: 0.314)

Francisco Morazán's Lack of Resilience score and ranking are due to very low Vulnerability combined with very high Coping Capacity scores.

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

Environmental Stress	**Transportation Infrastructure**	**Environmental Capacity**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 11 of 18 Departments (Score: 0.458)

Though Francisco Morazán exhibits a very high Multi-Hazard Exposure score, it is combined with very low Vulnerability and very high Coping Capacity scores, equating to low relative risk overall.

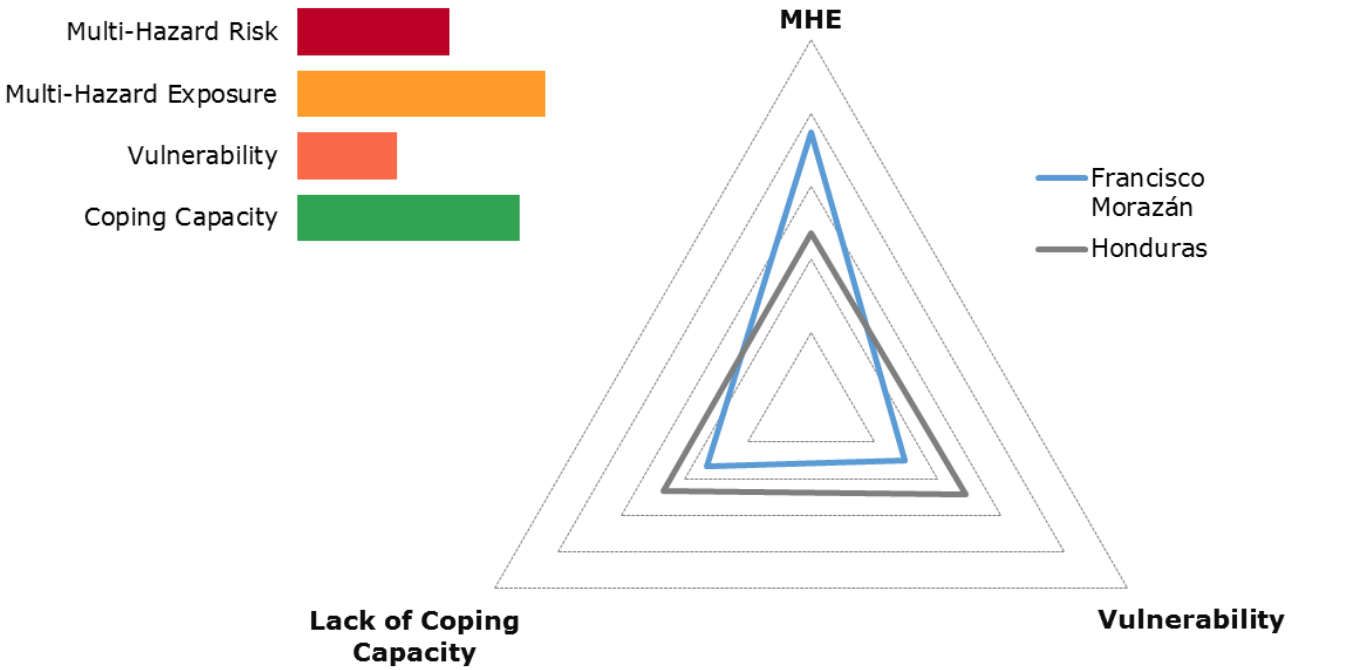


Figure 52. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

Lowest gender inequality

Ranked 18 of 18 departments, low gender inequality indicates that vulnerable populations are more likely to have their needs met under 'normal' conditions and may be less susceptible during times of disaster.

Low economic constraints

Ranked 16 of 18 departments, low economic constraints indicate that Francisco Morazán may be able to invest in additional mitigation and preparedness measures at the local and community level.

High overall infrastructure capacity

Ranked 2 of 18 departments, well-developed infrastructure – communication, health care, transportation - facilitates the exchange of information and physical distribution of goods and services to the population.

Recommendations

01

Institutionalize multi-hazard planning and education

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

02

Increase environmental programs

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

03

Invest in infrastructure

Invest in Transportation and Communication Infrastructures to increase coping capacity and resiliency within the department.

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Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Gracias a Dios

Department Capital: Puerto Lempira
Area: 16,997 km^2

Once part of the Mosquito Coast, Gracias a Dios is the easternmost department in northern Honduras. The department is relatively isolated and sparsely populated, containing extensive pine savannas, swamps, and rainforests. Gracias a Dios has the highest poverty rate in Honduras, and lowest access to piped water and sanitation.

98,337
Population (2017)

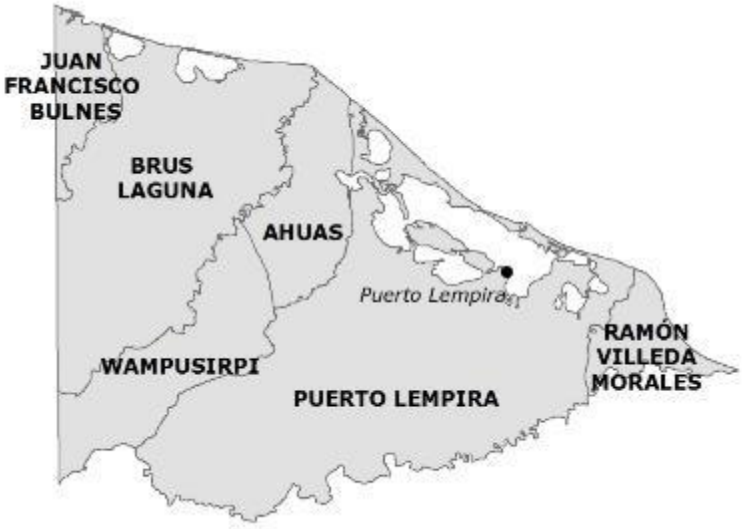
89.4%
Population in Poverty

16.0%
Illiterate Adult Population

74.5 yrs
Average Life Expectancy

27.7%
Household Access to Piped Water

Municipality	Population
Ahuas	8,694
Brus Laguna	13,801
Juan Francisco Bulnes	6,428
Puerto Lempira	53,131
Villeda Morales	10,365
Wampusirpi	5,919



Multi-Hazard Risk Rank: Very High (1 of 18)

Lack of Resilience Rank: Very High (1 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		Very High		Low		Very High		Very Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.573	1	0.696	1	0.326	12	0.639	1	0.247	18

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 12 of 18 Departments (Score: 0.326)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone
100%
85,471 People

Seismic
0%
0 People

Drought
1%
967 People

Inland Flood
66%
56,150 People

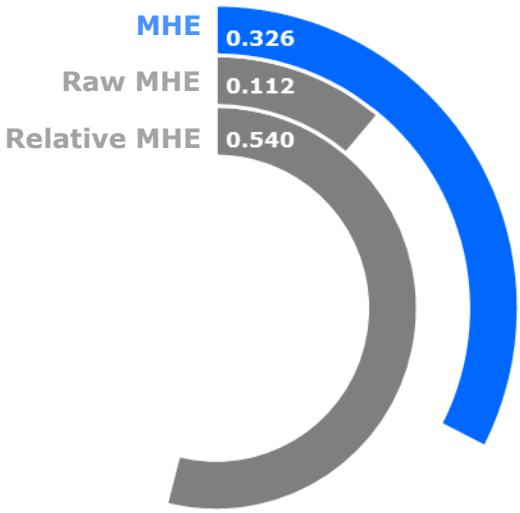
The highest percentage of inland flood exposure in the country

Landslide
8%
6,548 People

Coastal Flood
52%
44,844 People

Case Study: Remote Territory

Gracias a Dios is the second largest department in Honduras, but the least densely populated with less than six people per km^2. The department is inaccessible by land, and most roads in the department are not paved. Despite its remoteness and low population density, Gracias a Dios suffers from relatively high crime. Due to its vast size and the Honduran government's relatively low ability to fight crime in the area, trafficking of narcotics is common in Gracias a Dios. Criminal organizations are also common in the area. Remoteness and high crime rates indicate that Gracias a Dios may have less capacity to cope with the effects of a disaster.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 1 of 18 Departments (Score: 0.639) Vulnerability in Gracias a Dios is strongly influenced by Clean Water Vulnerability, Population Pressures, Economic Constraints, and Information Access Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Vulnerability score.

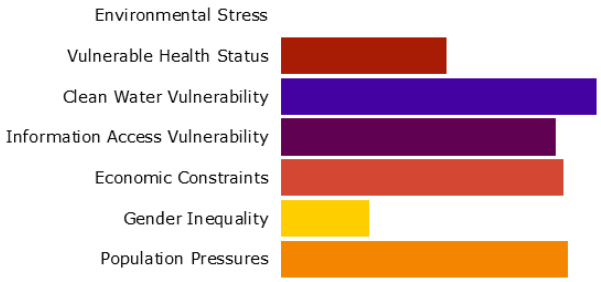


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**0%** Forest Loss Due to Pine Beetle Plague	**0%** Water Shortage Area						
Vulnerable Health Status	**15.1** Infant Mortality Rate	**186.9** Maternal Mortality Ratio	**74.5** Life Expectancy (years)	**0.9%** Acute Malnutrition Rate	**2.5%** Population Disabled	**0.671** Communicable Disease Sub-Index[4]	**0.731** Non-Communicable Disease Sub-Index[4]	
Clean Water Vulnerability	**27.7%** Households Access to Piped Water	**8.4%** Households Connected to Sewer or Septic System						
Information Access Vulnerability	**16.0%** Adult Illiteracy	**5.9** Average Years of Schooling	**85.3%** Enrollment in Basic Education	**98.3%** Households without Internet	**77.2%** Households without TV	**71.2%** Households without Radio		
Economic Constraints	**0.79** Economic Dependency Ratio	**89.4%** Population in Poverty	**0.38** GINI Coefficient					
Gender Inequality	**0.61** Ratio of Female to Male Land Ownership Rate	**1.15** Ratio of Female to Male Home Ownership	**0.52** Ratio Female to Male Economic Activity	**1.01** Ratio of Female to Male Secondary Enrollment				
Population Pressures	**2.9%** Average Annual Population Change	**16.6%** Average Annual Urban Population Change						

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 18 of 18 Departments (Score: 0.247) Gracias a Dios exhibits weaker Coping Capacity in the areas of Economic Capacity, Governance and Infrastructure (especially Communications). The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

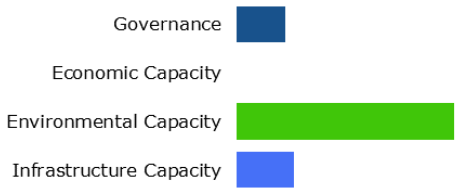


Table 4. Component scores for each coping capacity subcomponent

Governance	**27.5** Homicides per 100k Persons	**234.0** Sexual Violence and Assault per 100k Persons	**1.0%** Households with Public Garbage Collection	**45.6%** Voter Participation (2013 Election)		
Economic Capacity	**30.0%** Economic Activity Rate	**94.4%** Employment Rate	**1.1%** Population in Highest Wealth Quintile			
Environmental Capacity	**60.2%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**3.5** Hospital Beds per 10,000 Persons	**7.7** Physicians per 10,000 Persons	**14.6** Nurses per 10,000 Persons	**74.8 km** Average Distance to Nearest Hospital	**67.6%** Children Completed Immunization Schedule	
Communications Capacity	**2.9%** Households with Access to Fixed Phone Line	**36.9%** Households with Access to Mobile Phone				
Transportation Capacity	**25.5 km** Average Distance to Nearest Port or Airport	**2.1 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 1 of 18 Departments (Score: 0.696)

Gracias a Dios' Lack of Resilience score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores.

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

Clean Water Vulnerability	**Economic Capacity**	**Population Pressures**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 1 of 18 Departments (Score: 0.573)

Gracias a Dios' Multi-Hazard Risk score and ranking are due to low Multi-Hazard Exposure combined with very high Vulnerability and very low Coping Capacity scores.

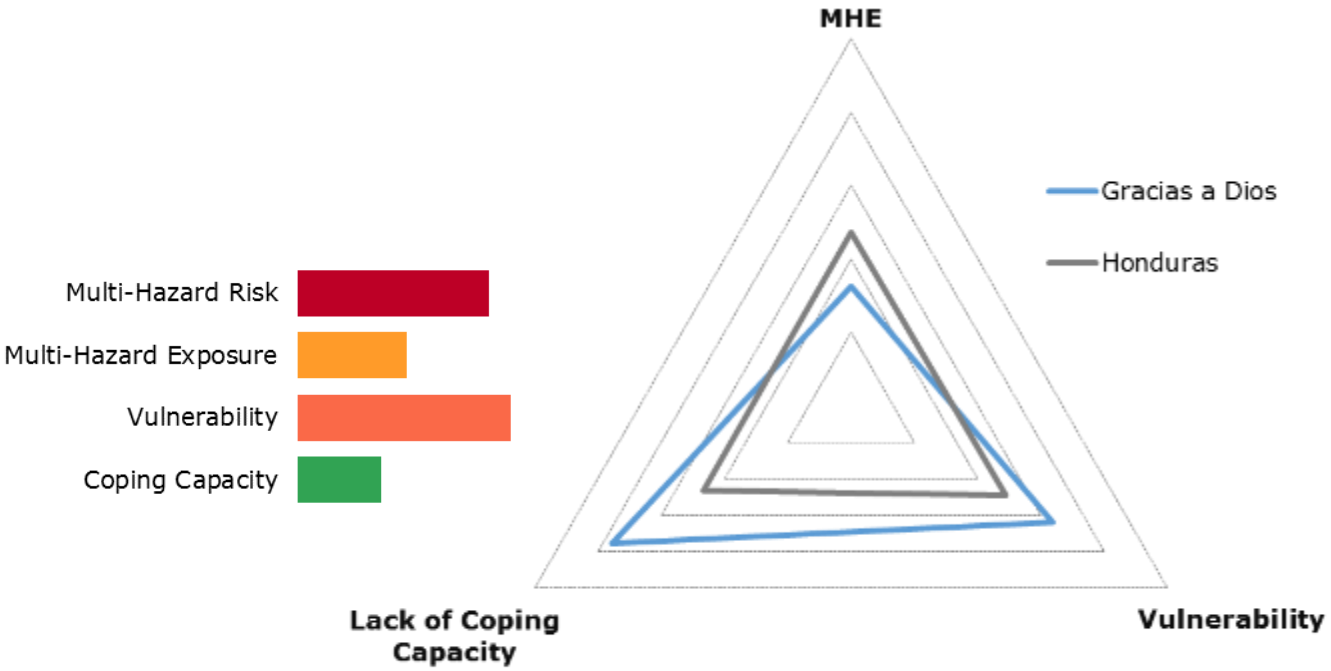


Figure 53. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

Lowest environmental stress

Ranked 17th (tied with Islas de la Bahía) of 18 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Highest environmental capacity

Ranked 1 of 18 departments, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Low gender inequality

Ranked 16 of 18 departments, low gender inequality indicates that vulnerable populations are more likely to have their needs met under "normal" conditions and may be less susceptible during times of disaster.

Recommendations

01

Increase water and sanitation services

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

02

Increase economic opportunity

Invest in business development and public education to increase economic capacity.

03

Reduce population pressure

Rapid population changes are difficult to plan for and can destabilize social, economic, and environmental systems. Analyze trends in the department to determine potential population changes, and update plans and SOPs more frequently to accommodate the changes.

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Intibucá

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Intibucá

Department Capital: La Esperanza
Area: 3,123 km^2
Intibucá is located in western Honduras, in the most mountainous region of the country. La Esperanza, the capital city, is known for having the coolest climate in Honduras. It is considered the heart of the Ruta Lenca (Lenca Trail), a region of Lenca ethnic influence that spans Honduras form Santa Rosa de Copán to Choluteca. Intibucá has the highest income inequality rate in Honduras.

250,959
Population (2017)

61.8%
Population in Poverty

18.6%
Illiterate Adult Population

74.7 yrs
Average Life Expectancy

76.9%
Household Access to Piped Water

Municipality	Population
Camasca	6,977
Colomoncagua	18,737
Concepción	10,557
Dolores	5,537
Intibucá	61,695
Jesus de Otoro	30,663
La Esperanza	13,413
Magdalena	4,489
Masaguara	16,794
San Antonio	5,658
San Fco. De Opalaca	12,024
San Isidro	4,812
San Juan	14,390
San Marcos de Sierra	9,285
San Miguelito	8,236
Santa Lucía	5,434
Yamaranguila	22,258

Multi-Hazard Risk Rank: Low (13 of 18)

Lack of Resilience Rank: High (5 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		High		Very Low		High		Moderate	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.432	13	0.527	5	0.242	17	0.570	6	0.516	10

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 17 of 18 Departments (Score: 0.242)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone
44%
111,738 People

Seismic
100%
251,590 People

Drought
0%
0 People

Inland Flood
0%
0 People

The only department in Honduras with 0% flood exposure, both inland and coastal

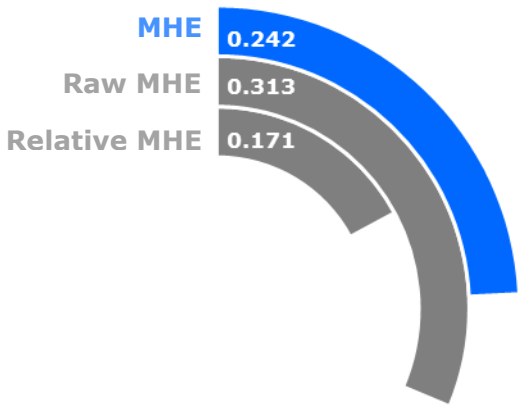
Landslide
15%
37,456 People

Coastal Flood
0%
0 People

Case Study: World Vision

World Vision is active in five municipalities throughout Intibucá department. The goal of their development program is to improve the well-being of children by focusing on community engagement. Programs like this can help decrease vulnerability and increase the coping capacity of vulnerable populations within the department.

https://www.ngoaidmap.org/location/gn_3608833?level=2&site=12



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

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

Vulnerability (V)

Vulnerability[3] Rank: 6 of 18 Departments (Score: 0.570) Vulnerability in Intibucá is strongly influenced by Economic Constraints, Information Access Vulnerability, Clean Water Vulnerability, and Gender Inequality. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

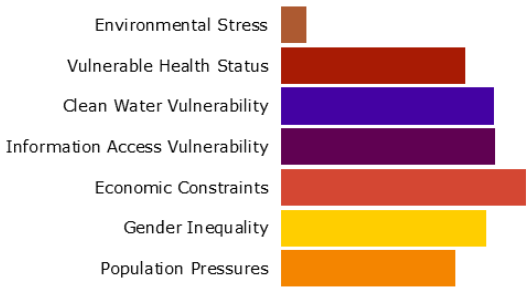


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**6.1%** Forest Loss Due to Pine Beetle Plague	**0.3%** Water Shortage Area						
Vulnerable Health Status	**19.7** Infant Mortality Rate	**261.0** Maternal Mortality Ratio	**74.7** Life Expectancy (years)	**0.7%** Acute Malnutrition Rate	**3.5%** Population Disabled	**0.437** Communicable Disease Sub-Index[4]	**0.269** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**76.9%** Households Access to Piped Water	**56.3%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**18.6%** Adult Illiteracy	**5.5** Average Years of Schooling	**92.7%** Enrollment in Basic Education	**97.4%** Households without Internet	**65.4%** Households without TV	**34.7%** Households without Radio	
Economic Constraints	**0.80** Economic Dependency Ratio	**61.8%** Population in Poverty	**0.42** GINI Coefficient				
Gender Inequality	**0.35** Ratio of Female to Male Land Ownership Rate	**0.81** Ratio of Female to Male Home Ownership Rate	**0.22** Ratio Female to Male Economic Activity	**1.02** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**2.4%** Average Annual Population Change	**7.1%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 10 of 18 Departments (Score: 0.516) Intibucá exhibits weaker Coping Capacity in the areas of Environmental Capacity and Infrastructure (especially Communications and Health Care). The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

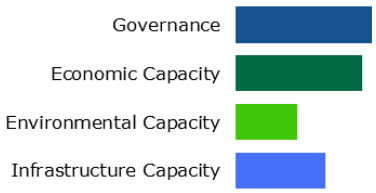


Table 4. Component scores for each coping capacity subcomponent

Governance	**33.1** Homicides per 100k Persons	**168.5** Sexual Violence and Assault per 100k Persons	**12.2%** Households with Public Garbage Collection	**75.1%** Voter Participation (2013 Election)		
Economic Capacity	**36.4%** Economic Activity Rate	**99.2%** Employment Rate	**4.6%** Population in Highest Wealth Quintile			
Environmental Capacity	**14.1%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**3.0** Hospital Beds per 10,000 Persons	**2.0** Physicians per 10,000 Persons	**7.8** Nurses per 10,000 Persons	**24.6 km** Average Distance to Nearest Hospital	**88.8%** Children Completed Immunization Schedule	
Communications Capacity	**7.6%** Households with Access to Fixed Phone Line	**50.4%** Households with Access to Mobile Phone				
Transportation Capacity	**43.3 km** Average Distance to Nearest Port or Airport	**24.4 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 5 of 18 Departments (Score: 0.527)

Intibucá's Lack of Resilience score and ranking are due to high Vulnerability combined with moderate Coping Capacity scores.

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

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

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 13 of 18 Departments (Score: 0.432)

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

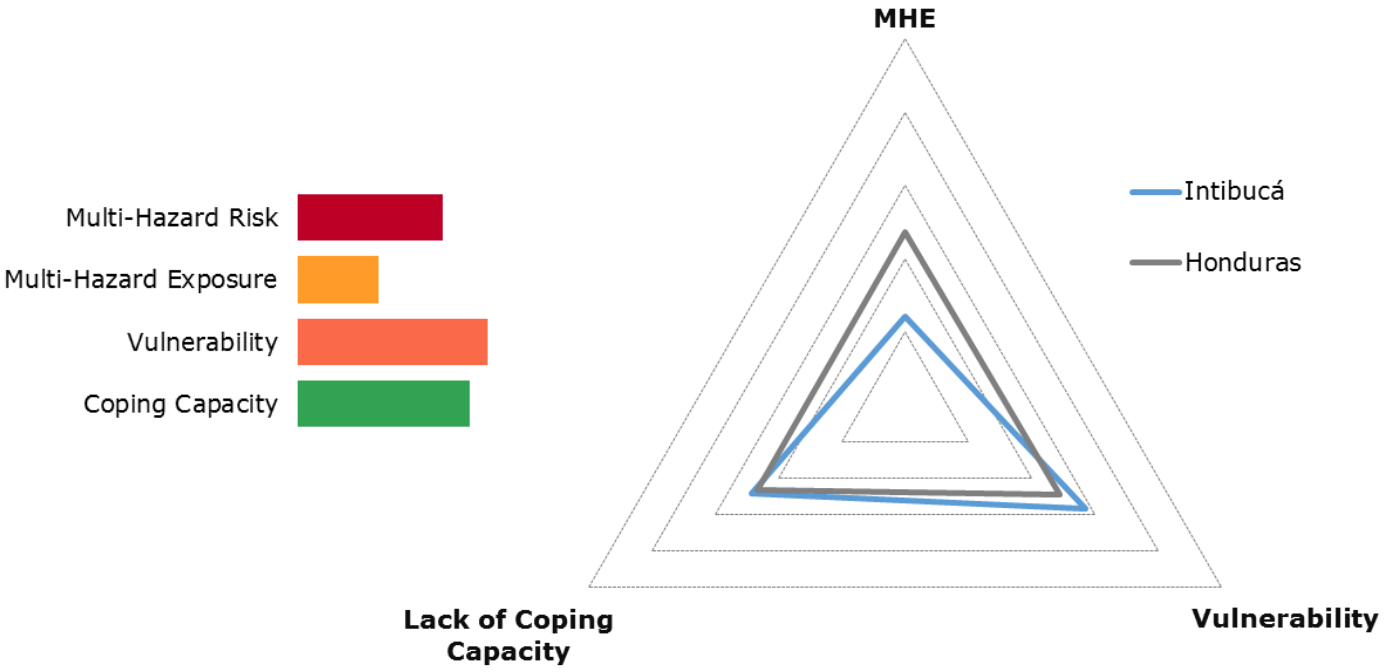


Figure 54. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

Low environmental stress

Ranked 13 of 18 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

High employment rate

Ranked 2 of 18 departments, a high employment rate increases economic capacity increasing the department's ability to invest in additional mitigation and preparedness measures at the local and community level.

Recommendations

01

Increase economic opportunity

Investment in business development and public education to increase economic capacity.

02

Invest in communication infrastructure

Increase access to communications for the population through investments in infrastructure and education. By increasing citizen access to information, disaster managers can provide disaster-related information to a greater percentage of the population.

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Islas de la Bahía

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Islas de la Bahía

Department Capital: Roatán
Area: 236 km^2

Islas de la Bahía is a group of bay islands off the Caribbean shore of Honduras. The bay islands serve as the anchor of Honduras' growing tourism industry. Tourism and fishing represent half of the gross island product. With dynamic expansion of the tourist and service industry, Islas de la Bahía exhibits ongoing rapid population growth.

69,493
Population (2017)

40.0%
Population in Poverty

4.2%
Illiterate Adult Population

77.6 yrs
Average Life Expectancy

94.3%
Household Access to Piped Water

Municipality	Population
Guanaja	5,663
José Santos Guardiola	11,823
Roatán	47,608
Utila	4,400

Multi-Hazard Risk Rank: Very Low (17 of 18)

Lack of Resilience Rank: Very Low (18 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Very Low		Moderate		Very Low		Very High	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.333	17	0.277	18	0.444	10	0.280	17	0.726	1

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 10 of 18 Departments (Score: 0.444)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone
100%
44,647 People

While all people in the department are subject to tropical cyclones, landfall is relatively infrequent and damage is limited by reefs and shallow waters.

Seismic
68%
30,144 People

Drought
0%
0 People

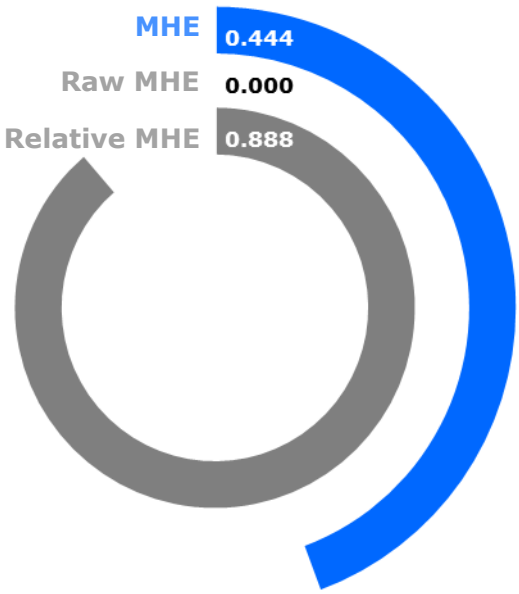
Inland Flood
24%
10,928 People

Landslide
4%
1,786 People

Coastal Flood
95%
42,349 People

Case Study: Hurricanes and Roatán

Despite its location in the Caribbean off the northern coast of Honduras, Roatán is not generally considered to have high tropical cyclone occurrence. From 1851-2010, there have been only 35 tropical cyclones to impact the island, including one Category 4 hurricane and one Category 5 hurricane (Mitch). Because the island is surrounded by reefs and shallow water, damage is usually limited when impact does occur.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 17 of 18 Departments (Score: 0.280) Despite having low relatively vulnerability overall, Islas de la Bahía ranks 2nd in Population Pressures. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

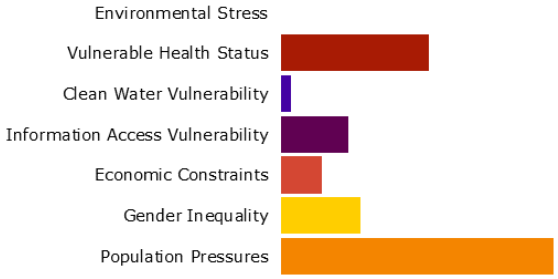


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**0%** Forest Loss Due to Pine Beetle Plague	**0%** Water Shortage Area						
Vulnerable Health Status	**12.6** Infant Mortality Rate	**148.7** Maternal Mortality Ratio	**77.6** Life Expectancy (years)	**3.7%** Acute Malnutrition Rate	**2.6%** Population Disabled	**0.646** Communicable Disease Sub-Index[4]	**0.683** Non-Communicable Disease Sub-Index [4]	
Clean Water Vulnerability	**94.3%** Households Access to Piped Water	**89.9%** Households Connected to Sewer or Septic System						
Information Access Vulnerability	**4.2%** Adult Illiteracy	**7.0** Average Years of Schooling	**97.0%** Enrollment in Basic Education	**82.2%** Households without Internet	**19.3%** Households without TV	**43.0%** Households without Radio		
Economic Constraints	**0.64** Economic Dependency Ratio	**40.0%** Population in Poverty	**0.20** GINI Coefficient					
Gender Inequality	**0.77** Ratio of Female to Male Land Ownership Rate	**1.15** Ratio of Female to Male Home Ownership Rate	**0.48** Ratio Female to Male Economic Activity	**1.02** Ratio of Female to Male Secondary Enrollment				
Population Pressures	**5.4%** Average Annual Population Change	**10.6%** Average Annual Urban Population Change						

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 1 of 18 Departments (Score: 0.726) Despite having the highest overall coping capacity in Honduras, Islas de la Bahía exhibits notable weakness in the area of Governance. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

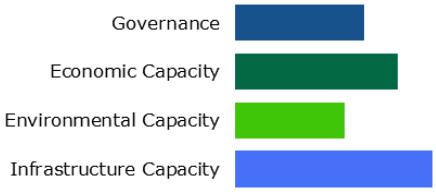


Table 4. Component scores for each coping capacity subcomponent

Governance	**13.7** Homicides per 100k Persons	**687.1** Sexual Violence and Assault per 100k Persons	**67.5%** Households with Public Garbage Collection	**55.2%** Voter Participation (2013 Election)		
Economic Capacity	**38.7%** Economic Activity Rate	**96.7%** Employment Rate	**31.4%** Population in Highest Wealth Quintile			
Environmental Capacity	**24.8%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**6.7** Hospital Beds per 10,000 Persons	**6.3** Physicians per 10,000 Persons	**16.5** Nurses per 10,000 Persons	**29.1 km** Average Distance to Nearest Hospital	**80.4%** Children Completed Immunization Schedule
Communications Capacity	**22.9%** Households with Access to Fixed Phone Line	**79.1%** Households with Access to Mobile Phone			
Transportation Capacity	**10.3 km** Average Distance to Nearest Port or Airport	**42.6 km** Total Length of Road per km^2 (area)			

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 18 of 18 Departments (Score: 0.277)

Islas de la Bahía's Lack of Resilience score and ranking are due to very low Vulnerability combined with very high Coping Capacity scores.

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

Population Pressures	**Governance**	**Vulnerable Health Status**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 17 of 18 Departments (Score: 0.333)

Islas de la Bahía's Multi-Hazard Risk score and ranking are due to moderate Multi-Hazard Exposure combined with very low Vulnerability and very high Coping Capacity scores.

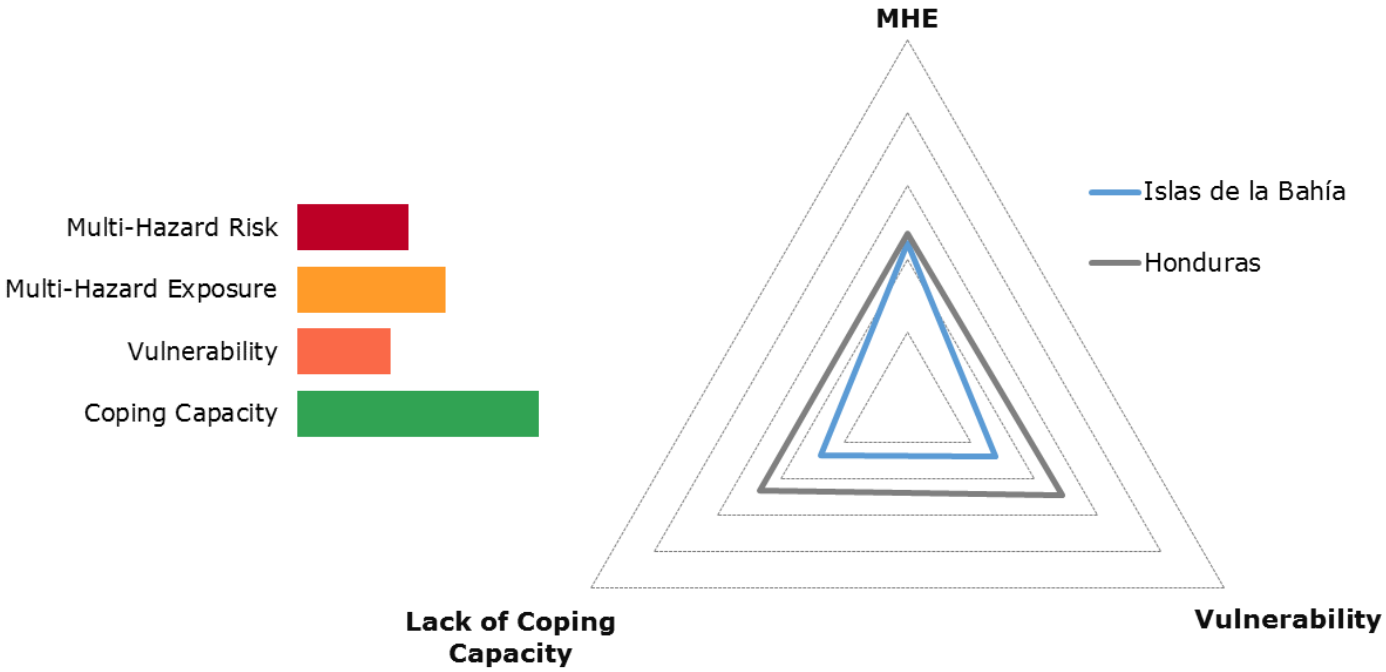


Figure 55. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

Highest transportation capacity

Ranked 1 of 18 departments, well-developed transportation networks facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

Lowest environmental stress

Ranked 17th (tied with Gracias a Dios), low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Low economic constraints

Ranked 17 of 18 departments, low economic constraints indicate that Islas de la Bahía may be able to invest in additional mitigation and preparedness measures at the local and community level.

Recommendations

01

Monitor and manage population influx

Invest in a program to manage population influx into the region. Islas de la Bahía's vast (protected) resources have caused an increase in corporate and individual farming and logging operations. Population-control measures must be enacted to control the influx in personnel as the infrastructure is not designed to handle it.

02

Increase government services

Investments in public services such as garbage collection, fire, and police will increase coping capacity and the department's ability to handle crises.

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La Paz

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: La Paz

Department Capital: La Paz
Area: 2,525 km^2

La Paz in located in southwest Honduras, between Francisco Morazán and Intibucá, sharing its southern border with El Salvador. The economy of La Paz is primarily agricultural, producing coffee, wheat, henequin (for rope making), and cattle. Along with Intibucá, La Paz shares the highest income inequality rate in Honduras.

213,499
Population (2017)

63.1%
Population in Poverty

16.7%
Illiterate Adult Population

74.6 yrs
Average Life Expectancy

82.9%
Household Access to Piped Water

Municipality	Population
Aguanqueterique	4,888
Cabañas	3,579
Cane	4,150
Chinacla	8,366
Guajiquiro	15,317
La Paz	48,640
Lauterique	3,060
Marcala	31,148
Opatoro	7,754
San Antonio del Norte	2,851
San José	9,086
San Juan	2,571
San Pedro de Tutule	7,421
Santa Ana	12,486
Santa Elena	13,139
Santa María	11,404
Santiago de Puringla	16,978
Yarula	9,522
Aguanqueterique	4,888

Multi-Hazard Risk Rank: Low (14 of 18)

Lack of Resilience Rank: Moderate (10 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Low		Moderate		Very Low		Moderate		Moderate	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.427	14	0.496	10	0.288	16	0.524	10	0.532	9

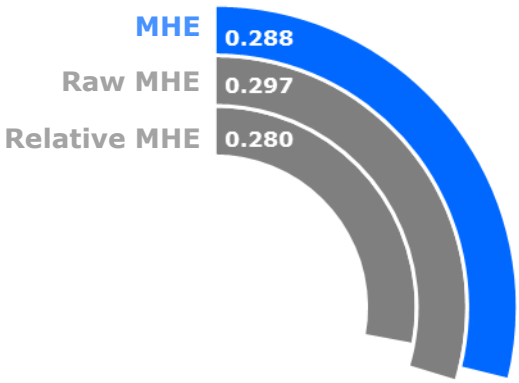
Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 16 of 18 Departments (Score: 0.288)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone	**42%**	**89,251 People**
Seismic	**100%**	**211,226 People**
Drought	**24%**	**50,804 People**
Inland Flood	**4%**	**8,719 People**
Landslide	**9%**	**18,426 People**
Coastal Flood	**0%**	**0 People**

Figure 1. Bridge in La Paz (image credit: Panoramio).



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

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

Vulnerability (V)

Vulnerability[3] Rank: 10 of 18 Departments (Score: 0.524) Vulnerability in La Paz is influenced by Economic Constraints, Gender Inequality, and Vulnerable Health Status. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

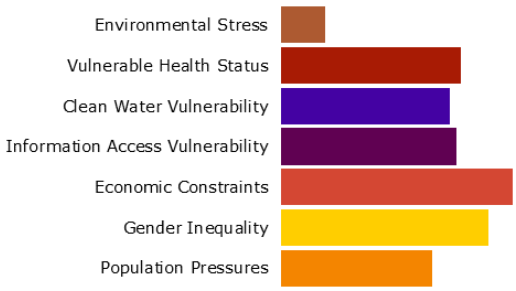


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**7.0%** Forest Loss Due to Pine Beetle Plague	**6.3%** Water Shortage Area						
Vulnerable Health Status	**23.8** Infant Mortality Rate	**181.8** Maternal Mortality Ratio	**74.6** Life Expectancy (years)	**0.4%** Acute Malnutrition Rate	**3.4%** Population Disabled	**0.447** Communicable Disease Sub-Index[4]	**0.352** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**82.9%** Households Access to Piped Water	**54.5%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**16.7%** Adult Illiteracy	**5.9** Average Years of Schooling	**93.7%** Enrollment in Basic Education	**96.2%** Households without Internet	**65.8%** Households without TV	**30.1%** Households without Radio	
Economic Constraints	**0.76** Economic Dependency Ratio	**63.1%** Population in Poverty	**0.42** GINI Coefficient				
Gender Inequality	**0.41** Ratio of Female to Male Land Ownership Rate	**0.83** Ratio of Female to Male Home Ownership Rate	**0.23** Ratio Female to Male Economic Activity	**1.02** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**2.3%** Average Annual Population Change	**6.4%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 9 of 18 Departments (Score: 0.532) La Paz exhibits weaker Coping Capacity in the areas of Infrastructure (especially Transportation and Communication) and Economic Constraints. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

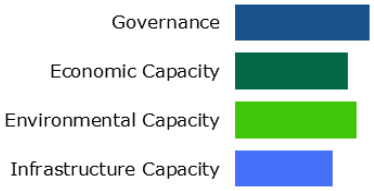


Table 4. Component scores for each coping capacity subcomponent

Governance	**18.4** Homicides per 100k Persons	**291.7** Sexual Violence and Assault per 100k Persons	**13.6%** Households with Public Garbage Collection	**74.7%** Voter Participation (2013 Election)		
Economic Capacity	**35.0%** Economic Activity Rate	**98.8%** Employment Rate	**5.9%** Population in Highest Wealth Quintile			
Environmental Capacity	**27.9%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**3.0** Hospital Beds per 10,000 Persons	**2.3** Physicians per 10,000 Persons	**9.2** Nurses per 10,000 Persons	**30.4 km** Average Distance to Nearest Hospital	**94.4%** Children Completed Immunization Schedule	
Communications Capacity	**10.9%** Households with Access to Fixed Phone Line	**54.1%** Households with Access to Mobile Phone				
Transportation Capacity	**44.4 km** Average Distance to Nearest Port or Airport	**19.3 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 10 of 18 Departments (Score: 0.496)

La Paz's Lack of Resilience score and ranking are due to moderate Vulnerability combined with moderate Coping Capacity scores.

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

Economic Constraints	**Gender Inequality**	**Vulnerable Health Status**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 14 of 18 Departments (Score: 0.427)

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

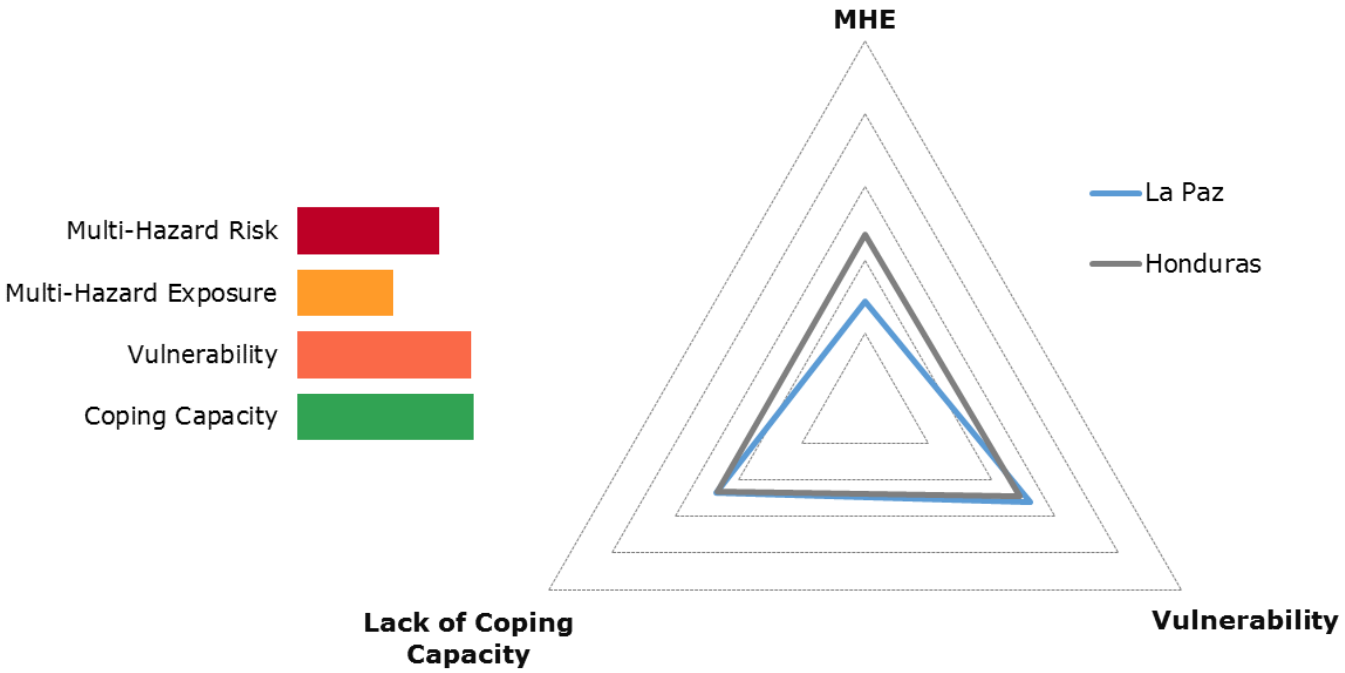


Figure 56. Department multi-hazard risk component scores compared to overall average country scores.

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

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

Successes

Low environmental stress

Ranked 12 of 18 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

High environmental capacity

Ranked 5 of 18 departments, high environmental capacity indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Provide business opportunities and education

Institute programs to provide independent economic opportunities in the department. Increased economic capacity will decrease vulnerability in emergencies.

02

Provide opportunities for women

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

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Lempira

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Lempira

Department Capital: Gracias
Area: 4,228 km^2
Lempira shares its southern border with El Salvador. Cerro Las Minas, the highest mountain in Honduras, is located within the department. With its rugged terrain, parts of Lempira are relatively isolated. Lempira has the highest rate of adult illiteracy in the country.

345,489
Population (2017)

73.6%
Population in Poverty

25.4%
Illiterate Adult Population

73.7 yrs
Average Life Expectancy

82.1%
Household Access to Piped Water

Municipality	Population
Belén	7,720
Candelaria	6,931
Cololaca	9,715
Erandique	16,009
Gracias	53,018
Gualcince	11,826
Guarita	8,646
La Campa	7,408
La Iguala	28,219
La Unión	13,791
La Virtud	6,682
Las Flores	10,172
Lepaera	39,004
Mapulaca	4,360
Piraera	14,485
San Andrés	14,028
San Francisco	9,260
San Manuel Colohete	15,123
San Marcos de Corquin	6,076
San Rafael	14,109
San Sebastián	11,279
Santa Cruz	7,429
Talgua	11,071
Tomalá	6,652
Valladolid	3,802

Multi-Hazard Risk Rank: Moderate (8 of 18)

Lack of Resilience Rank: Very High (2 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Moderate		Very High		Low		Very High		Very Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.499	8	0.586	2	0.325	14	0.631	2	0.460	17

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 14 of 18 Departments (Score: 0.325)

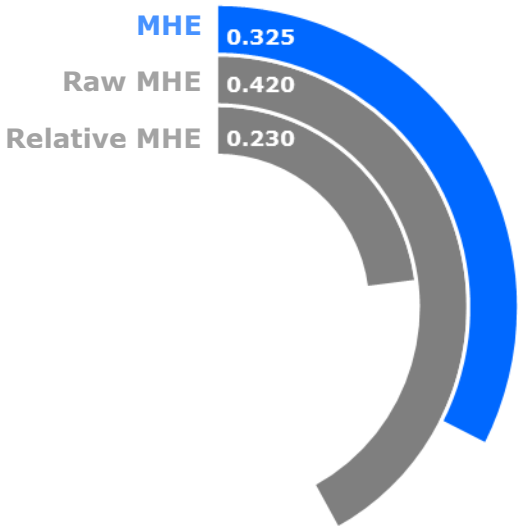
Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone	**47%**	**163,953 People**
Seismic	**100%**	**346,344 People**
Drought	**<1%**	**8 People**
Inland Flood	**2%**	**7,515 People**
Landslide	**21%**	**71,094 People**
Coastal Flood	**0%**	**0 People**

Case Study: Assistance for the Dry Corridor

In 2017, USAID Office of Food for Peace (FFP) supported the UN World Food Program (WFP) to provide cash-for-assets activities reaching approximately 7,600 vulnerable, drought-affected households in Lempira Department. In exchange for participating in asset creation activities—including efforts to improve the productivity of agricultural land, construction of hygiene infrastructure, rehabilitation of family gardens and agroforestry projects—households receive cash transfers for food. This assistance allows families to purchase nutritious foods, while supporting local markets and agricultural producers whenever possible, reducing drought susceptibility.

USAID Food Assistance Fact Sheet, Honduras, 25 SEP 2017



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

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

Vulnerability (V)

Vulnerability[3] Rank: 2 of 18 Departments (Score: 0.631) Vulnerability in Lempira is strongly influenced by Information Access Vulnerability, Economic Constraints, Gender Inequality, Clean Water Vulnerability, and Population Pressures. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

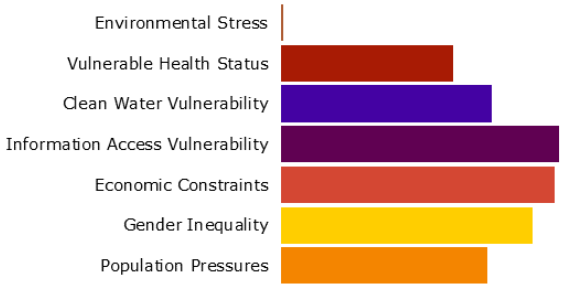


Table 3. Component scores for each vulnerability subcomponent

Environmental Stress	**0.4%** Forest Loss Due to Pine Beetle Plague	**<0.1%** Water Shortage Area						
Vulnerable Health Status	**19.0** Infant Mortality Rate	**85.8** Maternal Mortality Ratio	**73.7** Life Expectancy (years)	**2.4%** Acute Malnutrition Rate	**3.7%** Population Disabled	**0.289** Communicable Disease Sub-Index[4]	**0.284** Non-Communicable Disease Sub-Index [4]	
Clean Water Vulnerability	**82.1%** Households Access to Piped Water	**36.1%** Households Connected to Sewer or Septic System						
Information Access Vulnerability	**25.4%** Adult Illiteracy	**5.0** Average Years of Schooling	**88.9%** Enrollment in Basic Education	**98.7%** Households without Internet	**69.1%** Households without TV	**40.2%** Households without Radio		
Economic Constraints	**0.83** Economic Dependency Ratio	**73.6%** Population in Poverty	**0.40** GINI Coefficient					
Gender Inequality	**0.29** Ratio of Female to Male Land Ownership Rate	**0.83** Ratio of Female to Male Home Ownership Rate	**0.12** Ratio Female to Male Economic Activity	**1.06** Ratio of Female to Male Secondary Enrollment				
Population Pressures	**2.4%** Average Annual Population Change	**10.5%** Average Annual Urban Population Change						

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 17 of 18 Departments (Score: 0.460) Lempira exhibits weaker Coping Capacity in the areas of Economic Capacity, Environmental Capacity, and Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

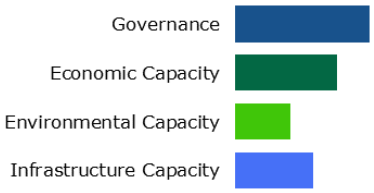


Table 4. Component scores for each coping capacity subcomponent

Governance	**54.6** Homicides per 100k Persons	**94.6** Sexual Violence and Assault per 100k Persons	**7.0%** Households with Public Garbage Collection	**78.9%** Voter Participation (2013 Election)		
Economic Capacity	**33.6%** Economic Activity Rate	**99.2%** Employment Rate	**2.5%** Population in Highest Wealth Quintile			
Environmental Capacity	**12.8%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**4.1** Hospital Beds per 10,000 Persons	**1.8** Physicians per 10,000 Persons	**7.1** Nurses per 10,000 Persons	**25.9 km** Average Distance to Nearest Hospital	**90.9%** Children Completed Immunization Schedule	
Communications Capacity	**3.2%** Households with Access to Fixed Phone Line	**46.1%** Households with Access to Mobile Phone				
Transportation Capacity	**31.6 km** Average Distance to Nearest Port or Airport	**15.3 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 2 of 18 Departments (Score: 0.586)

Lempira's Lack of Resilience score and ranking are due to very high Vulnerability combined with very low Coping Capacity scores.

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

Information Access Vulnerability	**Economic Constraints**	**Gender Inequality**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 8 of 18 Departments (Score: 0.499)

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

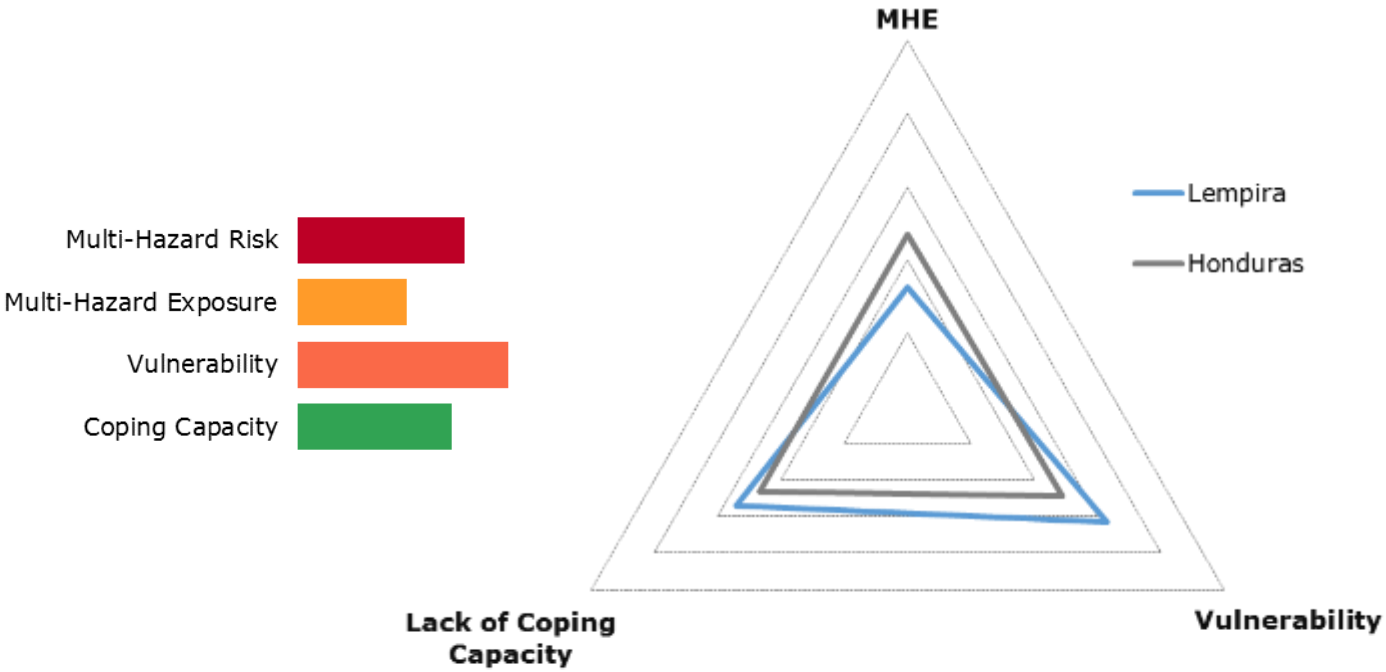


Figure 57. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

Low environmental stress

Ranked 14 of 18 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

Invest in communication infrastructure

Increase access to communications for the population through investments in infrastructure and education. By increasing citizen access to information, disaster managers can provide disaster-related information to a greater percentage of the population.

02

Provide business opportunities and education

Institute programs to provide independent economic opportunities in the department. Increased economic capacity will decrease vulnerability in emergencies.

03

Provide opportunities for women

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

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Fewer disasters.
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Ocotepeque

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Ocotepeque

Department Capital: Nueva Ocotepeque
Area: 1,630 km^2
Ocotepeque is the westernmost department in Honduras, bordering both Guatemala and El Salvador. While the main economic activities are agricultural – including coffee, corn, cabbage, sugar cane, and onion – Ocotepeque has the economic benefit of being a tri-country center of business.

157,018
Population (2017)

53.8%
Population in Poverty

21.3%
Illiterate Adult Population

75.3 yrs
Average Life Expectancy

90.1%
Household Access to Piped Water

Municipality	Population
Belén Gualcho	16,568
Concepción	5,439
Dolores Merendón	4,287
Fraternidad	6,111
La Encarnación	5,330
La Labor	10,188
Lucerna	6,157
Mercedes	7,491
Ocotepeque	24,770
San Fernando	7,184
San Francisco del Valle	10,051
San Jorge	5,336
San Marcos	21,448
Santa Fe	5,174
Sensenti	11,881
Sinuapa	9,601

Multi-Hazard Risk Rank: Very Low (18 of 18)

Lack of Resilience Rank: Low (14 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very Low		Low		Very Low		Moderate		Very High	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.303	18	0.429	14	0.051	18	0.541	8	0.682	2

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 18 of 18 Departments (Score: 0.051)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone

0%

0 People

Seismic

100%

146,825 People

Drought

<1%

34 People

Inland Flood

4%

6,286 People

Landslide

24%

34,523 People

Coastal Flood

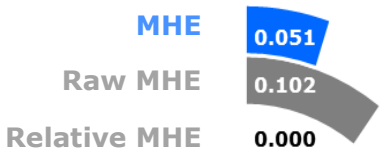
0%

0 People

Case Study: Emigration and Food Insecurity

Ocotepeque Department, the northernmost department within the Dry Corridor, has seen excessive drought over the last two years, as have other departments in Honduras and areas of El Salvador and Guatemala. According to an interagency study entitled *Food Security and Emigration*, released in August 2017, food insecurity caused by the drought is causing emigration north to the United States. The study showed that younger and more vulnerable populations are emigrating, and if the emigration fails, families are left scrambling to feed the additional household members. The emigration causes further poverty in the area as the family members left behind are forced to take on the debt and workload of those leaving.

The study was funded and jointly produced by WFP, the International Fund for Agricultural Development (IFAD) and the Inter-American Development Bank (IDB) with the collaboration of the International Organization for Migration (IOM) and the Organization of American States (OAS).



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

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

Vulnerability (V)

Vulnerability[3] Rank: 8 of 18 Departments (Score: 0.541) Vulnerability in Ocotepeque is strongly influenced by Gender Inequality, Population Pressures, and Information Access Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

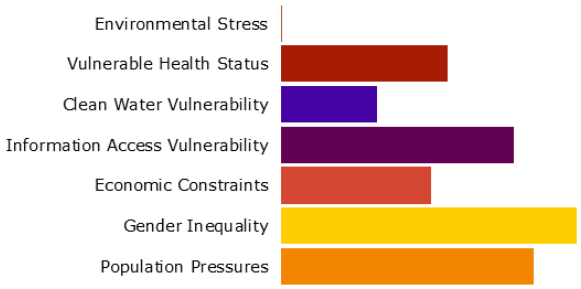


Table 3. Component scores for each vulnerability subcomponent.

Environmental Stress	**0.2%** Forest Loss Due to Pine Beetle Plague	**0.0%** Water Shortage Area					
Vulnerable Health Status	**18.6** Infant Mortality Rate	**67.5** Maternal Mortality Ratio	**75.3** Life Expectancy (years)	**2.7%** Acute Malnutrition Rate	**3.4%** Population Disabled	**0.464** Communicable Disease Sub-Index[4]	**0.572** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**90.1%** Households Access to Piped Water	**62.6%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**21.3%** Adult Illiteracy	**5.6** Average Years of Schooling	**88.5%** Enrollment in Basic Education	**95.6%** Households without Internet	**40.7%** Households without TV	**42.8%** Households without Radio	
Economic Constraints	**0.70** Economic Dependency Ratio	**53.8%** Population in Poverty	**0.33** GINI Coefficient				
Gender Inequality	**0.33** Ratio of Female to Male Land Ownership Rate	**0.77** Ratio of Female to Male Home Ownership Rate	**0.19** Ratio Female to Male Economic Activity	**1.13** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**3.0%** Average Annual Population Change	**11.1%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 2 of 18 Departments (Score: 0.682) Despite having relatively high Coping Capacity overall, Ocotepeque exhibits moderate weaknesses in the thematic areas of Environmental Capacity and Communications Infrastructure. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

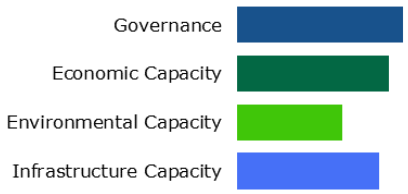


Table 4. Component scores for each coping capacity subcomponent.

Governance	**50.8** Homicides per 100k Persons	**108.2** Sexual Violence and Assault per 100k Persons	**26.2%** Households with Public Garbage Collection	**77.0%** Voter Participation (2013 Election)		
Economic Capacity	**38.8%** Economic Activity Rate	**99.0%** Employment Rate	**9.4%** Population in Highest Wealth Quintile			
Environmental Capacity	**23.5%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**5.3** Hospital Beds per 10,000 Persons	**3.4** Physicians per 10,000 Persons	**13.2** Nurses per 10,000 Persons	**20.0 km** Average Distance to Nearest Hospital	**91.8%** Children Completed Immunization Schedule	
Communications Capacity	**10.2%** Households with Access to Fixed Phone Line	**63.9%** Households with Access to Mobile Phone				
Transportation Capacity	**16.7 km** Average Distance to Nearest Port or Airport	**25.3 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 14 of 18 Departments (Score: 0.429)

Ocotepeque's Lack of Resilience score and ranking are due to moderate Vulnerability combined with very high Coping Capacity scores.

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

Gender Inequality	**Population Pressures**	**Information Access Vulnerability**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 18 of 18 Departments (Score: 0.303)

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

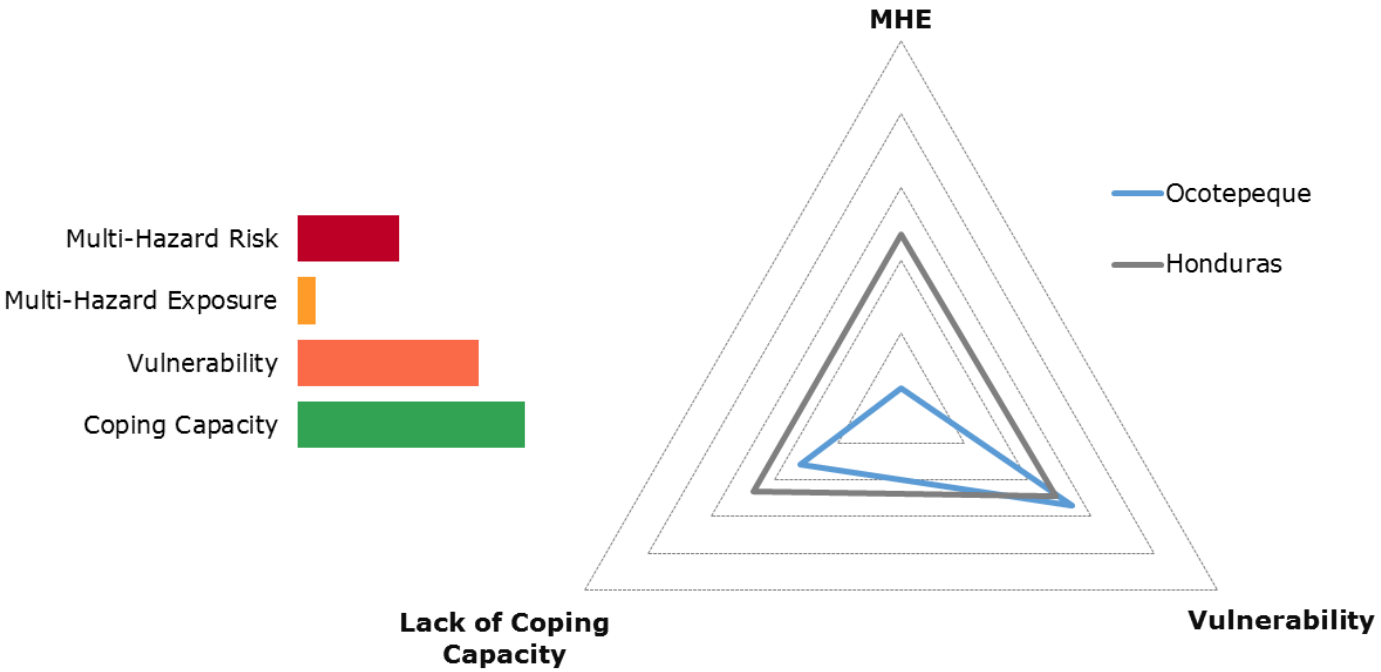


Figure 58. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

High transportation capacity
Ranked 3 of 18 departments, well-developed transportation networks facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

Highest overall governance
Ranked 1 of 18 departments, high governance could facilitate the implementation of disaster-management initiatives into departmental and municipal communities.

Low environmental stress
Ranked 15 of 18 departments, low environmental stress indicates that natural resources and agriculture will be more resilient to the effects of a disaster and may recover faster.

Recommendations

01

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

02

Monitor and manage population influx
Invest in a program to manage population influx into the region. Ocotepeque's vast (protected) resources have caused an increase in corporate and individual farming and logging operations. Population-control measures must be enacted to control the influx in personnel as the infrastructure is not designed to handle it.

03

Increase information accessibility
Increase access to information for the population through investments in infrastructure and education. By increasing citizen access to information, disaster managers can provide disaster-related information to a greater percentage of the population.

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Olancho

Honduras National Disaster Preparedness Baseline Assessment

Department Profile

Department: Olancho

Department Capital: Juticalpa
Area: 23,905 km^2
Olancho, largest of the 18 departments, is located in eastern Honduras, north of El Paraíso. The department is regarded as having a wealth of natural resources with rich biodiversity. The economy is based primarily in agriculture with extensive farming, cattle ranching, and timber extraction. The Guayape River in Olancho is known for its gold deposits.

554,282 Population (2017)

63.2% Population in Poverty

20.0% Illiterate Adult Population

76.1 yrs Average Life Expectancy

78.9% Household Access to Piped Water

Municipality	Population
Campamento	21,814
Catacamas	126,982
Concordia	8,498
Dulce Nombre de Culmí	31,118
Esquipulas del Norte	11,496
Gualaco	22,769
Guarizama	7,942
Guata	12,385
Guayape	13,152
Jano	5,083
Juticalpa	135,076
La Unión	8,038
Mangulile	9,495
Manto	11,748
Patuca	27,671
Salamá	7,859
San Esteban	26,781
San Francisco de Becerra	10,318
San Francisco de La Paz	20,183
Santa María del Real	10,875
Silca	8,135
Yocón	12,566

Multi-Hazard Risk Rank: High (6 of 18)

Lack of Resilience Rank: High (4 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		High		Moderate		High		Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.534	6	0.541	4	0.520	7	0.594	4	0.513	11

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 7 of 18 Departments (Score: 0.520)

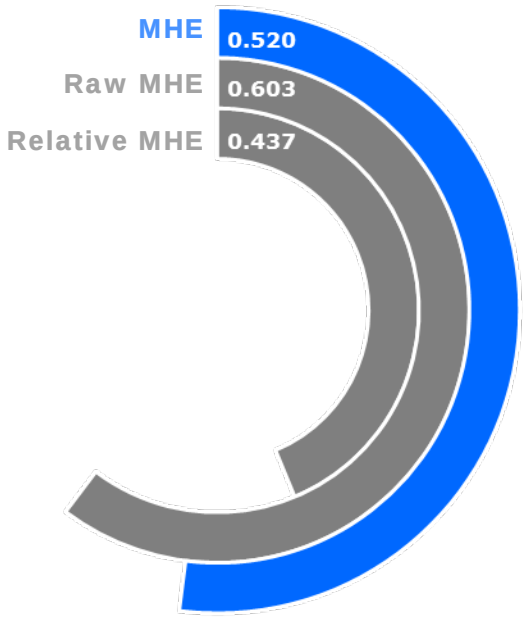
Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone	**100%**	Seismic	**0%**
	546,178 People		**0 People**
Drought	**72%**	Inland Flood	**35%**
	392,031 People		**193,204 People**
Landslide	**1%**	Coastal Flood	**0%**
	5,495 People		**0 People**

Case Study: Olancho Aid Foundation Inc.

The Olancho Aid Foundation Inc. is a nonprofit, faith-based organization that empowers Honduran youth to transform themselves, their communities, and their country through education.

Each year Mission Teams travel to Olancho from several different states in the U.S. Some teams consist of small groups of 4-5 people, and others are groups of 30+ people. Each team comes to help the underserved community in Juticalpa, Olancho, Honduras. Teams host medical clinics, complete construction projects, paint and make repairs, and distribute clothing to the poor in remote villages. Integration of disaster-risk information into the foundation could increase the resilience of the population.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 4 of 18 Departments (Score: 0.594) Vulnerability in Olancho is strongly influenced by Economic Constraints, Environmental Stress, Information Access Vulnerability, and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

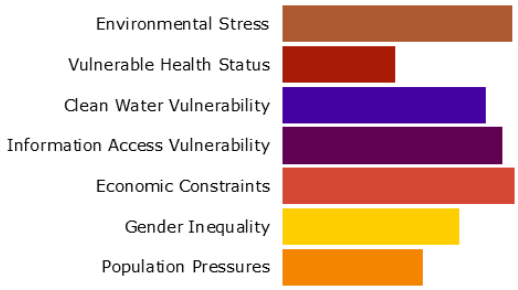


Table 3. Component scores for each vulnerability subcomponent.

Environmental Stress	**39.0%** Forest Loss Due to Pine Beetle Plague	**29.4%** Water Shortage Area						
Vulnerable Health Status	**17.6** Infant Mortality Rate	**188.1** Maternal Mortality Ratio	**76.1** Life Expectancy (years)	**0.7%** Acute Malnutrition Rate	**2.1%** Population Disabled	**0.440** Communicable Disease Sub-Index[4]	**0.192** Non-Communicable Disease Sub-Index[4]	
Clean Water Vulnerability	**78.9%** Households Access to Piped Water	**53.2%** Households Connected to Sewer or Septic System						
Information Access Vulnerability	**20.0%** Adult Illiteracy	**5.9** Average Years of Schooling	**87.1%** Enrollment in Basic Education	**96.4%** Households without Internet	**50.5%** Households without TV	**35.0%** Households without Radio		
Economic Constraints	**0.77** Economic Dependency Ratio	**63.2%** Population in Poverty	**0.41** GINI Coefficient					
Gender Inequality	**0.55** Ratio of Female to Male Land Ownership Rate	**1.02** Ratio of Female to Male Home Ownership Rate	**0.20** Ratio Female to Male Economic Activity	**1.12** Ratio of Female to Male Secondary Enrollment				
Population Pressures	**2.0%** Average Annual Population Change	**6.7%** Average Annual Urban Population Change						

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 11 of 18 Departments (Score: 0.513) Olancho exhibits weaker Coping Capacity in the areas of Economic Capacity and Infrastructure (especially Health Care and Transportation). The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

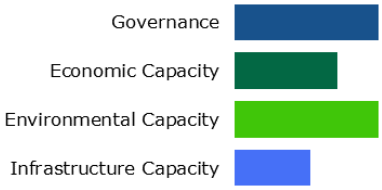


Table 4. Component scores for each coping capacity subcomponent.

Governance	**36.3** Homicides per 100k Persons	**94.5** Sexual Violence and Assault per 100k Persons	**18.3%** Households with Public Garbage Collection	**69.1%** Voter Participation (2013 Election)		
Economic Capacity	**33.3%** Economic Activity Rate	**98.5%** Employment Rate	**9.3%** Population in Highest Wealth Quintile			
Environmental Capacity	**34.4%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**3.2** Hospital Beds per 10,000 Persons	**1.8** Physicians per 10,000 Persons	**7.0** Nurses per 10,000 Persons	**50.2 km** Average Distance to Nearest Hospital	**84.8%** Children Completed Immunization Schedule
Communications Capacity	**13.6%** Households with Access to Fixed Phone Line	**59.0%** Households with Access to Mobile Phone			
Transportation Capacity	**52.2 km** Average Distance to Nearest Port or Airport	**7.8 km** Total Length of Road per km^2 (area)			

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 4 of 18 Departments (Score: 0.541)

Olancho's Lack of Resilience score and ranking are due to high Vulnerability combined with low Coping Capacity scores.

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

Economic Constraints	**Environmental Stress**	**Information Access Vulnerability**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 6 of 18 Departments (Score: 0.534)

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

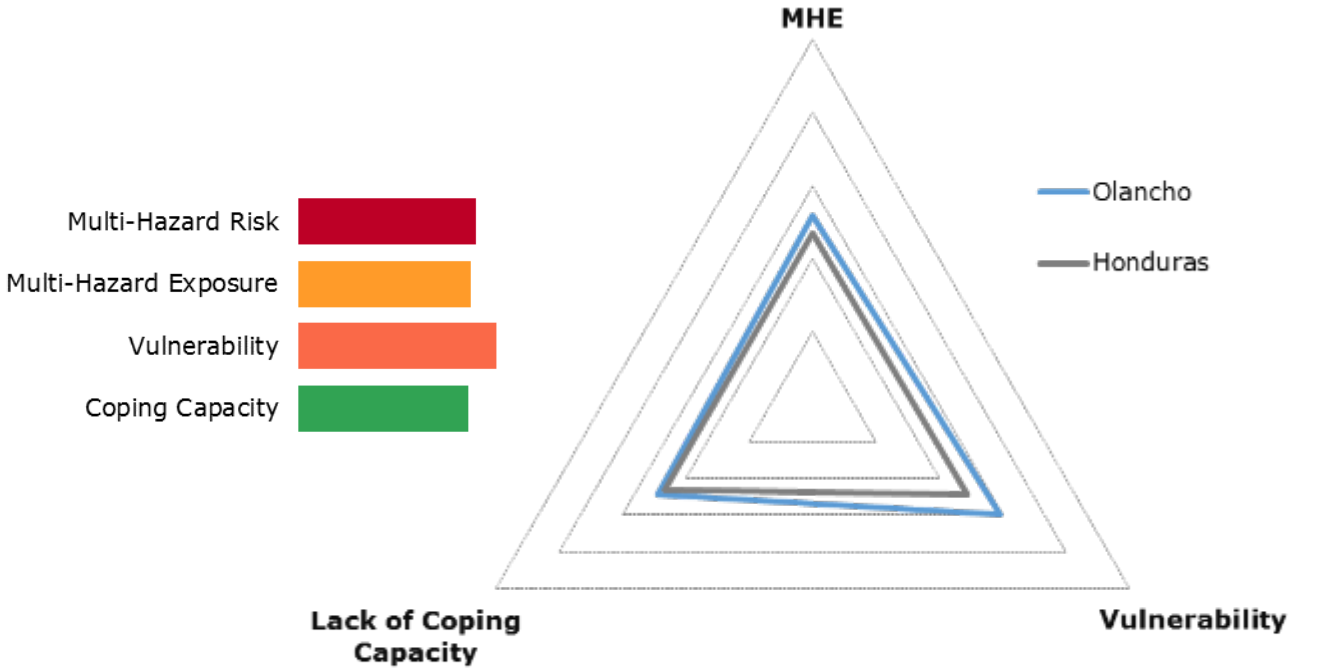


Figure 59. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

Low vulnerable health status

Ranked 17 of 18 departments, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

Low population pressures

Ranked 12 of 18 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

High overall governance

Ranked 5 of 18 departments, high governance could facilitate the implementation of disaster-management initiatives into departmental and municipal communities.

Recommendations

01

Increased economic opportunity

Provide education and government-backed incentivized business programs to promote business development and growth, ultimately decreasing vulnerability within the department.

02

Promote environmental programs

Invest in environmental protection programs to preserve land and vegetation, increasing resiliency and coping capacity.

03

Increase information accessibility

Increase access to information for the population through investments in infrastructure and education. By increasing citizen access to information, disaster managers can provide disaster-related information to a greater percentage of the population.

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Santa Bárbara

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Santa Bárbara

Department Capital: Santa Bárbara
Area: 5,024 km^2
Santa Bárbara is located between Copán and Cortés, sharing a border with Guatemala. The department features climatic conditions ideal for growing coffee, the main staple crop. Local economies also thrive on the sale of handicrafts made from reed of palm. El Mochito mine produces zinc, lead, and silver.

448,942 Population (2017)

55.0% Population in Poverty

22.3% Illiterate Adult Population

76.3 yrs Average Life Expectancy

89.5% Household Access to Piped Water

Municipality	Population
Arada	10.433
Atima	19,132
Azacualpa	22,240
Ceguaca	5,353
Chinda	4,947
Concepción del Norte	9,405
Concepción del Sur	5,517
El Níspero	8,745
Gualala	5,416
Ilama	9,160
Las Vegas	25,075
Macuelizo	36,607
Naranjito	12,637
Nueva Frontera	13,245
Nuevo Celilac	8,185
Petoa	12,617
Protección	17,220
Quimistán	54,638
San Francisco de Ojuera	7,595
San José de Colinas	19,407
San Luis	25,166
San Marcos	15,857
San Nicolás	15,360
San Pedro Zacapa	10,868
San Vicente Centenario	3,629
Santa Bárbara	45,002
Santa Rita	4,036
Trinidad	20,307

Multi-Hazard Risk Rank: High (5 of 18)

Lack of Resilience Rank: High (6 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
High		High		High		Low		Very Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.545	5	0.508	6	0.619	5	0.482	11	0.465	15

Multi-Hazard Exposure (MHE)

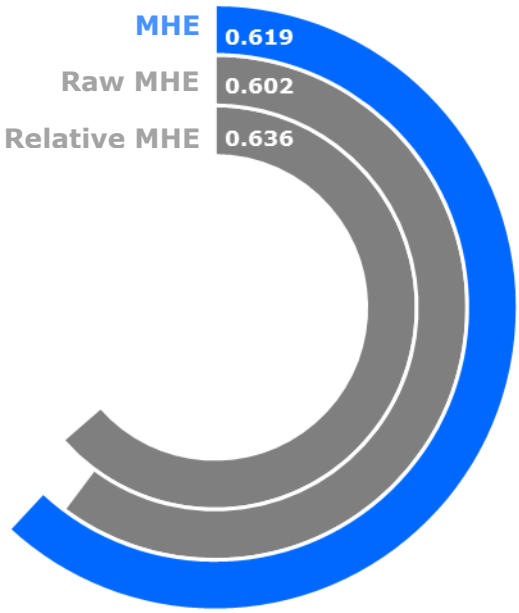
Multi-Hazard Exposure[1] Rank: 5 of 18 Departments (Score: 0.619)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone	**100%**	**463,791 People**
Seismic	**100%**	**463,791 People**
Drought	**27%**	**124,570 People**
Inland Flood	**6%**	**26,405 People**
Landslide	**12%**	**56,084 People**
Coastal Flood	**0%**	**0 People**

Case Study: Unitarian Universalist Service Committee (UUSC)

UUSC is conducting a project in Santa Bárbara designed to "promote awareness, protection, and access to justice for Honduran women who face insecurity from gender-based violence." This program, started June 2017, may help to reduce the high gender inequality present throughout the department.



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

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

Vulnerability (V)

Vulnerability[3] Rank: 11 of 18 Departments (Score: 0.482) Vulnerability in Santa Bárbara is influenced by Information Access Vulnerability and Gender Inequality. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

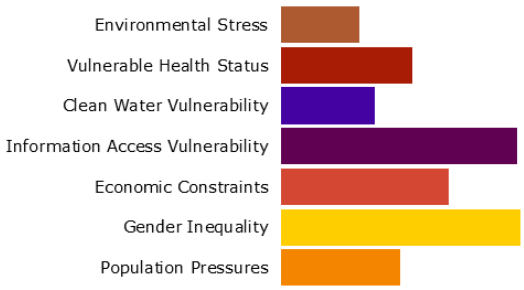


Table 3. Component scores for each vulnerability subcomponent.

Environmental Stress	**7.7%** Forest Loss Due to Pine Beetle Plague	**19.0%** Water Shortage Area						
Vulnerable Health Status	**18.5** Infant Mortality Rate	**140.1** Maternal Mortality Ratio	**76.3** Life Expectancy (years)	**1.2%** Acute Malnutrition Rate	**3.4%** Population Disabled	**0.280** Communicable Disease Sub-Index[4]	**0.259** Non-Communicable Disease Sub-Index [4]
Clean Water Vulnerability	**89.5%** Households Access to Piped Water	**66.3%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**22.3%** Adult Illiteracy	**5.7** Average Years of Schooling	**89.7%** Enrollment in Basic Education	**96.6%** Households without Internet	**47.1%** Households without TV	**42.6%** Households without Radio	
Economic Constraints	**0.73** Economic Dependency Ratio	**55.0%** Population in Poverty	**0.34** GINI Coefficient				
Gender Inequality	**0.35** Ratio of Female to Male Land Ownership Rate	**0.85** Ratio of Female to Male Home Ownership Rate	**0.19** Ratio Female to Male Economic Activity	**1.08** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**1.9%** Average Annual Population Change	**5.7%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 15 of 18 Departments (Score: 0.465) Santa Bárbara exhibits weaker Coping Capacity in the areas of Environmental Capacity and Infrastructure (especially Health Care and Communications). The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

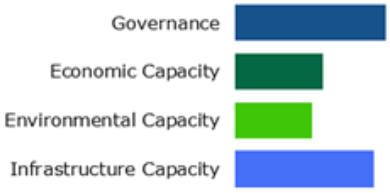


Table 4. Component scores for each coping capacity subcomponent.

Governance	**63.2** Homicides per 100k Persons	**118.2** Sexual Violence and Assault per 100k Persons	**15.1%** Households with Public Garbage Collection	**78.9%** Voter Participation (2013 Election)		
Economic Capacity	**34.6%** Economic Activity Rate	**98.5%** Employment Rate	**8.7%** Population in Highest Wealth Quintile			
Environmental Capacity	**6.4%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**2.2** Hospital Beds per 10,000 Persons	**1.4** Physicians per 10,000 Persons	**4.9** Nurses per 10,000 Persons	**30.5 km** Average Distance to Nearest Hospital	**87.5%** Children Completed Immunization Schedule	
Communications Capacity	**7.5%** Households with Access to Fixed Phone Line	**54.0%** Households with Access to Mobile Phone				
Transportation Capacity	**47.4 km** Average Distance to Nearest Port or Airport	**25.4 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 6 of 18 Departments (Score: 0.508)

Santa Bárbara's Lack of Resilience score and ranking are due to low Vulnerability combined with very low Coping Capacity scores.

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

Environmental Stress	**Environmental Capacity**	**Infrastructure**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 5 of 18 Departments (Score: 0.545)

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

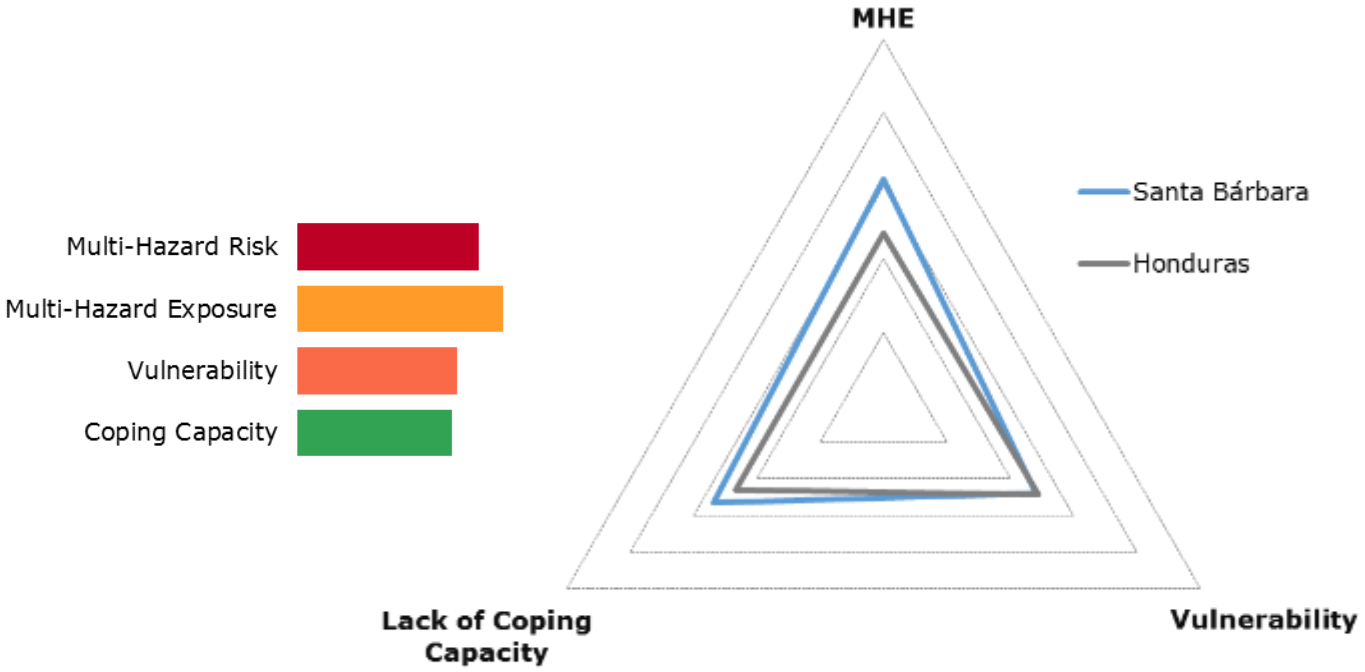


Figure 60. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

Low vulnerable health status

Ranked 15 of 18 departments, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

High overall governance

Ranked 7 of 18 departments, high governance could facilitate the implementation of disaster-management initiatives into departmental and municipal communities.

Recommendations

01

Increase environmental programs

While environmental programs are not weighted heavily in the analysis, an increased emphasis on land preservation, reforestation, and drought-resistant farming can decrease vulnerability and increase coping capacity.

02

Invest in infrastructure

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

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Valle

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Valle

Department Capital: Nacaome
Area: 1,665 km^2
Valle is located in south Honduras, west of Choluteca, sharing a border with the Gulf of Fonseca to the south and El Salvador to the west. Climate in the department tends to be very hot and dry. Over half of the department resides in a water-shortage area. Economic activity in Valle is based on agriculture, shrimp farming, and salt mining.

182,996 Population (2017)

67.2% Population in Poverty

17.7% Illiterate Adult Population

76.2 yrs Average Life Expectancy

77.1% Household Access to Piped Water

Municipality	Population
Alianza	7,562
Amapala	13,302
Aramecina	7,460
Caridad	4,000
Goascorán	14,489
Langue	21,387
Nacaome	59,970
San Francisco de Coray	9,910
San Lorenzo	44,917

Multi-Hazard Risk Rank: Moderate (10 of 18)

Lack of Resilience Rank: Low (11 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Moderate		Low		Moderate		Moderate		Moderate	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.485	10	0.490	11	0.473	8	0.537	9	0.557	8

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 8 of 18 Departments (Score: 0.473)

Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone
0%
0 People

One of only three departments with 0% exposure to tropical cyclones.

Seismic
100%
204,386 People

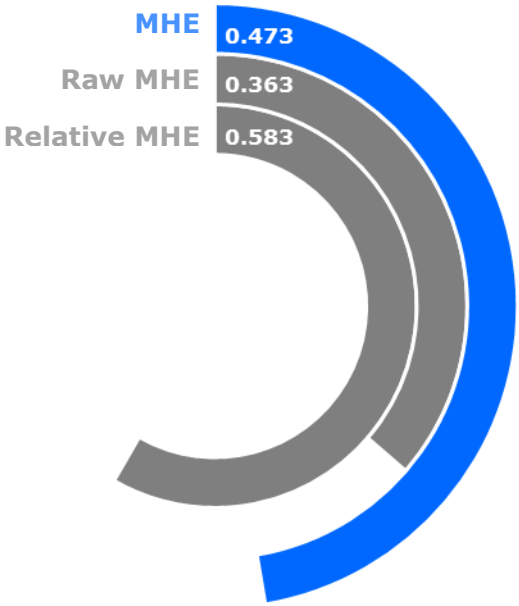
Drought
79%
161,120 People

Inland Flood
36%
73,092 People

Landslide
9%
17,981 People

Coastal Flood
12%
23,650 People

Figure 1. Valle, Honduras (image credit: Panoramio).



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

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

Vulnerability (V)

Vulnerability[3] Rank: 9 of 18 Departments (Score: 0.537) Vulnerability in Valle is strongly influenced by Environmental Stress and Clean Water Vulnerability. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

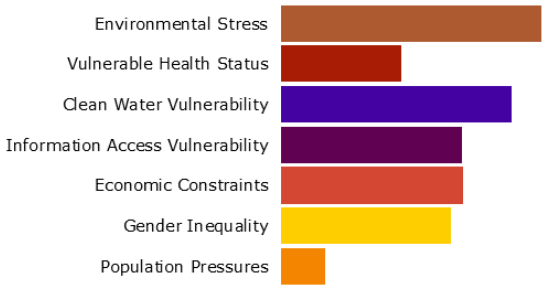


Table 3. Component scores for each vulnerability subcomponent.

Environmental Stress	**25.4%** Forest Loss Due to Pine Beetle Plague	**64.2%** Water Shortage Area						
Vulnerable Health Status	**13.4** Infant Mortality Rate	**123.8** Maternal Mortality Ratio	**76.2** Life Expectancy (years)	**1.6%** Acute Malnutrition Rate	**2.7%** Population Disabled	**0.611** Communicable Disease Sub-Index[4]	**0.408** Non-Communicable Disease Sub-Index[4]
Clean Water Vulnerability	**77.1%** Households Access to Piped Water	**46.0%** Households Connected to Sewer or Septic System					
Information Access Vulnerability	**17.7%** Adult Illiteracy	**6.2** Average Years of Schooling	**92.6%** Enrollment in Basic Education	**95.5%** Households without Internet	**40.0%** Households without TV	**38.0%** Households without Radio	
Economic Constraints	**0.72** Economic Dependency Ratio	**67.2%** Population in Poverty	**0.32** GINI Coefficient				
Gender Inequality	**0.65** Ratio of Female to Male Land Ownership Rate	**1.11** Ratio of Female to Male Home Ownership Rate	**0.24** Ratio Female to Male Economic Activity	**1.09** Ratio of Female to Male Secondary Enrollment			
Population Pressures	**1.2%** Average Annual Population Change	**4.3%** Average Annual Urban Population Change					

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 8 of 18 Departments (Score: 0.557)

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

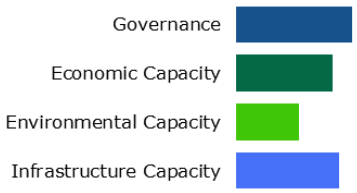


Table 4. Component scores for each coping capacity subcomponent.

Governance	**14.0** Homicides per 100k Persons	**189.3** Sexual Violence and Assault per 100k Persons	**11.0%** Households with Public Garbage Collection	**79.7%** Voter Participation (2013 Election)		
Economic Capacity	**32.8%** Economic Activity Rate	**97.8%** Employment Rate	**8.6%** Population in Highest Wealth Quintile			
Environmental Capacity	**17.0%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**4.9** Hospital Beds per 10,000 Persons	**3.4** Physicians per 10,000 Persons	**12.4** Nurses per 10,000 Persons	**25.2 km** Average Distance to Nearest Hospital	**86.4%** Children Completed Immunization Schedule	
Communications Capacity	**12.4%** Households with Access to Fixed Phone Line	**58.1%** Households with Access to Mobile Phone				
Transportation Capacity	**23.0 km** Average Distance to Nearest Port or Airport	**35.6 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 11 of 18 Departments (Score: 0.490)

Valle's Lack of Resilience score and ranking are due to moderate Vulnerability combined with moderate Coping Capacity scores.

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

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

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 10 of 18 Departments (Score: 0.485)

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

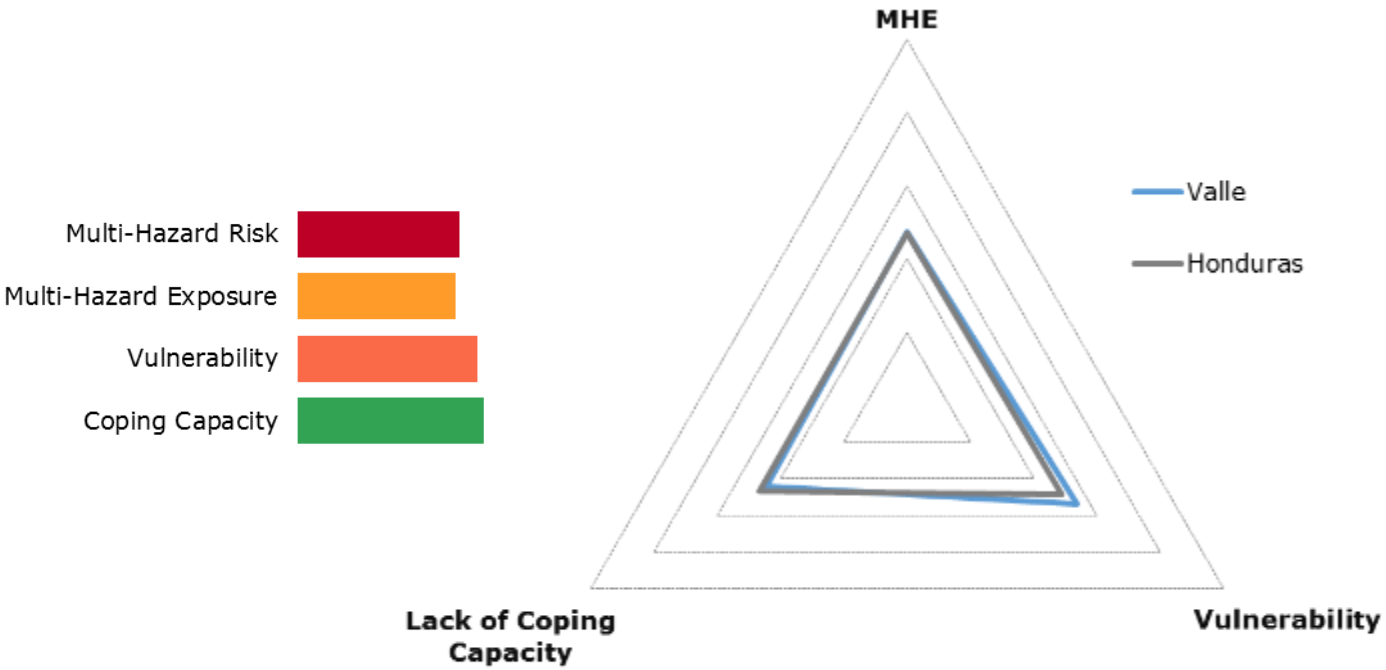


Figure 61. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

Low vulnerable health status

Ranked 16 of 18 departments, low health vulnerability could indicate a population that will be more resilient to the negative health impacts associated with major disaster events.

High overall governance

Ranked 3 of 18 departments, high governance could facilitate the implementation of disaster-management initiatives into departmental and municipal communities.

High transportation capacity

Ranked 2 of 18 departments, well-developed transportation networks facilitate the movement of goods and services, decreasing wait times for response and relief supplies.

Recommendations

01

Increase environmental programs

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

02

Increase water and sanitation services

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

03

Increase economic capacity

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

Better solutions.
Fewer disasters.
Safer world.

PDC | GLOBAL

Yoro

Honduras National Disaster Preparedness Baseline Assessment
Department Profile

Department: Yoro

Department Capital: Yoro
Area: 7,781 km^2
Yoro is located in north-central Honduras, south of Atlántida. The department contains rich agricultural lands, concentrated mainly within the Aguan River Valley to the east and the Sula Valley to the west. The capital city of Yoro is famous for the "Lluvia de Peces" (rain of fishes), a tradition by which fish "fall from the sky" during heavy summer rains.

604,844
Population (2017)

54.7%
Population in Poverty

15.1%
Illiterate Adult Population

75.5 yrs
Average Life Expectancy

91.0%
Household Access to Piped Water

Municipality	Population
Arenal	5,995
El Negrito	47,663
El Progreso	195,247
Jocón	9,710
Morazán	44,188
Olanchito	112,444
Santa Rita	20,841
Sulaco	18,866
Victoria	35,475
Yorito	20,926
Yoro	93,489

Multi-Hazard Risk Rank: Very High (2 of 18)

Lack of Resilience Rank: Moderate (7 of 18)

RVA Component Scores

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

Multi-Hazard Risk		Lack of Resilience		Multi-Hazard Exposure		Vulnerability		Coping Capacity	
Very High		High		Very High		Low		Very Low	
Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)	Score	Rank (of 18)
0.568	2	0.504	7	0.697	3	0.473	12	0.464	16

Multi-Hazard Exposure (MHE)

Multi-Hazard Exposure[1] Rank: 3 of 18 Departments (Score: 0.697)

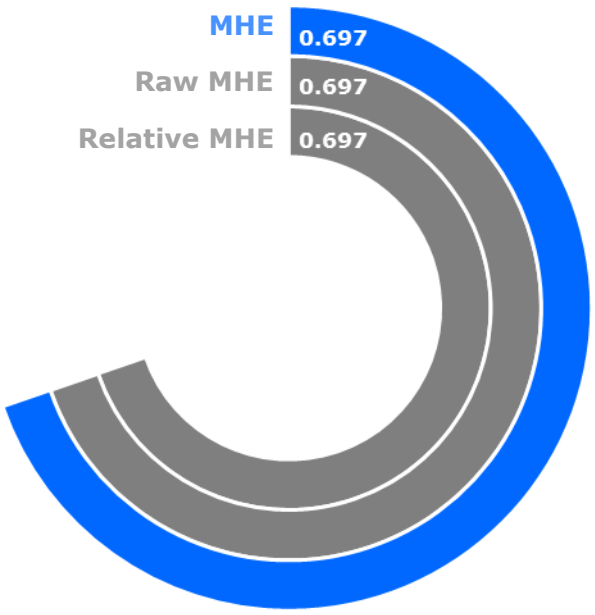
Table 2. Estimated ambient population[2] exposed to each hazard (2014).

Cyclone	**100%**	**623,605 People**
Seismic	**49%**	**306,600 People**
Drought	**85%**	**528,658 People**
Inland Flood	**20%**	**124,367 People**
Landslide	**2%**	**12,751 People**
Coastal Flood	**0%**	**0 People**

Case Study: Feed the Children

Feed the Children is conducting a project in Yoro designed to "improve the food & nutrition security of mothers and children, and more specifically to reduce malnutrition." This project could help to reduce vulnerable health in the department.

https://www.ngoaidmap.org/projects/14187



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

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

Vulnerability (V)

Vulnerability[3] Rank: 12 of 18 Departments (Score: 0.473) Vulnerability in Yoro is influenced by Environmental Stress, Gender Inequality, Information Access Vulnerability, and Economic Constraints. The bar chart on the right indicates the socioeconomic themes contributing to the department's overall score.

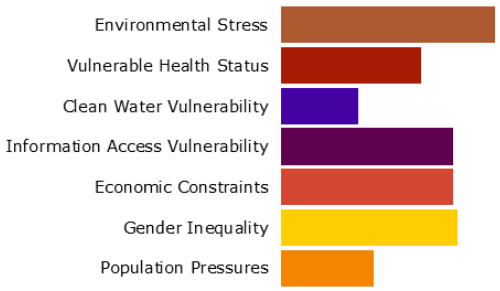


Table 3. Component scores for each vulnerability subcomponent.

Environmental Stress	**36.3%** Forest Loss Due to Pine Beetle Plague	**27.4%** Water Shortage Area						
Vulnerable Health Status	**16.4** Infant Mortality Rate	**123.5** Maternal Mortality Ratio	**75.5** Life Expectancy (years)	**1.9%** Acute Malnutrition Rate	**3.1%** Population Disabled	**0.412** Communicable Disease Sub-Index[4]	**0.319** Non-Communicable Disease Sub-Index [4]	
Clean Water Vulnerability	**91.0%** Households Access to Piped Water	**68.4%** Households Connected to Sewer or Septic System						
Information Access Vulnerability	**15.1%** Adult Illiteracy	**6.1** Average Years of Schooling	**91.4%** Enrollment in Basic Education	**93.9%** Households without Internet	**35.8%** Households without TV	**37.5%** Households without Radio		
Economic Constraints	**0.74** Economic Dependency Ratio	**54.7%** Population in Poverty	**0.34** GINI Coefficient					
Gender Inequality	**0.38** Ratio of Female to Male Land Ownership Rate	**1.05** Ratio of Female to Male Home Ownership Rate	**0.26** Ratio Female to Male Economic Activity	**1.07** Ratio of Female to Male Secondary Enrollment				
Population Pressures	**1.9%** Average Annual Population Change	**4.5%** Average Annual Urban Population Change						

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

[4] **Sub-indices:** A combination of scaled indicators to represent a vulnerability theme (e.g. Communicable Disease). Values range from 0 (low) to 1 (high).

Coping Capacity (CC)

Coping Capacity[5] Rank: 16 of 18 Departments (Score: 0.464) Yoro exhibits weaker Coping Capacity in the areas of Economic Capacity, Environmental Capacity, and Infrastructure (especially Transportation and Health Care). The bar chart on the right indicates the socioeconomic themes contributing to the department's overall Coping Capacity score.

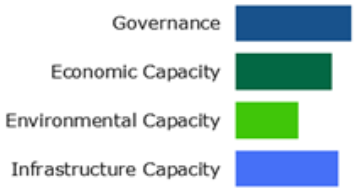


Table 4. Component scores for each coping capacity subcomponent.

Governance	**77.8** Homicides per 100k Persons	**124.5** Sexual Violence and Assault per 100k Persons	**27.7%** Households with Public Garbage Collection	**59.3%** Voter Participation (2013 Election)		
Economic Capacity	**32.8%** Economic Activity Rate	**97.5%** Employment Rate	**15.7%** Population in Highest Wealth Quintile			
Environmental Capacity	**14.2%** Natural Protected Area					
Infrastructure Capacity						
Health Care Capacity	**4.5** Hospital Beds per 10,000 Persons	**2.2** Physicians per 10,000 Persons	**6.9** Nurses per 10,000 Persons	**22.9 km** Average Distance to Nearest Hospital	**80.9%** Children Completed Immunization Schedule	
Communications Capacity	**14.7%** Households with Access to Fixed Phone Line	**61.2%** Households with Access to Mobile Phone				
Transportation Capacity	**36.3 km** Average Distance to Nearest Port or Airport	**10.5 km** Total Length of Road per km^2 (area)				

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

Lack of Resilience (LR)

Lack of Resilience[6] Rank: 7 of 18 Departments (Score: 0.504)

Yoro's Lack of Resilience score and ranking are due to low Vulnerability combined with very low Coping Capacity scores.

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

Environmental Stress	**Environmental Capacity**	**Gender Inequality**

Multi-Hazard Risk (MHR)

Multi-Hazard Risk[7] Rank: 2 of 18 Departments (Score: 0.568)

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

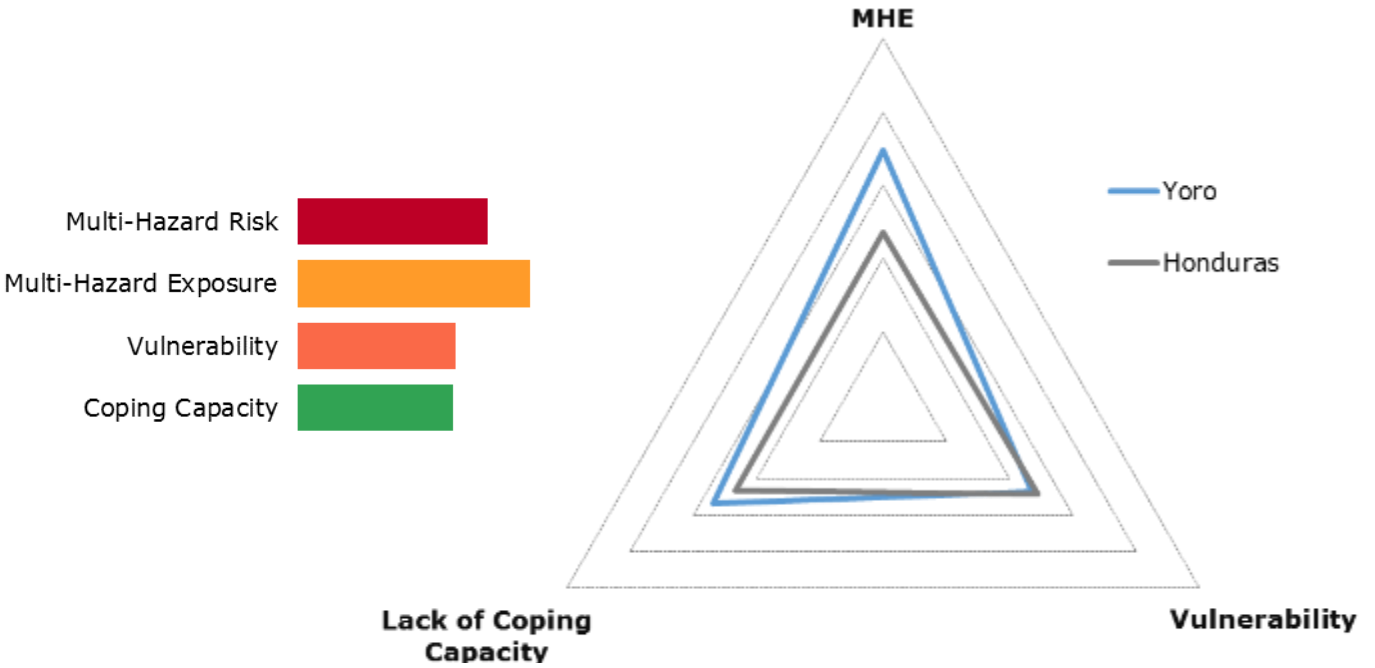


Figure 62. Department multi-hazard risk component scores compared to overall average country scores

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

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

Successes

Low clean water vulnerability

Ranking 14 of 18 departments, low clean water vulnerability indicates that a population has access to high water quality and good containment systems, reducing susceptibility to disaster.

Low population pressures

Ranked 15 of 18 departments, limited population change allows disaster managers to form accurate evacuation, sheltering, and resource plans.

Recommendations

01

Promote drought-resistant farming methods

A high percentage of the department is at risk of drought. Programs that promote drought-resistant crops and farming methods will decrease vulnerability to drought in the department.

02

Increase environmental programs

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

Appendices

Appendix A: RVA Component Index Hierarchies and Thematic Rationale

Multi-Hazard Exposure

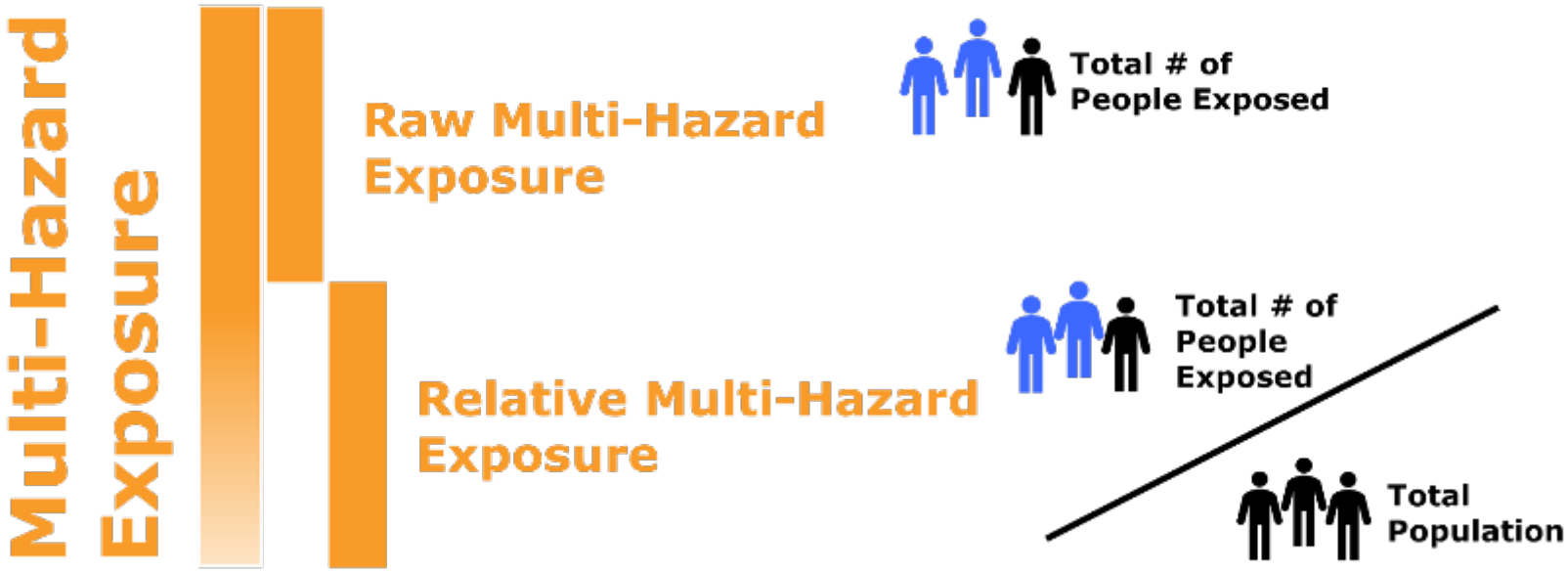


Figure 42.Multi-hazard exposure index hierarchy.

Table 11. Multi-hazard exposure scores and ranks for all indices and subcomponents.

Department	MHE Index		Raw MHE		Relative MHE	
	Score	Rank	Score	Rank	Score	Rank
Atlántida	0.539	6	0.564	7	0.513	9
Choluteca	0.315	15	0.502	10	0.128	17
Colón	0.325	13	0.395	12	0.255	14
Comayagua	0.658	4	0.619	4	0.697	4
Copán	0.472	9	0.511	9	0.433	11
Cortés	1.000	1	1.000	1	1.000	1
El Paraíso	0.438	11	0.537	8	0.340	12
Francisco Morazán	0.747	2	0.927	2	0.567	7
Gracias a Dios	0.326	12	0.112	16	0.540	8
Intibucá	0.242	17	0.313	14	0.171	16
Islas de la Bahía	0.444	10	0.000	18	0.888	2
La Paz	0.288	16	0.297	15	0.280	13
Lempira	0.325	14	0.420	11	0.230	15
Ocotepeque	0.051	18	0.102	17	0.000	18
Olancho	0.520	7	0.603	5	0.437	10
Santa Bárbara	0.619	5	0.602	6	0.636	5
Valle	0.473	8	0.363	13	0.583	6
Yoro	0.697	3	0.697	3	0.697	3

Table 12. RVA—Multi-Hazard Exposure metadata.

Multi-Hazard Exposure					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Raw Exposure	Raw Population Exposure	COPECO, GEM RESIS II (hazards zones); Oak Ridge National Lab (ORNL) Landscan (population)	2014 (population)	Cumulative raw count of person units exposed to multiple hazards, including coastal and inland floods, earthquake, landslides, tropical cyclone wind, and drought	Hazard-exposure zones: Coastal Flood: Areas susceptible to coastal flooding, tides, and tidal waves based on historical observations and modeling. Inland Flood: Areas susceptible to inland flood based on historical observations and modeling. Seismic: Areas with MMI VII and above based on 1.0 second spectral acceleration at a 2,475-year return period. Landslide: Areas susceptible to landslide, estimated using a combination of environmental-susceptibility modeling and observation-based datasets. This zone includes 1) areas observed as unstable or previously impacted by landslides; and 2) areas modeled as having medium, high, or very high susceptibility. Tropical Cyclone Wind: Areas with maximum sustained wind speeds greater than or equal to 119 km/h (corresponding to Tropical Cyclone Category 1 and greater winds). Drought: Areas modeled as being in water shortage.
Relative Exposure	Relative Population Exposure	INETER (Hazards Zones); MunichRe/USGS HazPac (Tropical Cyclone Wind); SRTM Elevation; ORNL Landscan (population)	2014 (population)	Cumulative raw count of person units exposed to multiple hazards, per capita.	See above for detailed description of hazard zones.

Vulnerability

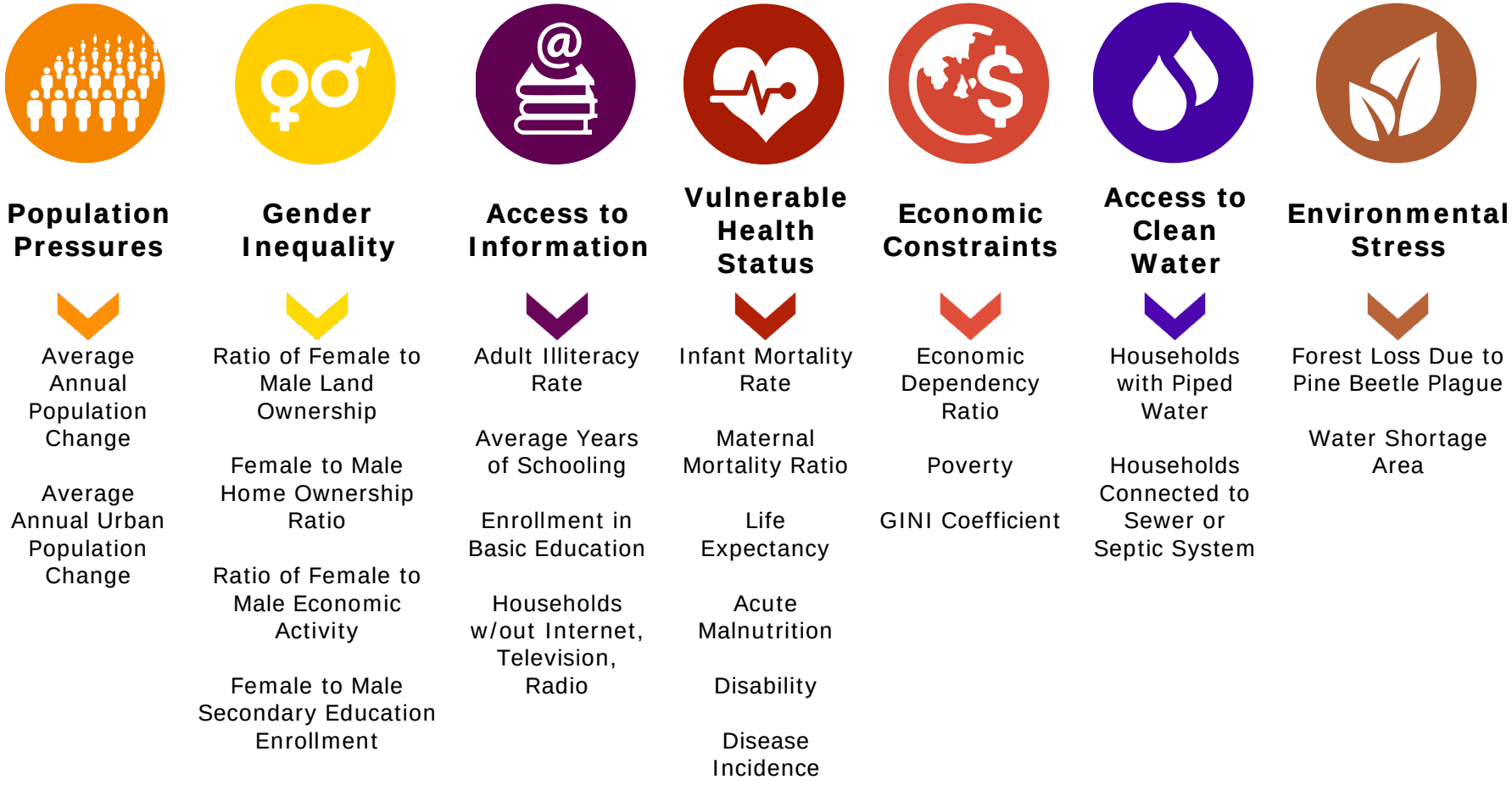


Figure 43. Vulnerability index hierarchy.

Table 13. 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
Atlántida	0.363	15	0.367	15	0.309	15	0.138	16	0.487	9	0.399	14	0.375	14	0.463	8
Choluteca	0.459	13	0.622	7	0.597	10	0.783	2	0.451	11	0.508	13	0.107	18	0.143	11
Colón	0.409	14	0.513	13	0.616	9	0.197	15	0.497	7	0.521	12	0.515	8	0.001	16
Comayagua	0.564	7	0.593	8	0.485	14	0.388	9	0.439	13	0.766	3	0.754	4	0.521	6
Copán	0.573	5	0.677	6	0.854	3	0.380	10	0.639	1	0.755	6	0.559	6	0.149	10
Cortés	0.265	18	0.073	18	0.230	16	0.004	18	0.302	18	0.281	15	0.454	10	0.513	7
El Paraíso	0.598	3	0.592	9	0.637	8	0.714	4	0.496	8	0.761	4	0.452	11	0.537	5
Francisco Morazán	0.298	16	0.167	16	0.063	18	0.299	12	0.429	14	0.213	18	0.284	16	0.630	4
Gracias a Dios	0.639	1	0.895	1	0.869	2	1.000	1	0.523	6	0.278	16	0.909	1	0.000	17
Intibucá	0.570	6	0.776	3	0.677	7	0.674	5	0.583	2	0.651	8	0.551	7	0.081	13
Islas de la Bahía	0.280	17	0.130	17	0.214	17	0.032	17	0.467	10	0.252	17	0.863	2	0.000	17
La Paz	0.524	10	0.733	5	0.557	12	0.534	8	0.570	3	0.657	7	0.479	9	0.139	12
Lempira	0.631	2	0.867	2	0.882	1	0.666	6	0.546	4	0.799	2	0.655	5	0.005	14
Ocotepeque	0.541	8	0.473	14	0.738	5	0.303	11	0.529	5	0.937	1	0.801	3	0.003	15
Olancho	0.594	4	0.733	4	0.697	6	0.643	7	0.357	17	0.559	9	0.443	12	0.729	2
Santa Bárbara	0.482	11	0.533	12	0.749	4	0.297	13	0.414	15	0.758	5	0.377	13	0.247	9
Valle	0.537	9	0.576	10	0.573	11	0.732	3	0.380	16	0.537	11	0.138	17	0.826	1
Yoro	0.473	12	0.544	11	0.545	13	0.244	14	0.443	12	0.558	10	0.294	15	0.679	3

Table 14. Vulnerability metadata.

Vulnerability					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Economic Constraints	Economic Dependency Ratio	INE REDATAM - CNPV 2013	2013	Ratio of dependents - people younger than 15 and older than 64 - to the working-age population - those ages 15-64	
	Poverty by Unsatisfied Basic Needs	INE REDATAM - CNPV 2013	2013	Percentage of households with one or more unsatisfied basic need	
	GINI Coefficient	INE/SESAL - ENDESA 2011/12	2012	Income inequality - GINI Coefficient	
Access to information Vulnerability	Adult Illiteracy Rate	INE REDATAM - CNPV 2013	2013	Percentage of the population aged 15 years and older that are illiterate	
	Average Years of Schooling	INE CNPV 2013 - Interactive Database	2013	Mean years of schooling	Cuadro 4.5.1
	Basic Education Enrollment	INE CNPV 2013 - Interactive Database	2013	Percentage of the population aged 7 to 12 years enrolled in basic education	Cuadro 4.3.1
	Households without Internet	INE REDATAM - CNPV 2013	2013	Percentage of households that DO NOT have an internet service at home	
	Households without Television	INE REDATAM - CNPV 2013	2013	Percentage of households that DO NOT have a television	
	Households without Radio	INE REDATAM - CNPV 2013	2013	Percentage of households that DO NOT have radio	

Vulnerability						
Subcomponent		**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Clean Water Vulnerability		Households with Improved Water	INE REDATAM - CNPV 2013	2013	Percentage of households receiving piped water from a public or private system, or a well with pump	
		Households with Sewer Connection	INE REDATAM - CNPV 2013	2013	Percentage of households with toilets connected to sewage or septic system	
Vulnerable Health Status		Infant Mortality Rate	INE Population Projection, 2013 - 2030	2016	Infant mortality rate per 1,000 live births (projected)	
		Maternal Mortality Ratio	INE CNPV 2013	2013	Maternal mortality ratio per 100,000 live births	
		Acute Malnutrition	INE/SESAL - ENDESA 2011/12	2012	Rate of acute malnutrition in children under 5	Acute malnutrition is identified when a child's weight is more than 2 SD below the average for their height
		Life Expectancy at Birth	INE Population Projection, 2013 - 2030	2016	Life expectancy at birth (projected)	
		Disability	INE CNPV 2013 - Interactive Database	2013	Percentage of the population that has a permanent disability	Grafico 3.1.1
	Non-Communicable Disease Incidence	Heart Disease Incidence	SESAL/PAHO Indicadores Basicos	2010	Cases of heart disease per 100,000 persons	
		Diabetes Incidence	SESAL/PAHO Indicadores Basicos	2010	Cases of diabetes per 100,000 persons	

Vulnerability						
Subcomponent		**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
		Pneumonia Incidence	SESAL/PAHO Indicadores Basicos	2010	Cases of pneumonia per 100,000 persons	
	Communicable Disease Incidence	Dengue Incidence	SESAL/PAHO Indicadores Basicos	2010	Cases of dengue per 100,000 persons	Combines cases of Dengue Clásico and Dengue Hemorrágico
		Malaria Incidence	SESAL/PAHO Indicadores Basicos	2010	Cases of malaria per 100,000 persons	
		TB Incidence	SESAL/PAHO Indicadores Basicos	2010	Cases of tuberculosis per 100,000 persons	
		Diarrheal Disease Incidence	SESAL/PAHO Indicadores Basicos	2010	Cases of diarrhea per 100,000 persons	Grafico 3.1.1
Population Pressures		Average Annual Population Change	INE - CNPV 2013	2001 to 2013	Average annual percentage of total population change from 2001 to 2013	
		Average Annual Urban Population Change	INE - CNPV 2013	2001 to 2013	Average annual percentage of urban population change for from 2001 to 2013	
Environmental Stress		Forest Area Affected by Pine Beetle	ICF - shared by Dr. Ron Billings, Texas A&M Forest Service	2017	Percent of forested area that is affected by the southern pine beetle plague	Data were originally compiled by ICF. Dataset was shared by Dr. Ron Billings, Texas A&M Forest Service
		Area under Water Stress	UNAH Atlas Climatico y de Gestion de Riesgo de Honduras	2010	Percentage of territory with estimated water shortage	

Vulnerability					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Gender Inequality	Ratio of Female to Male Home Ownership	INE/SESAL - ENDESA 2011/12	2012	Ratio of female home-ownership rate to male home-ownership rate	
	Ratio of Female to Male Secondary Education Enrollment	INE - CNPV 2013	2013	Ratio of female secondary enrollment rate to male secondary enrollment rate	Secondary enrollment rate is the proportion of population aged 12 to 17 attending school, by gender.
	Female to Male Labor Ratio	INE - CNPV 2013	2013	Ratio of female economic-activity rate to male economic-activity rate	Economic activity rates represent the proportion of the population age 10 and older that is economically active, by gender

Coping Capacity

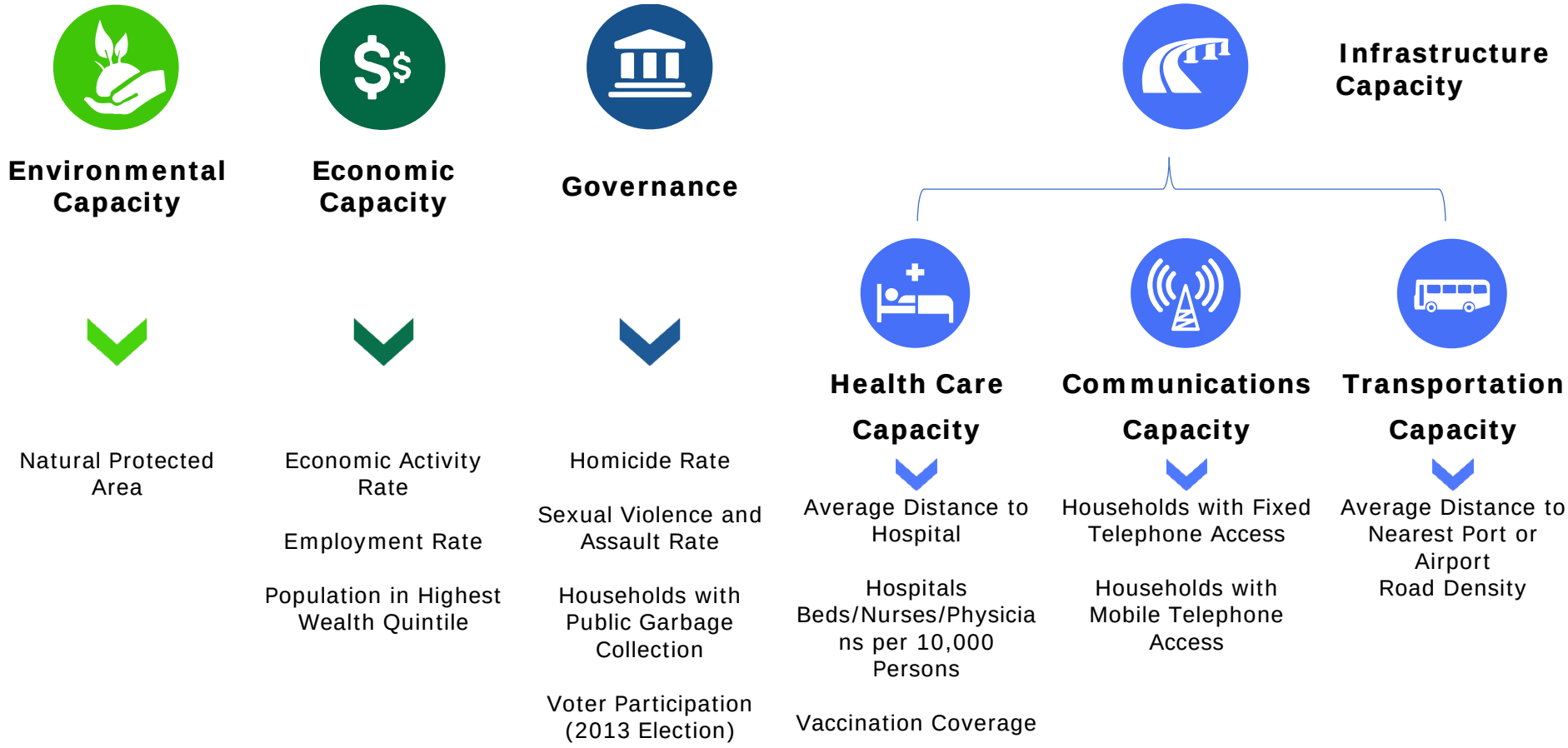


Figure 44. Coping Capacity index hierarchy.

Table 15. RVA - Coping Capacity scores and ranks for all indices and subcomponents.

Department	Coping Capacity Index		Governance		Econ. Capacity		Environ. Capacity		Infrastructure Index		Health Care (Infra.)		Transport (Infra)		Comms (Infra.)	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Atlántida	0.563	6	0.423	16	0.540	9	0.786	2	0.651	4	0.593	6	0.568	7	0.793	4
Choluteca	0.508	12	0.679	4	0.392	17	0.220	14	0.548	9	0.546	7	0.656	6	0.440	12
Colón	0.468	14	0.400	17	0.458	14	0.777	3	0.443	12	0.382	15	0.358	16	0.590	6
Comayagua	0.559	7	0.588	13	0.587	6	0.378	9	0.561	8	0.418	12	0.534	8	0.731	5
Copán	0.579	5	0.654	6	0.676	5	0.000	18	0.600	7	0.687	4	0.671	5	0.443	11
Cortés	0.629	4	0.500	15	0.750	2	0.514	6	0.676	3	0.390	14	0.708	4	0.929	3
El Paraíso	0.494	13	0.731	2	0.585	7	0.062	17	0.309	17	0.287	17	0.226	18	0.412	13
Francisco Morazán	0.670	3	0.637	8	0.837	1	0.085	15	0.731	2	0.773	1	0.475	12	0.945	2
Gracias a Dios	0.247	18	0.227	18	0.000	18	1.000	1	0.264	18	0.413	13	0.378	15	0.000	18
Intibucá	0.516	10	0.627	9	0.583	8	0.287	12	0.413	13	0.454	10	0.511	9	0.275	16
Islas de la Bahía	0.726	1	0.594	12	0.749	3	0.505	7	0.907	1	0.722	2	1.000	1	1.000	1
La Paz	0.532	9	0.620	11	0.520	10	0.560	5	0.448	11	0.502	8	0.439	13	0.403	14
Lempira	0.460	17	0.620	10	0.469	13	0.257	13	0.357	15	0.462	9	0.493	10	0.117	17
Ocotepeque	0.682	2	0.764	1	0.699	4	0.482	8	0.651	5	0.714	3	0.736	3	0.502	9
Olancho	0.513	11	0.662	5	0.476	12	0.662	4	0.352	16	0.292	16	0.235	17	0.528	8
Santa Bárbara	0.465	15	0.653	7	0.511	11	0.070	16	0.364	14	0.285	18	0.490	11	0.318	15
Valle	0.557	8	0.693	3	0.406	16	0.354	10	0.640	6	0.619	5	0.812	2	0.489	10
Yoro	0.464	16	0.533	14	0.446	15	0.291	11	0.472	10	0.437	11	0.396	14	0.582	7

Table 16. RVA - Coping Capacity metadata.

Coping Capacity					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Environmental Capacity	Protected Natural Area	ICF	2016	Percentage of department area that is protected	
Infrastructure - Healthcare	Average Distance to Hospital	CIDES (Hospitals); ORNL (Populated Areas)	2014 (populated Areas)	Average distance to hospital	Average distance was calculated for populated areas only.
	Vaccination Coverage Rate	INE/SESAL - ENDESA 2011/12	2012	Percentage of children age 12-23 months that completed the full immunization schedule for polio, BCG, DPT, and SRP (MMR)	
	Nurses per 10,000 Persons	SESAL/PAHO Indicadores Basicos	2010	Nurses per 10,000 persons	Data on doctors and nurses were provided separately for those working inside and outside of hospitals. For those working inside of hospitals, human resources were summarized by facility. Provided counts were aggregated to the departmental level using hospital location.
	Physicians per 10,000 Persons	SESAL/PAHO Indicadores Basicos	2010	Physicians per 10,000 persons	Data on doctors and nurses were provided separately for those working inside and outside of hospitals. For those working inside of hospitals, human resources were summarized by facility. Provided counts were aggregated to the department level using hospital location.
Infrastructure - Transportation	Road Density	INE Estadisticas de Carreteras y Aeropuertos de Honduras	2014	Total length of road (km) per sq. km of territory	
	Average Distance to Nearest Port or Airport	CIDES (Ports), ICAO/INE Estadisticas de Carreteras y Aeropuertos de Honduras (Airports)	2016	Average distance (throughout the department) to the nearest port or airport.	Airport locations were derived using coordinates from the INE Estadísticas de Carreteras y Aeropuertos de Honduras Report and UN-ICAO. Coordinates were verified using imagery from Google.

Coping Capacity					
Subcomponent	**Indicator**	**Source(s)**	**Year**	**Description**	**Notes**
Infrastructure - Communications	Fixed Phone Access	INE REDATAM - CNPV 2013	2013	Percentage of households that have a fixed phone line	
	Mobile Phone Access	INE REDATAM - CNPV 2013	2013	Percentage of the population age 12 and older that have a cellular phone	
Economic Capacity	Economic Activity Rate	INE REDATAM - CNPV 2013	2013	Percentage of the population that is economically active	
	Employment Rate	INE REDATAM - CNPV 2013	2013	Percentage of the economically active population that is employed	
	% Population in Highest Wealth Quintile	INE/SESAL - ENDESA 2011/12	2012	Percentage of the population living in the highest national wealth quintile	
Governance	Voter Participation	TSE - General Election 2013	2013	Percentage of voter participation during 2013 general election	
	Households with Public Garbage Collection Service	INE REDATAM - CNPV 2013	2013	Percentage of households that receive public garbage collection services	
	Homicide Rate	IUDPAS Observatorio de a Violencia Annual 2015	2015	Homicides per 100.000 persons	
	Sexual and Physical Violence Rate	IUDPAS Observatorio de a Violencia Annual 2015	2015	Sexual crime and injury case evaluations per 100.000 persons	Cases evaluation were reported by regional office and aggregated to the departmental level

Appendix B: RVA Index Construction

After finalizing the datasets for the analysis, indicators were created. Indicators are simply standardized datasets representing one aspect of multi-hazard risk that can be combined 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. 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)

Cases where an indicator observed value was outside +/- 3 standard deviations from the mean 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 CC) 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 Honduras.

Appendix C: CDM Survey I

Introduction

As part of CDM data-gathering efforts, stakeholder participants completed an initial survey during the NDPBA Kickoff Meeting/Initial Knowledge Exchange in Tegucigalpa, Honduras, on March 29, 2016. Survey questions were designed to provide insight into how participants perceive CDM efforts within their country. Survey I included a total of 25 questions, four of which required short answer responses. Frequency tables of responses to survey questions 1-21 are included for reference.

Organizational Affiliation of Survey Respondents	Number	Percent (%)
COPECO	8	26%
Other National Government Agencies	6	22%
Fire Department	2	7%
Local Government	2	7%
INGOs	8	26%
US Embassy	1	4%
Universities	1	4%
UN	1	4%

Age of Survey Respondents (years)	Number	Percent (%)
18-25	0	0
26-30	3	12%
31-40	6	20%
41-50	12	40%
51-60	5	16%
1-65	1	4%
Over 65	2	8%

Gender	Number	Percent
Female	22	77%
Male	7	23%

Survey responses were validated through interviews conducted over the course of the project. Interview subjects represented national and subnational government organizations and NGOs, and included leaders and specialists in the field of disaster management.

Frequency Tables of CDM Survey I Responses

Table 17. Survey I Response - Question 1

Are you in a position of leadership within your organization?	Frequency	Percent
Yes	17	59
No	9	31
I don't know	3	10
Does not apply		
Missing		
Total	29	100

Table 18. Survey I Response - Question 2

Do you feel you have the necessary resources to effectively perform your job requirements?	Frequency	Percent
Yes	17	59
No	12	41
I don't know		
Does not apply		
Missing		
Total	29	100

Table 19. Survey I Response - Question 3

In your current position, have you been provided with opportunities for disaster management training?	Frequency	Percent
Yes	25	86
No	3	10
I don't know		
Does not apply		
Missing	1	4
Total	29	100

Table 20. Survey I Response - Question 4

Does your organization require you to complete training on disaster management?	Frequency	Percent
Yes	19	66
No	5	17
I don't know	3	10
Does not apply	2	7
Missing		
Total	29	100

Table 21. Survey I Response - Question 5

Has disaster management training improved your ability to effectively perform your job duties/requirements?	Frequency	Percent
Yes	26	90
No		
I don't know	2	7
Does not apply	1	3
Missing		
Total	29	100

Table 22. Survey I Response - Question 6

Have you experienced any barriers to attending disaster management training?	Frequency	Percent
Yes	11	38
No	15	52
I don't know	2	7
Does not apply	1	3
Missing		
Total	29	100

Table 23. Survey I Response – Question 7

Does your organization have a dedicated budget for disaster preparedness?	Frequency	Percent
Yes	13	45

No	9	31
I don't know	5	17
Does not apply	2	7
Missing		
Total	29	100

Table 24. Survey I Response - Question 8

Does your organization have a dedicated budget for disaster response?	Frequency	Percent
Yes	17	59
No	6	21
I don't know	4	14
Does not apply	2	6
Missing		
Total	29	100

Table 25. Survey I Response - Question 9

Does your organization have mutual-aid agreements in place?	Frequency	Percent
Yes	19	66
No	4	14
I don't know	4	14
Does not apply		
Missing	2	6
Total	29	100

Table 26. Survey I Response - Question 10

In your opinion, does your organization have sufficient inventory to respond to a large-scale disaster?	Frequency	Percent
Yes	6	21
No	14	48
I don't know	4	14
Does not apply	3	11
Missing	2	6
Total	29	100

Table 27. Survey I Response – Question 11

Do you feel that existing disaster risk reduction laws are being adequately implemented at the national level?	Frequency	Percent
Yes	4	14
No	20	69
I don't know	5	17
Does not apply		
Missing		
Total	29	100

Table 28. Survey I Response - Question 12

Do you feel that existing disaster risk reduction laws are being adequately implemented at the subnational level?	Frequency	Percent
Yes	4	14
No	20	69
I don't know	5	17
Does not apply		
Missing		
Total	29	100

Table 29. Survey I Response - Question 13

In your opinion, do Departments actively support disaster management?	Frequency	Percent
Yes	3	10
No	21	73
I don't know	5	17
Does not apply		
Missing		
Total	29	100

Table 30. Survey I Response - Question 14

In your opinion, is there adequate local support for disaster risk reduction?	Frequency	Percent
Yes	9	31
No	17	59
I don't know	2	7
Does not apply		
Missing	1	3
Total	29	100

Table 31. Survey I Response - Question 15

In your opinion, do Departments currently have the capacity to effectively respond to local disasters?	Frequency	Percent
Yes	1	3
No	25	87
I don't know	3	10
Does not apply		
Missing		
Total	29	100

Table 32. Survey I Response - Question 16

In your opinion, is there strong support of public-private partnerships in disaster management at the local level?	Frequency	Percent
Yes	6	21
No	15	52
I don't know	8	27
Does not apply		
Missing		
Total	29	100

Table 33. Survey I Response - Question 17

In your opinion, are non-government organizations (NGOs) actively engaged in disaster preparedness at the local level?	Frequency	Percent
Yes	22	76
No	5	17
I don't know	2	7
Does not apply		
Missing		
Total	29	100

Table 34. Survey I Response - Question 18

In your opinion, is the National Emergency Preparedness and Response Fund adequate to respond to a major disaster?	Frequency	Percent
Yes	2	7
No	18	62
I don't know	7	24
Does not apply	1	3
Missing	1	3
Total	29	100

Table 35. Survey I Response - Question 19

In your opinion, is the National Disaster Management budget adequate to meet disaster management requirements?	Frequency	Percent
Yes	7	24
No	20	69
I don't know	1	3
Does not apply		
Missing	1	3
Total	29	100

Table 36. Survey I Response - Question 20

In your opinion, is there sufficient government inventory (supplies) to respond to a large-scale disaster?	Frequency	Percent
Yes	2	7
No	23	79
I don't know	3	10
Does not apply	1	3
Missing		
Total	29	100

Table 37. Survey I Response - Question 21

In your opinion, is there sufficient government inventory (supplies) to respond to a large-scale disaster?	Frequency	Percent
Yes	19	65
No	6	21
I don't know	4	14
Does not apply		
Missing		
Total	29	100

Participant Definitions of 'Comprehensive Disaster Management'

Respondent	Definition
1	Someone knowledgeable in the subject matter with at least 10 years of experience in the field and that has participated in the SINAGER.
2	A focus on work that groups prevention and mitigation to reduce local risks by involving the authorities and the communities.
3	National capability to identify cases and their institutional, interagency, and legal supports to reduce, mitigate, and avoid risks and confront disasters.
4	N/A
5	Social technical process that seeks to identify threats and acquire the tools to safeguard the life of inhabitants and their livelihoods.
6	Duly channeled actions that encompass all components for the recovery of society, and the affected population, institutions, and infrastructure.
7	In the event of any emergency my organization (firefighters) together with other disaster relief organizations provide help before, during, and after the emergency.
8	It means management, prevention, mitigation, response, and recovery.
9	Synonymous of a well thought, systematic, and inclusive development.
10	It is the coordinated action of both entities and persons to manage and prevent risks to disasters to persons, infrastructure, and the environment.
11	I define it as an opportunity to implement the issue in all potential areas; from the knowledge of how to behave in an event of emergency at the primary school level, all the way to the university curricula without forgetting the population in general.
12	As a meeting of technical, scientific, financial, human elements to confront natural and man-made disasters to solve these problems.
13	Set of policies, standards, relationships, functions, and actions that in a comprehensive manner prevent and

	mitigate risks as well as the actions towards the preparedness and response in an emergency, and the recovery after an emergency or disaster.
14	Approach all aspects of the negative effects of a disaster, from education, prevention, management, and mitigation.
15	All actions necessary to manage disasters together with all the institutions and population involved and that can reduce risks.
16	All kinds of actions and/or decisions that are taken together by all stakeholders linked and/or involved in risk management.
17	Undertake prevention, risk reduction, preparedness, response, and recovery.
18	To manage means to know the territory and its population. In a broad context, risk management is not possible. Human settlements are the most important of all elements that must be saved in any disaster.
19	N/A
20	Activities focused on identifying threats, vulnerabilities, risks, mitigation, response, rehabilitation, and reconstruction.
21	N/A
22	Management decisions to implement policies, strategies, and capabilities to strengthen response times during a disaster for all victims.
23	Are the organizations in charge of putting into practice all policies, standards, laws, regulations, through the appropriate national financial management and donations. To strengthen risk management capabilities and consequently reduce vulnerabilities in order to increase people´s resilience.
24	It could be a social process that promotes risk and vulnerability reduction and the increase of resilience in a sustainable way among the population.
25	All institutions involved must be coordinated and integrated into one sole process to immediately prevent or respond in the event of a disaster.
26	It is the appropriate and timely management of a natural disaster which involves various entities that play an important role in risk and vulnerability management in a region or country.

Appendix D: CDM Survey II

Introduction

As part of CDM data-gathering efforts, stakeholder participants completed a second survey during the NDPBA Knowledge Exchange II in Tegucigalpa, Honduras, on May 16, 2017. Survey II 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 the national and subnational level. Survey II included a total of 32 questions, five of which required short-answer responses. Frequency tables of responses to survey questions 1-28 are included for reference.

Organizational Affiliation of Survey Respondents	Number	Percent (%)
Central Government	10	59
Local Government	3	18
INGOs	3	18
Universities	1	6

Age of Survey Respondents (years)	Number	Percent (%)
18-25		
26-30	3	18
31-40	5	29
41-50	4	24
51-60	4	24
61-65	1	6
Over 65		

Gender of Survey Respondents	Number	Percent (%)
Female	3	18
Male	14	82
Not stated		

Survey responses were validated during interviews conducted by PDC staff over the course of the project. Interview subjects represented national and subnational government organizations and NGOs, and included leaders and specialists in disaster management.

Frequency Tables of CDM Survey II Responses

Table 38. Survey II Preparedness - Question 1

Does your organization have a comprehensive disaster management plan?	Frequency	Percent
Yes	6	35
No	8	47
I don't know	1	6
Does not apply	2	12
Missing		
Total	17	100

Table 39. Survey II Preparedness - Question 2

Does your organization have a disaster response plan?	Frequency	Percent
Yes	8	47
No	7	41
I don't know		
Does not apply	2	12
Missing		
Total	17	100

Table 40. Survey II Preparedness - Question 3

Does your organization have a disaster preparedness plan?	Frequency	Percent
Yes	8	47
No	8	47
I don't know		
Does not apply	1	6
Missing		
Total	17	100

Table 41. Survey II Preparedness - Question 4

Does your organization have a disaster mitigation plan?	Frequency	Percent
Yes	6	35
No	8	47
I don't know	2	12
Does not apply	1	6
Missing		
Total	17	100

Table 42. Survey II Preparedness – Question 5

Does your organization have a recovery plan?	Frequency	Percent
Yes	6	35
No	8	47
I don't know	2	12
Does not apply	1	6
Missing		
Total	17	100

Table 43. Survey II Preparedness – Question 6

Did you participate in the drafting of any of the disaster plans?	Frequency	Percent
Yes	7	41
No	9	53
I don't know		
Does not apply	1	6
Missing		
Total	17	100

Table 44. Survey II Preparedness - Question 7

Do you have a copy of the disaster management plan(s)?	Frequency	Percent
Yes	4	24
No	10	59
I don't know	1	6
Does not apply	1	6

Missing	1	6
Total	17	100

Table 45. Survey II Preparedness - Question 8

Does your disaster management plan include information on all hazard types (example: earthquakes, landslide, tsunami, extreme cold, floods, etc.…)	Frequency	Percent
Yes	6	36
No	6	36
I don't know	1	6
Does not apply	3	18
Missing	1	6
Total	17	100

Table 46. Survey II Preparedness - Question 9

Has your plan been shared with other agencies or organizations active in disaster management?	Frequency	Percent
Yes	5	29
No	7	41
I don't know	2	12
Does not apply	3	18
Missing		
Total	17	100

Table 47. Survey II Preparedness - Question 10

Are your organization's disaster plans updated regularly?	Frequency	Percent
Yes	7	41
No	3	18
I don't know	2	12
Does not apply	4	24
Missing	1	6
Total	17	100

Table 142. Survey II Preparedness - Question 11

Are your organization's disaster plans tested, drilled or exercised regularly?	Frequency	Percent
Yes	10	59
No	2	12
I don't know		
Does not apply	4	24
Missing	1	6
Total	17	100

Table 48. Survey II Preparedness - Question 12

Do your disaster plans address public outreach?	Frequency	Percent
Yes	5	29
No	4	24
I don't know	1	6
Does not apply	5	29
Missing	2	12
Total	17	100

Table 49. Survey II Preparedness - Question 13

Do your disaster plans address early warning?	Frequency	Percent
Yes	8	47
No	5	29
I don't know		
Does not apply	4	24
Missing		
Total	17	100

Table 50. Survey II Preparedness - Question 14

Do your disaster plans address evacuation?	Frequency	Percent
Yes	5	30
No	6	35
I don't know		
Does not apply	5	30
Missing	1	6
Total	17	100

Table 51. Survey II Preparedness - Question 15

Do your disaster plans address logistics management? (the movement of personnel and resources during times of disasters)	Frequency	Percent
Yes	7	41
No	5	30
I don't know		
Does not apply	5	30
Missing		
Total	17	100

Table 52. Survey II Preparedness - Question 16

Do your disaster plans address shelter operations?	Frequency	Percent
Yes	5	30
No	6	35
I don't know	1	6
Does not apply	4	24
Missing	1	6
Total	17	100

Table 53. Survey II Preparedness - Question 17

Do your disaster plans address when and how to activate the Emergency Operation Center?	Frequency	Percent
Yes	6	35
No	5	30
I don't know	1	6
Does not apply	4	24
Missing	1	6
Total	17	100

Table 54. Survey II Preparedness - Question 18

Does your organization have a separate standard operating procedure (SOP)	Frequency	Percent

for how to activate the Emergency Operation Center?		
Yes	5	29
No	7	41
I don't know	1	6
Does not apply	4	24
Missing		
Total	17	100

Table 55. Survey II Preparedness - Question 19

Do your disaster plans address transportation during times of disasters?	Frequency	Percent
Yes	6	35
No	6	35
I don't know	1	6
Does not apply	4	24
Missing		
Total	17	100

Table 56. Survey II Preparedness - Question 20

Do your disaster management plans address emergency communications during times of disaster?	Frequency	Percent
Yes	6	35
No	6	35
I don't know	1	6
Does not apply	4	24
Missing		
Total	16	100

Table 57. Survey II Preparedness - Question 21

Do your disaster plans address public works and engineering?	Frequency	Percent
Yes	6	35
No	5	30
I don't know	1	6

Does not apply	5	30
Missing		
Total	17	100

Table 58. Survey II Preparedness - Question 22

Do your disaster plans address public health and medical services?	Frequency	Percent
Yes	4	24
No	8	47
I don't know	1	6
Does not apply	4	24
Missing		
Total	17	100

Table 59. Survey II Preparedness - Question 23

Do your plans address search and rescue?	Frequency	Percent
Yes	6	35
No	6	35
I don't know	1	6
Does not apply	4	24
Missing		
Total	17	100

Table 60. Survey II Preparedness - Question 24

Do your plans address oil and hazardous materials response (chemical, biological, radiological, etc.)?	Frequency	Percent
Yes	1	6
No	11	65
I don't know	1	6
Does not apply	4	24
Missing		
Total	17	100

Table 61. Survey II Preparedness - Question 25

Do your plans address agriculture and natural resources?	Frequency	Percent
Yes	5	29
No	8	47
I don't know	1	6
Does not apply	3	18
Missing		
Total	17	100

Table 62. Survey II Preparedness - Question 26

Do your plans address public safety and security?	Frequency	Percent
Yes	1	6
No	11	65
I don't know	1	6
Does not apply	4	24
Missing		
Total	17	100

Table 63. Survey II Preparedness - Question 27

Do your plans address long-term community recovery?	Frequency	Percent
Yes	8	47
No	4	24
I don't know	1	6
Does not apply	4	24
Missing		
Total	17	100

Table 64. Survey II Preparedness - Question 28

Does your organization have strong disaster management leadership?	Frequency	Percent
Yes	10	59
No	2	12
I don't know	1	6
Does not apply	4	24
Missing		

Total	17	100

Table 65. Survey II Preparedness - Question 29

Do you think your organization has an effective disaster management program?	Frequency	Percent
Yes	3	18
No	10	59
I don't know	1	6
Does not apply	3	18
Missing		
Total	17	100

Table 66. Survey II Preparedness - Question 30

How often are your SOPs reviewed and updated?	Frequency	Percent
Annually	4	24
Every 2 Years	7	41
Every 5+ Years	1	6
Not Updated	5	30
Missing		
Total	17	100

Participant Definitions of 'Effective Disaster Management'

Respondent	Definition
1	Prospective risk management.
2	Prospective management of risks.
3	The one that has knowledge on risk, data analysis, and decision making.
4	Clear and concrete actions, well-defined guidelines based on risks and people´s capacity to react to the realities of the country.
5	To prevent all the risks faced by the most vulnerable populations in a timely fashion to confront risks based on mitigation and adaptation projects in all risk areas.
6	It is an efficient tool that is very helpful in a disaster.
7	The correct, timely, and effective enforcement of procedures and protocols that come to minimize and/or reduce the effects of a natural event.
8	A management that is relevant to the type of actual situation.
9	Having the knowledge on risks as a basis, we will decide on the management given to each disaster.
10	Response capacity.
11	The capability to prevent, mitigate, and respond to the requirements of the population before and after a disaster.
12	Avoid casualties, alleviate suffering, and reduce losses.
13	It is based on a comprehensive, participative, and inclusive action conducive to capacity building in response and vulnerability reduction.
14	Timely detection of the risks the country faces, in order to make sound decisions to reduce risks before they become disasters.

Appendix E: CDM Survey III

Introduction

As part of comprehensive disaster management (CDM) data-gathering efforts, stakeholder participants completed a third survey during the NDPBA Knowledge Exchange II in Tegucigalpa on May 16, 2017. Survey III explored aspects of disaster response activities within the country, including 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. Survey III included 21 questions, six of which required short answer responses. Frequency tables of responses to survey questions 1-15 are included for reference.

Organizational Affiliation of Survey Respondents	Number	Percent (%)
Central Government	8	44%
Local Government	2	11%
INGOs	3	17%
Universities	1	6%
US Embassy	1	6%

Age of Survey Respondents (years)	Number	Percent (%)
18-25	0	0%
26-30	2	11%
31-40	5	28%
41-50	4	22%
51-60	4	22%
61-65	1	6%
Over 65	0	0%
Not Stated	2	11%

Gender of Survey Respondents	Number	Percent (%)
Female	3	17%
Male	14	77%
Not stated	1	6%

Survey responses were validated through interviews conducted over the course of the project. Interview subjects represented national and subnational government organizations and NGOs, and included leaders and specialists in disaster management.

Frequency Tables of CDM Survey III Responses

Table 67. Survey III Response - Question 1

Is your organization active in disaster response?	Frequency	Percent
Yes	9	50
No	4	22
I don't know	3	17
Does not apply	2	11
Missing		
Total	18	100

Table 68. Survey III Response - Question 2

In your opinion, was the national response to the last major disaster effective?	Frequency	Percent
Yes	8	44
No	4	22
I don't know	3	17
Does not apply	3	17
Missing		
Total	18	100

Table 69. Survey III Response - Question 3

Do you feel that disaster alert/warning messages were issued effectively during the last disaster?	Frequency	Percent
Yes	8	45
No	6	33
I don't know	2	11
Does not apply	2	11
Missing		
Total	18	100

Table 70. Survey III Response - Question 4

In your opinion, was the mobilization of resources and response personnel effective during the last disaster?	Frequency	Percent
Yes	8	45
No	6	33
I don't know	2	11
Does not apply	2	11
Missing		
Total	18	100

Table 71. Survey III Response – Question 5

Does your organization have pre-established agreements for support during times of disaster (i.e. mutual-aid agreements)?	Frequency	Percent
Yes	11	61
No	3	17
I don't know	1	6
Does not apply	3	17
Missing		
Total	18	100

Table 72. Survey III Response – Question 6

Is your organization responsible for post-disaster damage and needs assessments?	Frequency	Percent
Yes	9	50
No	4	22
I don't know	1	6
Does not apply	4	22
Missing		
Total	18	100

Table 73. Survey III Response - Question 7a

Were post-disaster damage and needs assessments conducted following the last major disaster?	Frequency	Percent
Yes	10	6
No	1	56
I don't know	3	17
Does not apply	4	22
Missing		
Total	18	100

Table 74. Survey III Response - Question 7b

If yes, were they done accurately?	Frequency	Percent
Yes	4	28
No	5	22
I don't know	1	6
Does not apply	4	22
Missing	4	22
Total	18	100

Table 75. Survey III Response - Question 8a

Does your organization maintain an Emergency Operations Center?	Frequency	Percent
Yes		
No	7	39
I don't know	7	39
Does not apply	4	22
Missing		
Total	18	100

Table 76. Survey III Response - Question 8b

If yes, does the Emergency Operations Center have adequate resources to perform its responsibilities effectively?	Frequency	Percent
Yes	1	6
No	6	33
I don't know	1	6
Does not apply	5	28
Missing	5	28
Total	18	100

Table 77. Survey III Response - Question 9

In your opinion, does your organization have adequate staffing to conduct disaster response?	Frequency	Percent
Yes	8	44
No	5	28
I don't know	3	17
Does not apply	2	11
Missing		
Total	18	100

Table 78. Survey III Response - Question 10

Does your organization have a training program to help develop and build capacity in disaster management staff members?	Frequency	Percent
Yes	6	33
No	8	44
I don't know	2	11
Does not apply	2	11
Missing		
Total	18	100

Table 79. Survey III Response - Question 11

In your opinion, are disaster response tasks clearly defined?	Frequency	Percent
Yes	7	39
No	5	28
I don't know	3	17
Does not apply	2	11
Missing	1	6
Total	18	100

Table 80. Survey III Response - Question 12

In your opinion, is there overlap between organizations active in disaster response in Honduras?	Frequency	Percent
Yes	9	50
No	3	17
I don't know	4	22
Does not apply	2	11
Missing		
Total	18	100

Table 81. Survey III Response - Question 13

Does your organization engage with the military to support disaster response?	Frequency	Percent
Yes	10	56
No	5	28
I don't know	1	6
Does not apply	2	11
Missing		
Total	18	100

Table 82. Survey III Response - Question 14

Does your organization engage with the private sector to support disaster response?	Frequency	Percent
Yes	7	39
No	7	39
I don't know	2	11
Does not apply	2	11
Missing		
Total	19	100

Table 83. Survey III Response - Question 15a

Does your organization have a budget allocated for disaster response?	Frequency	Percent
Yes	5	28
No	9	50
I don't know	2	11
Does not apply	2	11
Missing		
Total	18	100

Table 84. Survey III Response - Question 15b

If yes, was the budget adequate for the last disaster response your organization conducted?	Frequency	Percent
Yes		
No	2	11
I don't know	5	28
Does not apply	4	22
Missing	11	39
Total	18	100

Participant Definitions of 'Effective Disaster Response'

Respondent	Definition
1	Invest in prevention, perform good preparedness, and an efficient early alert.
2	When there is a good prevention management and planning and an efficient early alert.
3	It means responding rapidly with appropriate resources and at the site where the disaster occurred.
4	Being able to respond to an emergency with greater efficiency, and prevent greater risks for the population and lower the risk at the national level.
5	Timely and direct response in case of a natural and/or man-made event that is occurring, and not only respond but also the resolution of problems and collaboration in the recovery of the population.
6	An efficient response consists in providing timely care to the disaster stricken population, insuring the return of the population to its normal status in the least time possible.
7	Response capability.
8	Avoid deaths, reduce suffering, and avoid losses.