



UNICARIBE

UNIVERSITY OF THE CARIBBEAN



Plan Institucional de
**REDUCCIÓN DE RIESGOS
DE DESASTRES**

Apoyo y financiamiento USAID/BHA



A SAFER, MORE SUSTAINABLE, AND MORE RESILIENT UNICARIBE

Institutional Disaster Risk Reduction Plan

UPDATED NOVEMBER 2020

2021

Santo Domingo, Dominican Republic

GENERAL COORDINATION.

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INSTITUTIONAL QUALITY ASSURANCE DEPARTMENT PRINTING

Publisher

Santo Domingo, Dominican Republic

2021

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I. INTRODUCTION

The Dominican Republic is exposed to threats from various sources, such as earthquakes, tsunamis, hurricanes, storms, floods, droughts, fires, and biological threats, such as the COVID-19 pandemic, which has impacted the entire structure and processes of education, both locally and internationally.

In this context, the Universidad del Caribe has established policies and strategies to raise the quality of its academic offerings and services, including risk management, aware that it is at the center of the Dominican Republic's educational processes. Therefore, it is the responsibility of all members to protect the institution from any type of threat, prioritizing the care of students, teachers, academic and administrative managers, as well as the protection of property.

Environmental and risk management is part of the country's development, as it is deeply influenced by the limitations and possibilities offered by its location and environmental dynamics. Consequently, society depends on the development of capacities to reduce risks and protect itself against multiple threats.

The Universidad del Caribe places immeasurable value on education in Environmental and Risk Management as a vital element in building a safer and more sustainable future. Within this context, it presents the Institutional Plan for Disaster Risk Reduction as a tool that strengthens university practice in all areas. With this contribution, we reinforce our institutional commitment to helping strengthen the safety and resilience of the education sector in the Dominican Republic.

José Alejandro Aybar M.

Rector

II. INTRODUCTION

Higher education institutions (HEIs) in the Dominican Republic, aware of the threats to the natural and human environment, face significant challenges in ensuring the safety and protection of the university community in the event of disasters. Consequently, they are taking measures to address this issue by developing and organizing safety plans and teams to provide guidelines to follow in case of emergencies.

In response to this, there are both national and international guidelines that determine the regulations to be drawn up by Dominican institutions in relation to disaster prevention, mitigation, and response, in order to safeguard human life.

The University of the Caribbean (UNICARIBE), aware of its responsibility to the university community, presents its Institutional Disaster Risk Reduction Plan, continuing its development and sustainability in disaster prevention. This plan is the main instrument for providing a timely, effective, and coordinated response to adverse events, aimed at reducing risks and preventing and mitigating the destructive impact on the lives and property of both students and staff.

III.JUSTIFICATION

Due to its geographical characteristics and socioeconomic factors, the Dominican Republic is exposed to a high number of threats that pose a risk to human settlements in the country. These include earthquakes, cyclones, floods, traffic accidents, and epidemics, which can cause damage to the physical integrity and property of the inhabitants, to vital infrastructure such as educational centers, and to the well-being of the population in general.

For these circumstances, an Institutional Disaster Risk Reduction Plan has been developed, based on disaster risk analysis, in addition to the deliberate formulation of measures to be taken in the event of adverse situations that may pose a threat to society.

The University of the Caribbean, concerned for the well-being of its stakeholders and the student community, and taking into account the severe effects that emergencies and disasters can cause, decided to develop this document, a tool that allows for adequate risk management to protect the integrity of people, material goods, students, faculty, and university employees.

IV. OBJECTIVES

General

To continuously and permanently reduce disaster risks in order to contribute to a safer, more sustainable, and more resilient UNICARIBE in the face of adverse events.

Specific

- To have an updated institutional diagnosis of the main threats to which it is exposed and the best practices for intervention and risk reduction.
- Improve emergency response procedures within the institution.
- Establish action protocols that indicate guidelines for controlling, in a timely and safe manner, with the least possible damage, the different risk situations in the facilities and the university community.
- Promote a culture of safety as the basis for institutional and local development.
- Incorporate risk reduction into the university management culture.
- Encourage the participation of the entire community in risk management.

V. REGULATORY FRAMEWORK

The "Safer, More Sustainable, and Resilient UNICARIBE" project establishes collaboration with other international, regional, national, and local agendas, especially those related to sustainability, climate change, humanitarian assistance, habitat, and others that the institution prioritizes according to its geographical location. The Dominican Republic is a signatory to several international agreements on risk management, climate change, and, therefore, environmental management. Similarly, it has standards and procedures that address governance at the national level.

International

- **Sendai Framework for Disaster Risk Reduction (2015-2030)** *Expected outcome: Substantial reduction in disaster risk and human, material, social, cultural, and environmental losses to individuals, businesses, communities, and countries.*
Objective: Prevent the emergence of new disaster risks and reduce existing ones by implementing integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political, and institutional measures that prevent and reduce vulnerability to hazards and disasters, increase preparedness for response and recovery, and thereby strengthen resilience.
- **Sustainable Development Goals (SDGs, 2015–2030)**

On September 25, 2015, at the United Nations, 193 world leaders committed to the 2030 Agenda with goals for the Sustainable Development of all nations and peoples. Among the goals are eradicating extreme poverty, combating inequality and injustice, and solving climate change.

National

- **National Plan for Comprehensive Disaster Risk Management in the Dominican Republic - Decree No. 275-13**

The National Plan for Comprehensive Disaster Risk Management in the Dominican Republic seeks to define the strategic objectives to be developed by public institutions and

private institutions, as well as social organizations, must develop in order to implement programs and initiatives aimed at reducing disaster risk through risk prevention and mitigation, preparedness for response, rehabilitation, and reconstruction in the event of disasters, thereby ensuring better safety conditions for the population and protecting its economic, social, environmental, and cultural heritage.

Law 1-2012: National Development Strategy (END)

One of the objectives of the fourth strategic pillar of the END is sustainable environmental management and adequate adaptation to climate change, including environmental sustainability, effective risk management, and adaptation to climate change.

- The Constitution of the Dominican Republic (2010)

Chapter III - Security and Defense, Article 260. High-priority national objectives: Organize and maintain effective systems to prevent or mitigate damage caused by natural and technological disasters.

- Decree 932-03 approves the Regulations for the Application of Law No. 147-02 on Risk Management

Chapter II - General Provisions, Article 2.03: Public, autonomous, and decentralized institutions must create the units or departments necessary for the application of the Law.

- Risk Management Law 147-02

Article 2 states that the risk management policy is to prevent or reduce potential human, material, and environmental losses to citizens as a result of existing risks and natural and anthropogenic disasters that may occur within the national territory.

- Law No. 139-01, which creates the National System of Higher Education, Science, and Technology

Chapter II - Higher Education, Science, and Technology, Article 7. The purpose of higher education is to provide scientific, professional, humanistic, artistic, and technical training of the highest level. It aims to contribute to economic competitiveness and

sustainable human development; promote the generation, development, and dissemination of knowledge in all its forms; contribute to the preservation of national culture; and develop the attitudes and values required for the formation of responsible individuals with ethical and supportive awareness who are reflective, innovative, critical, and capable of improving the quality of life, consolidate respect for the environment, the country's institutions, and the validity of the democratic order.

Decree No. 184-95 on the incorporation of UNICARIBE

The Caribbean Educational Foundation, incorporated by Decree No. 184-95, with the purpose of creating an institution of higher education, which was named the University of the Caribbean (UNICARIBE), recognized by Decree No. 234-95 of October 12, 1995, authorized to issue academic degrees with the same scope as official or autonomous institutions of the same category, based in the city of Santo Domingo, Dominican Republic. It is an open and distance learning institution of higher education that trains competent, responsible professionals who respect cultural diversity and are capable of influencing social change, contributing to the development of science, technology, and ecological balance.

VI. GENERAL INFORMATION AND DATA ABOUT UNICARIBE



Illustration 1 Photograph of the University of the Caribbean

The University of the Caribbean is an open, distance learning institution of higher education that trains professionals who are competent, responsible, respectful of cultural diversity, capable of influencing social change, and contributing to the development of science, technology, and ecological balance. See Illustration 1 (Espinal, 2020).

The University of the Caribbean was founded in 1995 by the Caribbean Educational Foundation, a non-profit entity incorporated by Decree No. 184-95. Its purpose was to create an institution of higher education, called the "University of the Caribbean (UNICARIBE),"

which was recognized by Decree No. 234-95, dated October 12, 1995.

UNICARIBE innovated higher education in the Dominican Republic with a model that until recently was unconventional: the blended learning modality, which emerged in response to the needs of those students who could not attend classes due, in most cases, to work commitments. Since its founding, more than 20,000 professionals have been trained, beginning with a first class of 24 graduates and rising to an average of 3,000 per year.

General Characteristics



Illustration 2 Image of the UNICARIBE Location

VI.1.a. Characteristics of the Location:

Urban settlement with mixed-use land: residential and commercial.

See Illustration 2 (Google Maps, 2020).

Existing Services in the Sector

- **Paved roads, sidewalks, and curbs.**
- **Water mains and sewerage**
- **Electricity**
- **Telecommunications**
- **Garbage collection**
- **Public transportation**

General Information

Address	Autopista 30 de Mayo, western strip of the Malecón de Santo Domingo, west of the Feria Ganadera, near Avenida Núñez de Cáceres, Urbanización Tropical. Santo Domingo, National District, Dominican Republic.
Phone	+1 (809) 616-1616
Website	https://unicaribe.edu.do/
Hours	Monday to Friday: 8:00 a.m. – 9:30 p.m. Saturday: 8:00 a.m.–7:30 p.m. Sunday: 8:00 a.m.–3:30 p.m.
Perimeter	North: Residential lots South: 30 de Mayo Highway East: Commercial and residential buildings West: San Pablo Street
Access roads	South: 30 de Mayo Highway East: Matanzas Street West: San Pablo Street

VI.1.b. Spatial Organization

For the evaluation of the university's physical layout, the criterion of campus infrastructure was formulated, consisting of

five blocks, determined by the number of buildings and their composition. (Pieter, 2018).

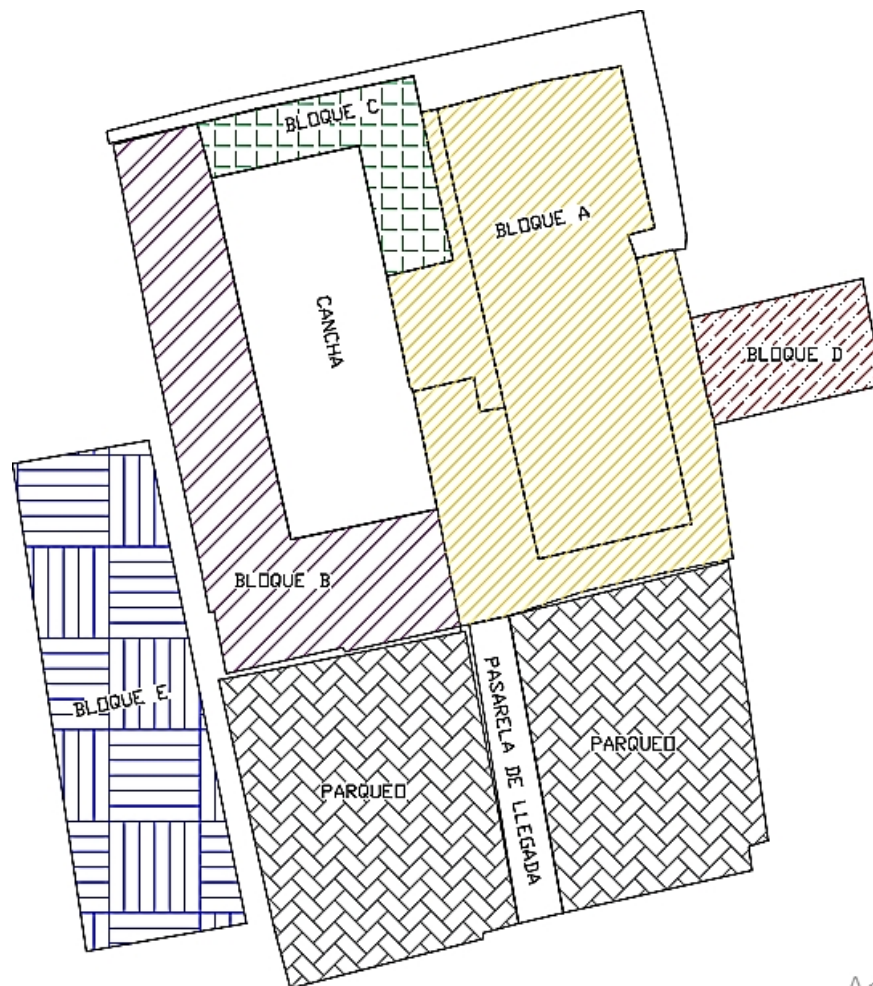


Illustration 3 Spatial Organization of UNICARIBE

Acti

Characteristics of Spatial Organization UNICARIBE Infrastructure

<ul style="list-style-type: none"> ▪ Block A. To the east of the campus, it comprises a main 3-story building, a basement, and annexes, with classrooms, a library, a cafeteria, the rector's office, and administrative offices.
<ul style="list-style-type: none"> ▪ Block B. In the southwest, it consists of five levels, which also house classrooms, laboratories, offices, and a multipurpose room.
<ul style="list-style-type: none"> ▪ Block C. Located in the northwest of the campus, it has five floors with classrooms, the commissary, administrative offices, and a partial area: the cafeteria.
<ul style="list-style-type: none"> ▪ Block D. Located in the southeast of the campus, it has two floors, where the administrative and student services offices are located, as well as the infirmary.
<ul style="list-style-type: none"> ▪ Block E. Located in the west of the campus, it is currently under construction. The future five-story building will have classrooms, student services, reading and exhibition areas, as well as administrative offices.

VI.1.c. Services and Facilities

Drinking water and storage	<ul style="list-style-type: none"> ▪ Tubular well. ▪ Water storage: Two cisterns with a capacity of between 11,809 and 26,345 gallons, and a good pumping system, with a set of pumps per cistern and an additional one.
Electrical installations	3 electricity generators with their respective installations.
Air conditioning	Cooling systems
Telecommunications	Telephone, Internet, and cable television

VI.1.d. Emergency Response Resources

Emergencies	<ul style="list-style-type: none"> • 28 fire extinguishers. • 4 megaphones. • 15 helmets. • 20 protective goggles. • Alarm. • Carbon monoxide detector. • Motorcycle. • 39 cones. • Approximately 30 spokes. • 7 buckets. • 3 spotlights.
Communication	<p>It has fixed and mobile communication equipment for emergencies.</p> <ul style="list-style-type: none"> • 27 communication radios. • Fleet system. • 200-extension telephone exchange. • 46 WiFi repeaters. • In case of emergency, radios, fleets, and verbal communication will be used.
Security	<p>It has an organized technical staff, with communication radios and security camera monitoring, installed at different points on the campus.</p>
Access to the campus	<p>Controlled by security personnel at the South (30 de Mayo Highway), East (Matanzas Street), and West (San Pablo Street) entrances.</p>
First Aid	<ul style="list-style-type: none"> • Medical unit with two doctors. • Stretcher. • Stethoscopes. • Sphygmomanometer. • Medications.
Fire extinguishers	<p>Located at different points on campus.</p>
Evacuation route	<p>Properly marked and with fire extinguishers available. They comply with safety requirements.</p>
Meeting point	<p>The sports field in the central area of the campus.</p>

UNICARIBE Organizational Structure

VI.2.a. Organizational Structure

It is made up of a set of units and bodies that support all the activities academic,

administrative, research, and social outreach activities carried out on campus.

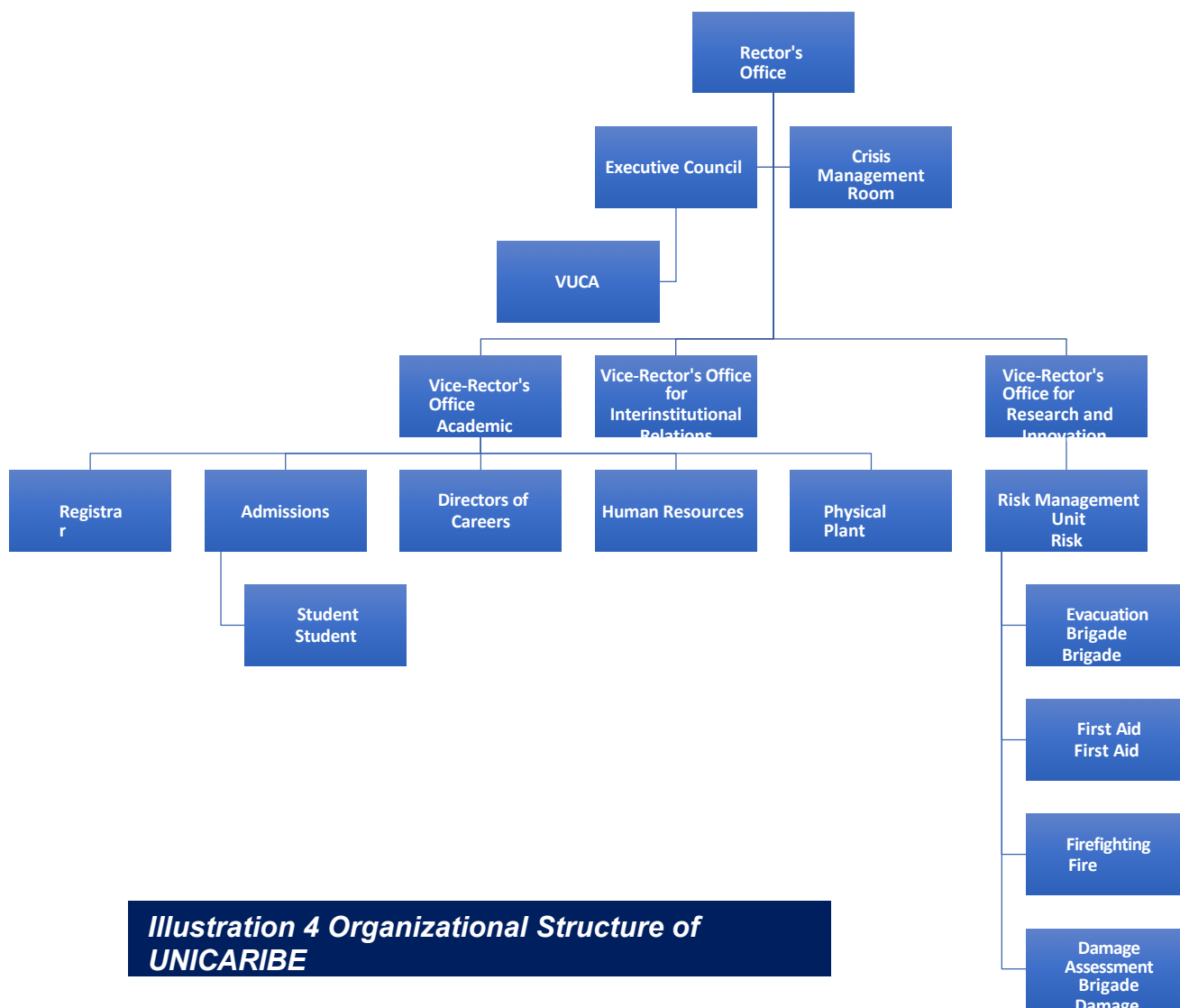


Illustration 4 Organizational Structure of UNICARIBE

VI.2.b. Organizational Structure of the Emergency and/or Disaster Response Plan

The plan envisages a functional, non-hierarchical organization, chaired by the Institutional Emergency Committee (IEC) during emergencies, which will temporarily replace the institution's formal organizational structure (Tactuk, 2018).

(COE), Civil Defense, the Security and Emergency Response System (9-1-1), and hospitals and response institutions in the area (if necessary), and internally with the different departments and units of UNICARIBE.

The CEI shall coordinate external collaborations with the Emergency Operations Center

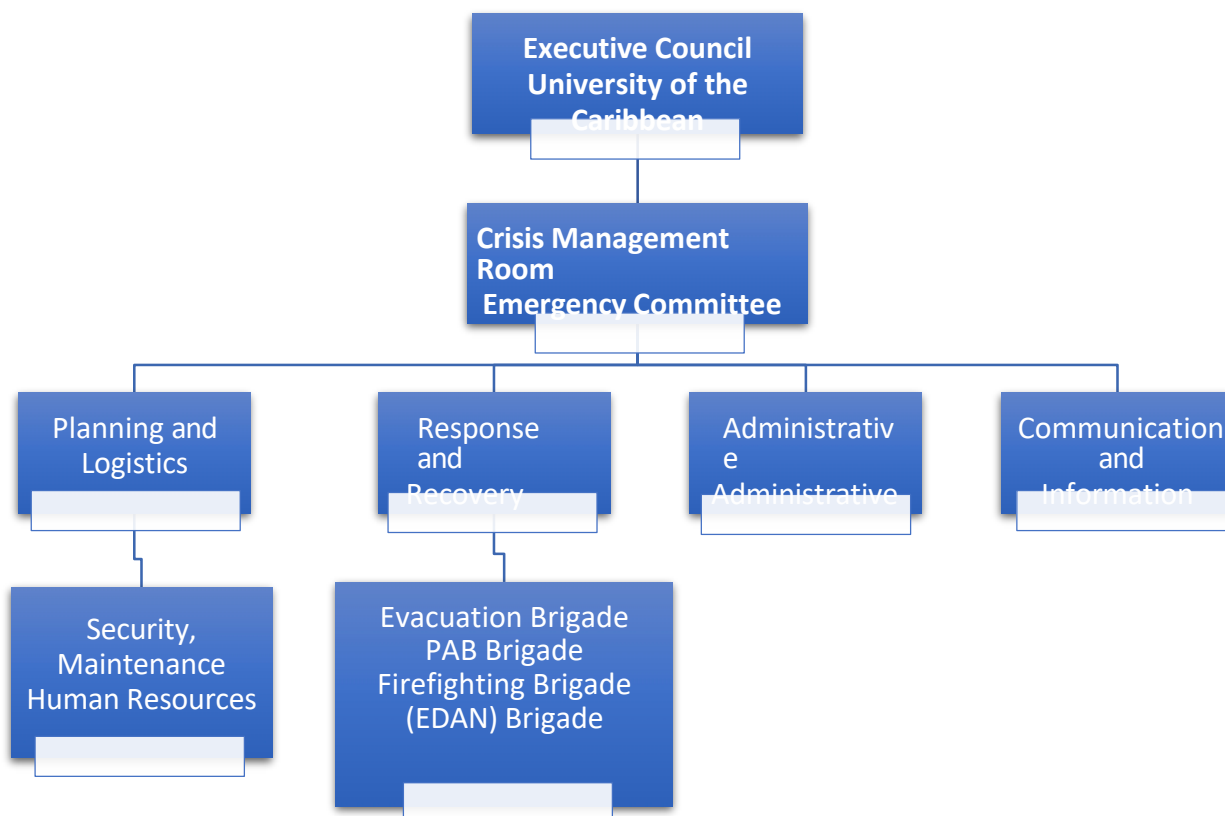


Illustration 2 Institutional Emergency Committee (IEC) Structure Diagram

VI.2.c. Institutional Emergency Committee (IEC)

It is made up of the following bodies:

Instances of the Institutional Emergency Committee (CEI)

- Rector's Office/Presidency
- Academic Vice-Rector's Office
- Vice-Rector for Planning
- Physical Plant Management
- Internal Security Department
- Human Resources Department
- Directorate of Student Services
- Medical Unit
- Communication and Press
- Risk Management
- Faculty Representation
- Student Representation

VI.2.d. Functional Structure of the Institutional Emergency Committee (CEI).

FUNCTIONS OF THE INSTITUTIONAL EMERGENCY COMMITTEE (CEI)		
BEFORE	DURING	AFTER
<i>Collaborate in the preparation, organization, and regulation of the Plan. Prevention, Mitigation, and Municipal Response, with public and private sector entities.</i>	Assess the conditions, origin, and magnitude of the emergency.	Determine the level of alertness required while returning to normalcy.
<i>Develop procedures, programs, and activities for the Emergency and/or Disaster Response Plan for training and emergency situations.</i>	Implement the Contingency Plan in accordance with the emergency that has arisen.	Evaluate the different activities carried out after an emergency or drill.
<i>Form Operational Brigades and select personnel according to the specified profile.</i>	Distribute physical and human resources for timely response to the emergency.	Prepare and submit the event report.

<p><i>The plan must be tested or validated through annual drills, which should initially be carried out with prior notice, then unexpectedly, and later with simulated victims.</i></p>	<p>Contact internal and external support groups (Red Cross, Civil Defense, and Fire Department).</p>	<p>Coordinate the resumption of work.</p>
<p><i>Keep records of the evaluation of the actions and times taken in the plan, in order to make any necessary adjustments.</i></p>	<p>Coordinate operational actions during emergencies.</p>	<p>Provide feedback on each element of the Emergency Plan.</p>
<p><i>Hold regular meetings and evaluations to keep the Plan up to date with the different risk variables.</i></p>	<p>Coordinate the transfer of the injured to medical assistance centers.</p>	
<p><i>Evaluate emergency response processes to provide feedback for planning initiatives.</i></p>	<p>Collect and process all information related to the emergency.</p>	
<p><i>Record all Emergency Committee meetings.</i></p>	<p>Be responsible for the timely implementation of the Plan, its development, and effectiveness during the emergency.</p>	
<p><i>Decide what information the Press Coordination should provide to the media in the event of emergencies.</i></p>	<p>During the emergency, the equipment, resources, and personnel will be at the disposal of the IEC.</p>	

Functions of the Institutional Emergency Committee (IEC) According to the Institutional Structure

Component	Responsibilities
UNICARIBE Council	<p>As the highest decision-making body, it will be responsible, from the crisis management room, for planning, coordinating, and managing the plan activation process.</p> <ul style="list-style-type: none"> ▪ Responsible for directing preparedness and response actions in the event of ongoing events. ▪ In the event of sudden events, the activation of the Plan will be the responsibility of the person with the highest level of decision-making authority at the time of the emergency.
The Situation Room or Institutional Operations Center	<ul style="list-style-type: none"> ▪ Its main function is to implement, coordinate, and direct: it is an entity whose main function is to implement, coordinate, and direct: <ul style="list-style-type: none"> ▪ Actions, strategies, protocols, and procedures for internal action within UNICARIBE, its collaboration with other entities in the national system in emergency situations that may endanger staff and users. Preparation of the supplies and logistics necessary for disaster preparedness. ▪ Activities related to the pre-, during, and post-phases that have been established for emergency management, encouraging the participation of all departments and employees. ▪ The process of activating the plan, as well as preparedness and response measures in the event of ongoing events. In the case of sudden situations, the activation of the Plan will be the responsibility of the person with the highest level of decision-making authority at the time of the emergency. ▪ Coordinate with the Emergency Operations Center (EOC) to disseminate alerts nationwide. ▪ Anticipate and ensure that, in UNICARIBE's disaster preparedness plans, the resumption of teaching is planned as soon as conditions allow. ▪ Declare the emergency over once any eventuality has been adequately addressed. ▪ Declare the emergency over once any eventualities have been adequately addressed. Hold post-incident meetings. <ul style="list-style-type: none"> ▪ Monitor the response plan during the crisis situation and evaluate its execution.
Planning and Logistics	<ul style="list-style-type: none"> ▪ Responsible for designing the appropriate response strategy for the type of event and likely scenarios. ▪ Conduct ongoing surveys and updates of resource inventories to determine their availability.

	<ul style="list-style-type: none"> ▪ Identify and classify the resources available and necessary to respond to the emergency. ▪ Establish systems that allow for the tracking, monitoring, and evaluation of logistics operations, from the start to the end of activities, as well as procedures for the proper handling of supplies. ▪ Manage the resources necessary to adapt the building in the event of a probable impact from hydrometeorological events. ▪ Obtain extraordinary resources for supplies, such as water, non-perishable food, fuel, power plant supplies, vehicle inventory, and driver availability.
Security	<ul style="list-style-type: none"> ▪ Monitor safety conditions. ▪ Implement all necessary measures to ensure the safety of all users.
Response and Recovery	<ul style="list-style-type: none"> ▪ Coordinate training so that members of operational brigades have up-to-date information relevant to the role of the brigades to which they belong. ▪ Activate the brigades in the event of a sudden incident. ▪ Coordinate teams by building level, according to assigned roles and responsibilities. ▪ Ensure the good condition, operation, and maintenance of brigade equipment. ▪ Determine the need for replacement personnel in case of necessity, such as personnel on vacation or leave, with a leading role in the response. ▪ Prepare an EDAN report, by brigade, which must be consolidated and sent to the Crisis Management Room.
Administrative Coordinator	<ul style="list-style-type: none"> ▪ Ensure timely resources to streamline the response. ▪ Coordinate with Planning to avoid duplication of efforts or resources. ▪ Support, at the national, regional, and local levels, the proper distribution of resources according to identified needs.
Information and Communication Coordination	<ul style="list-style-type: none"> ▪ Contact the CEI to initiate the chain of calls according to requirements in the event of ongoing emergencies. ▪ Transmit the information authorized by the CEI. ▪ Prepare circulars and press releases regarding the development of the event within the university.

Operational Structure of the Response and Recovery Brigades

The Institutional Emergency Committee is responsible for executing and implementing the Emergency Plan through initiatives, services, and with the support of operational brigades made up of administrative staff whose functions are defined within their field of action, both inside and outside the university.

The Response Brigades are specialized and equipped support groups whose purpose is to minimize injuries and losses that may occur as a result of an emergency. They are made up of administrative staff, duly supported by the administrative branch, and their field of action may be inside or outside the institution.

The operational structure of the Emergency and/or Disaster Response Plan is composed of:

- Evacuation Brigade
- First Aid Brigade
- Firefighting Brigade
- Damage Assessment and Needs Analysis Brigade (EDAN)

VI.3.a. Evacuation Brigade

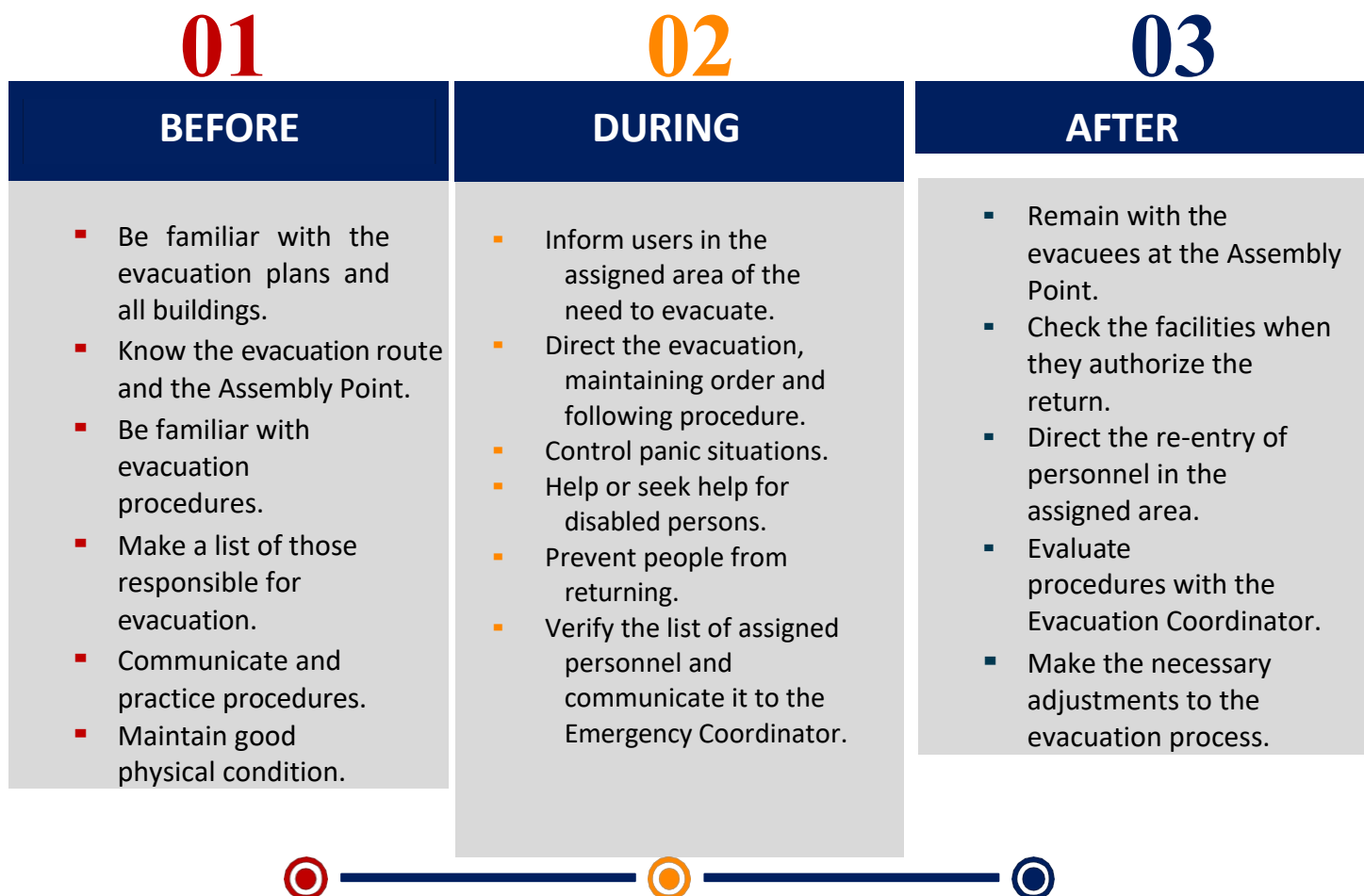
During an emergency on campus, the Evacuation Brigade's main objective is to evacuate people to a safe place and search for and rescue trapped individuals, whether injured or not, immediately after the event, and transport them to where first aid can be administered.

Members of the Evacuation Brigade

Position
<ul style="list-style-type: none"> ▪ <i>Vice-Chancellors</i> ▪ <i>Directors</i> ▪ <i>Human Resources</i> ▪ <i>Security</i>

General Functions of the Evacuation Brigade

EVACUATION BRIGADE



VI.3.b. First Aid Brigade

Responsible for providing immediate and temporary care to a person who has suffered an accident or sudden illness while waiting to receive specialized medical attention.

Members of the First Aid Brigade

Instance
<ul style="list-style-type: none"> ▪ <i>Medical Unit</i> ▪ <i>Presidency of the Council (Assistant)</i> ▪ <i>Security Directorate</i> ▪ <i>Directorate of Student Services</i>

General Functions of the First Aid Brigade

FIRST AID BRIGADE



BEFORE

- Check and inventory first aid equipment and resources.
- Periodically review the first aid manual.
- Attend training sessions and workshops on an ongoing basis.
- Stay in good physical condition.



DURING

- Locate the event area.
- Use the necessary safety equipment.
- Assess the area and number of patients to be treated.
- Provide first aid immediately and in a timely manner.
- Treat patients according to the doctor's recommendations.
- Transport patients to a medical center quickly and safely.



AFTER

- Maintain and replace equipment and personal protective equipment.
- Evaluate the reaction and response.
- Correct procedures.

VI.3.c. Firefighting Brigade

This brigade is responsible for preventive activities and actions to minimize damage and losses that may arise as a result of a fire threat, intervening with the available safety resources.

Members of the Firefighting Brigade

Instance
<ul style="list-style-type: none"> ▪ <i>Hotel Administration Department</i> ▪ <i>Housekeeping</i> ▪ <i>Security Department</i> ▪ <i>Maintenance</i>

General Functions of the Firefighting Brigade

FIRE BRIGADE



BEFORE

- Inspect all facilities periodically.
- Maintain an inventory of firefighting equipment.
- Attend training sessions on an ongoing basis.
- Stay in good physical condition.

DURING

- Locate the affected area affected.
 - Move the necessary equipment for control.
 - Assess the scene.
 - Control the event.
 - Check the area and control sources of ignition.

AFTER

- Inspect affected area affected
- Support the restoration of the affected area.
 - Maintain and replace equipment and personal protective equipment
- Evaluate techniques.
- Correct procedures.

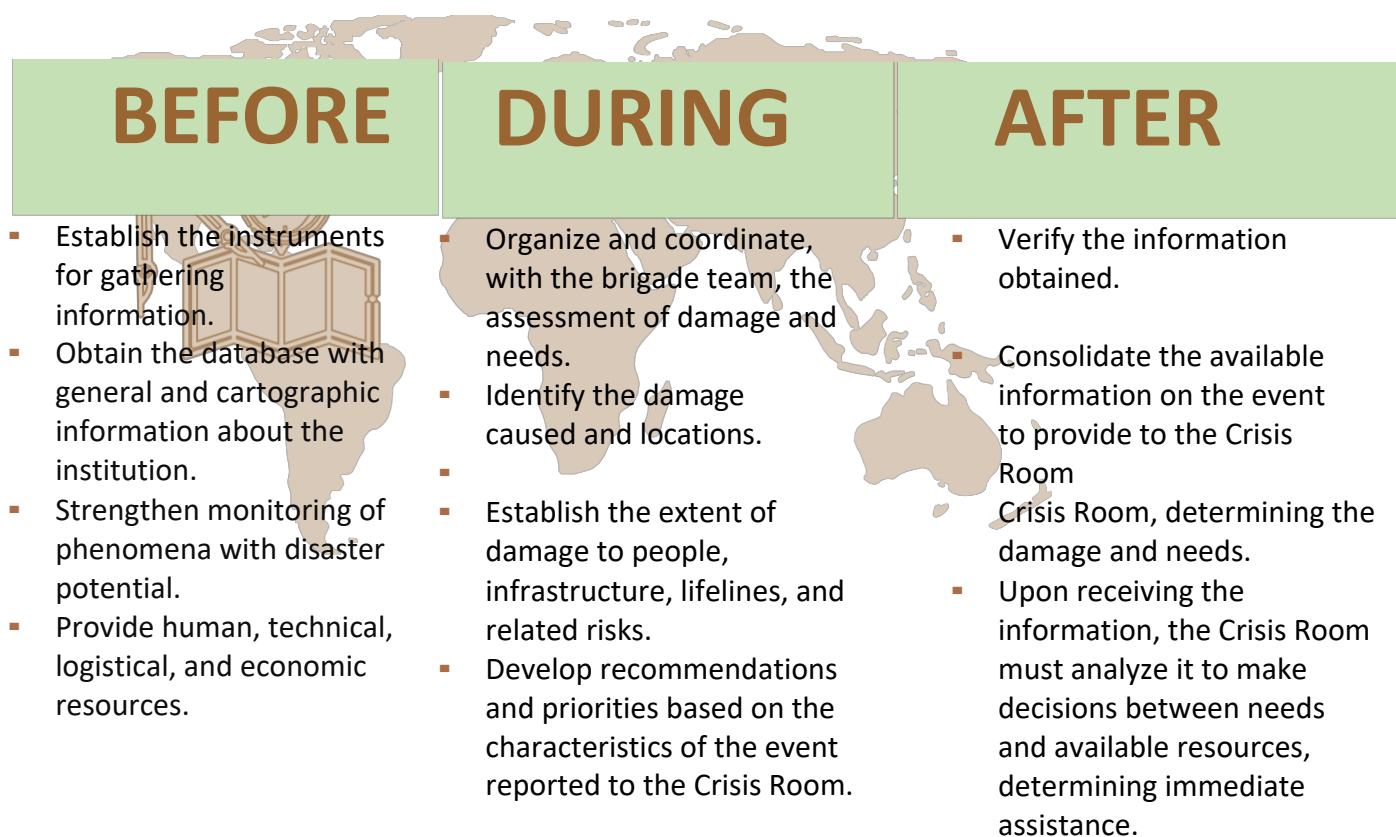
VI.3.d. Damage Assessment and Needs Analysis Brigade (EDAN)

This brigade is responsible for assessing the direct effects of the event in terms of losses, recommending the evacuation or confinement of affected persons. It must also provide timely, quality information on damage and needs resulting from an emergency.

Members of the Damage Assessment and Needs Analysis Brigade (EDAN)

Instance
<ul style="list-style-type: none"> ▪ <i>Physical Plant</i> ▪ <i>General Services Department</i> ▪ <i>Security</i> ▪ <i>Maintenance</i>

FUNCTIONS OF THE DAMAGE ASSESSMENT AND NEEDS ANALYSIS BRIGADE (EDAN)



Collaboration with National System Agencies

The Institutional Disaster Risk Reduction Plan is governed by the guidelines of the National Risk Management System.

DIRECTORY

EMERGENCY AND RESCUE AGENCIES FOR COORDINATION



- **DOMINICAN CIVIL DEFENSE**

Ortega y Gasset Highway, kilometer 419, corner of Pepillo Salcedo, Plaza de la Salud, next to the PAHO, 2nd Floor, La Fe neighborhood, National District, Dominican Republic.

809-472-8614

- **EMERGENCY OPERATIONS CENTER (COE)**

Pepillo Salcedo Street, National Emergency Commission Building No. 419, Plaza de La Salud, La Fe neighborhood, Dominican Republic.

809-472-0909

- **NATIONAL EMERGENCY AND SECURITY RESPONSE SYSTEM (911)**

Avenida Abraham Lincoln No. 69, corner of Dr. Núñez and Domínguez, National District, Dominican Republic.

809-688-9911

- **ROBERT REID CABRAL HOSPITAL**

Avenida Abraham Lincoln No. 2, Santo Domingo, 10101.

809-533-1111

- **Independencia Clinic**

South of Avenida Independencia No. 301, Santo Domingo.

809-533-2775

- **NATIONAL POLICE GENERAL HOSPITAL**

Calle Lic. Rafael Augusto Sánchez Ravelo, Santo Domingo.

809-533-8568

- **JUAN PABLO DUARTE CAMP (BLACK HELMETS).**

Independencia Avenue, corner of Abraham Lincoln.

809-533-1741

VII. DIAGNOSIS

Current Status of the Institution

Variables. The matrix for conducting the Disaster Risk Analysis in Higher Education Institutions is based on these four variables (Msc. García Lemus, 2019):

1. **Threats**
2. **Vulnerability**
3. **Exposure**
4. **Capabilities and Resilience**

Threat Analysis

Based on the Conceptual Framework (United Nations, General Assembly, 2016), we establish the following definitions:

Threat: A process, phenomenon, or activity that can cause death, injury, or other health effects, environmental and property damage, and social and economic disruption.

Natural threats: These are predominantly associated with natural processes and phenomena.

Human-made (anthropogenic) threats: These are threats that are wholly or partially induced by human activities and decisions.

Biological threats: These are of organic origin or transmitted by biological vectors, such as pathogenic microorganisms, toxins, and bioactive substances. Some examples are bacteria, viruses, or parasites, as well as poisonous animals and insects, poisonous plants, and mosquitoes that carry disease-causing agents.

Nine threats were identified and classified according to their origin: natural, anthropogenic, and biological, as detailed in Figure 6.

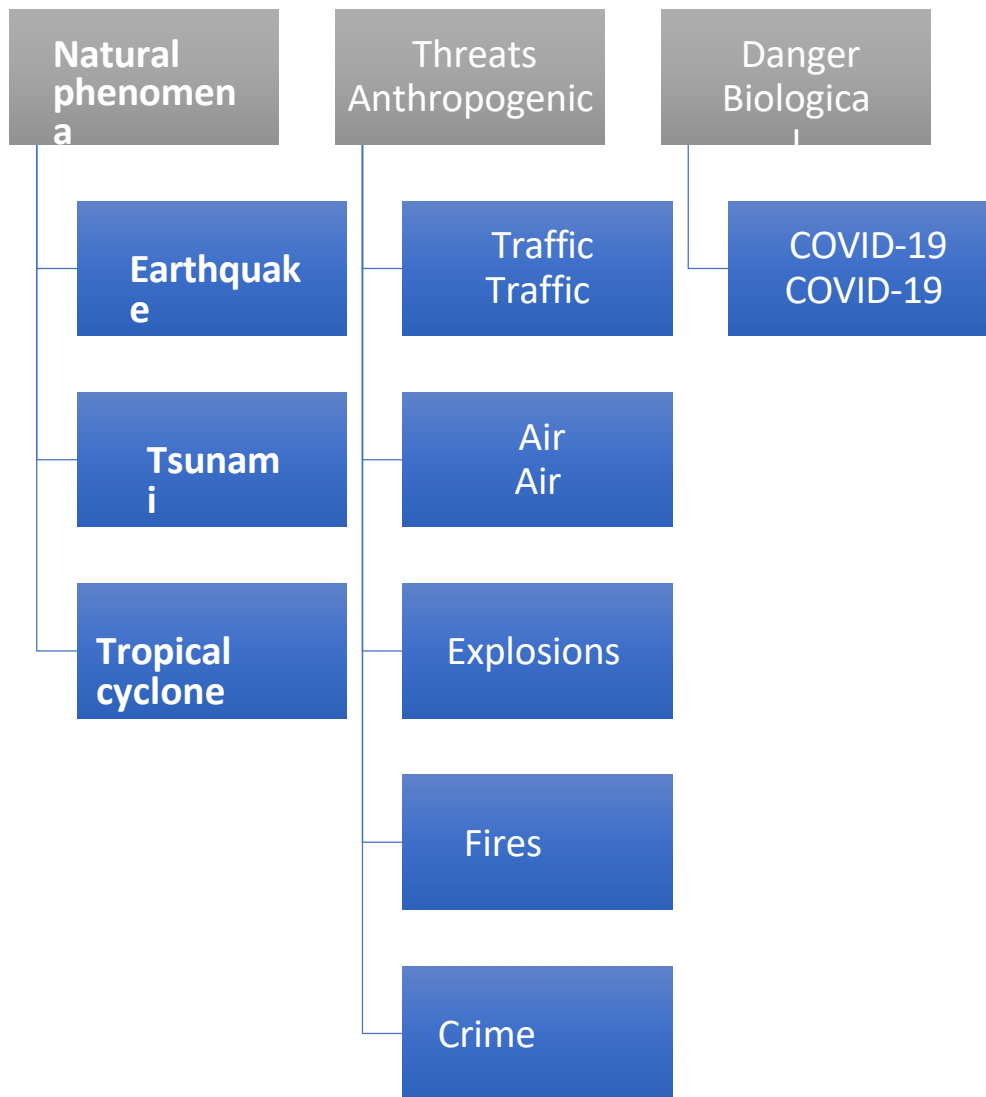


Illustration 3 Classification of Threats in UNICARIBE

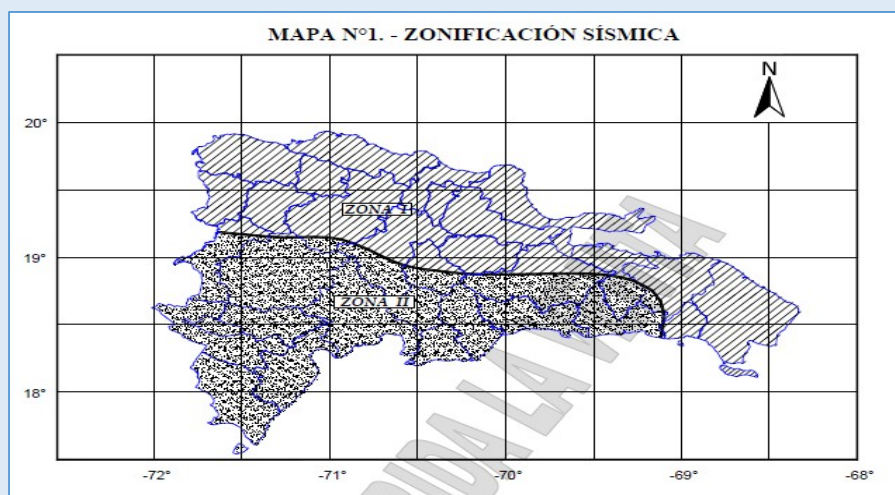
VII.1.a. Threats from Natural Phenomena

These are shown in Table 18 of the Disaster Risk Analysis for Threats Associated with Natural Phenomena, highlighting the main characteristics that could have an impact on the University of the Caribbean and its surroundings.

Disaster Risk Analysis (DRA) of Threats Originating from Natural Phenomena

1. Earthquake

- Seismic source threat. These can impact the study area. Among the main seismogenic sources on the island of Hispaniola, which corresponds to the territory of Santo Domingo (Bertil D., Terrier M., Belvaux M., 2015), are:
 - West: The boundary of the zone is located at the vertical end of the Bonao fault and its southern extension (ZFB0).
 - South of the island, particularly the capital, Santo Domingo: The main thrust fault in the Los Muertos Trench.
- Attenuation of movement. The study area, in the National District and Santo Domingo, with all its localities, corresponds to Zone II of medium seismicity (Ministry of Public Works and Communications, 2011). The MOPC Regulations for Seismic Analysis and Design of Structures (2011), in Article 8, states that the Dominican Republic is considered to be divided into two zones, according to their reference spectral seismic acceleration levels, for a return period of 2,475 years, with a 2% probability of exceedance in 50 years.



<p>2. Tsunami</p>	<ul style="list-style-type: none"> ▪ Due to its geographical location, the Dominican Republic has been impacted by high-intensity earthquakes, some of which have generated tsunamis, with a hundred such events recorded in the Caribbean. Among them, five have affected the country's coasts. ▪ A tsunami can be generated by several causes, including seismic activity. In fact, the scenario of the reference study (D. Bertil, M. Terrier, M. Belvaux, 2015) was based on an earthquake, so the following results were determined for the UNICARIBE study area in Santo Domingo (Pieter N, 2019): ▪ Maximum wave height: It can be seen that the maximum free surface elevation is close to 4 meters in the first two cases, corresponding to the first wave (4.65 and 4.12 meters, respectively). ▪ Arrival times: According to Figure 24 of the study, the wave with the greatest amplitude has an intermediate but high value of 10 minutes. ▪ Topographic levels of the UNICARIBE site. The contour map shows the geographical elevation relative to sea level of the university buildings, which are located 11.59 meters above sea level.
<p>3. Tropical cyclone</p>	<ul style="list-style-type: none"> ▪ The Dominican Republic is located in a geographical area with a humid tropical climate, where atmospheric conditions favor the generation of intense and frequent rainfall throughout most of the year (Pieter, 2019). ▪ Of the seven "basins" where tropical cyclones form, the Atlantic basin, which includes the northern part of the ocean with which it shares its name, the Gulf of Mexico, and the Caribbean Sea, is the one that affects the Dominican Republic. Although cyclones can occur "out of season," they usually occur from June 1 to November 30. ▪ Santo Domingo, where UNICARIBE is located, is an area vulnerable to tropical cyclones. ▪ The hurricane of 1502 led to the relocation of the town of Santo Domingo to the western bank of the Ozama River. ▪ Hurricanes heading toward the southern coast, passing through Santo Domingo, have caused both human and economic losses. Among them, San Zenón (1930), a category 4 hurricane on the Saffir-Simpson scale, caused 4,500 deaths, more than 20,000 people homeless, and losses of more than US\$20 million. David (1979), a category 5 hurricane, caused 1,000 human losses.

- The dangers posed by tropical cyclones include strong winds, heavy and torrential rains, precipitation, flooding, and storm surges capable of causing significant damage and loss.

VII.1.b. Anthropogenic Threats

Human-induced threats are those caused wholly or partly by human activities and decisions (Msc. García Lemus, 2019). These are shown in Table 19 of Disaster Risk Analysis by Anthropogenic Threats, with the main characteristics that could affect the University of the Caribbean and its surroundings, and with statistics for the country, city, and study area (Pieter, 2019).

Disaster Risk Analysis (DRA) of Anthropogenic Threats

<p>1. Traffic accidents</p>	<ul style="list-style-type: none"> ▪ Every year, hundreds of lives are lost in the Dominican Republic due to traffic accidents. On-site deaths decreased during the 2013-2018 period in the study area. In 2013, 111 deaths were recorded in a population of 992,730. Meanwhile, 2018 saw the largest reduction in traffic accident deaths. For a population of 1,029,607, a total of 82 deaths were recorded, according to information provided by the Dominican Republic's Citizen Security Observatory (OSC-RD). ▪ The threat of traffic accidents in the study area focuses on those that could occur on the 30 de Mayo Highway, south of the University of the Caribbean. This highway provides a high level of mobility for large volumes of traffic, serving long-distance traffic and connecting major cities.
<p>2. Air accidents</p>	<ul style="list-style-type: none"> ▪ The Dominican Republic Aviation Accident Investigation Commission (CIAA) indicates that there are approximately 250,000 flights in the country and that accidents represent 0.1% of them, a figure well below the average in the Caribbean (6%) and worldwide (8%). ▪ The Santo Domingo Heliport, built by the Airport Department, is located

on the 30 de Mayo Highway, about 415 meters east of the University of the Caribbean. The Aviation Accident Investigation Commission (CIAA), referring to aviation accident statistics in this locality, reported that, in its archives, there are no records of accidents or serious incidents involving aircraft at the facility or in its vicinity. (Dominican Civil Aviation Institute [IDAC], (2018)

3. Explosions

- Establishments selling liquid fuels and liquefied petroleum gas (LPG) are facilities where flammable materials are received, stored, and dispatched. These companies work with materials that have a high probability of causing explosions and fires due to the nature of these products, which are handled on a permanent basis.
- Fires and explosions are commonly associated phenomena, as one can lead to the other. The most characteristic effect of an explosion is a sudden increase in pressure, whose shock wave can become both the detonator and the deflagrant.
- The threats can be unique, sequential, or combined in their origin and effects.
- Records of explosions in the Dominican Republic are mainly obtained from journalistic data (2009-2018), which report accidents involving companies related to LPG handling and indicate fires in most cases.
- Gasoline and liquefied petroleum gas (LPG) stations are located near the campus:
 - Gasoline Station. Located 50 meters east of UNICARIBE.
 - Liquefied petroleum gas (LPG) station. Located 155 meters east of the campus.

4. Fires

- The National Emergency and Security Response System 9-1-1 responded to 15,506 fire incidents between 2014 and 2019. Between January and March 2019, 746 fires were recorded in the capital.
- The Automotive Mechanics Workshop is located in the vicinity of the study area. It has now been converted into a small premises offering specialized services such as mechanics, electrical work, dent removal, and painting, as well as storage of spare parts and materials, with sources of ignition and

5. Crime

flammable products (welding, lubricants, and paints). All of this increases the likelihood of a fire occurring and its effects.

As a sociocultural phenomenon, crime is conditioned by the evolution of the environment and its relationship with the socioeconomic and political system. Crime is closely related to the underlying factors of disaster risk, as well as conditions linked to development, since they increase levels of exposure and vulnerability, reducing response capacity. (ADN, UNDP, 2006)

Socioeconomic data on the population, results for the districts of the National District: District No. 1: Study area, with lower population density than districts 2 and 3.

One in five households in the capital is poor. The lowest proportion of poor households is in constituency No. 1 (5%). Constituencies 2 and 3 have percentages of 20% and 33%, respectively.

The national average unemployment rate is 16%, with a rate of 11.45% in the National District, much lower than in districts 2 and 3. District No. 1 is below the rate for the capital.

Universities and shopping malls are considered the safest places in the city, compared to the rest of the results from respondents in district 1.

Crime records in neighborhoods of the National District, specifically within the Tropical Metaldom neighborhood, where the study area is located:

In 2016, there were 13 robberies, while in the January-March 2017 period, only 5 were recorded. (Observatory of Citizen Security of the Dominican Republic (OSC-RD), 2015)

VII.1.c. Biological Threat

"Biological threats are of organic origin or transmitted by biological vectors , such as pathogenic microorganisms, toxins, and bioactive substances. Some examples include bacteria, viruses, and parasites, as well as poisonous animals and insects, poisonous plants, and mosquitoes that carry disease-causing agents." (García Lemus MSc, 2019)

Disaster Risk Analysis (DRA) of Biological Threats

COVID-19 Pandemic

- Coronaviruses are a large family of pathogens that affect both animals and humans, causing respiratory infections that can range from the common cold to diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).
- COVID-19 is a disease caused by the most recently discovered coronavirus. Both this new virus and the disease it causes were unknown before the outbreak in Wuhan, China, in December 2019. Currently, the COVID-19 pandemic affects several countries (World Health Organization, 2020).
- In the Dominican Republic, the Ministry of Public Health confirmed that, as of November 15, 2020, there were 133,724 reported cases, of which 21,458 tested positive and 2,285 died, with a mortality rate of 218.89 per million inhabitants and a case fatality rate of 1.71% (Ministry of Public Health and Social Assistance, 2020).
- The Public Health recommendations for the population are as follows:
 - Urge the population to take the necessary measures to prevent the spread of the virus.
 - Instruct the population to wear masks in public and work spaces, wash their hands with soap and water, use alcohol-based hand sanitizer, cover their mouth and nose with their forearm or a tissue when sneezing or coughing, and avoid close contact with people who have flu or cold symptoms.
 - UNICARIBE has implemented a virtual mode of distance learning as a measure to prevent the spread of COVID-19.

Vulnerability Analysis

According to the United Nations General Assembly (2019), vulnerability is defined as *the set of conditions, determined by physical, social, economic, or environmental factors or processes, that increase the susceptibility of a person, community, and assets or systems to the effects of hazards.*

Vulnerability Assessment

Type	Impact of Threats	Fragility
Infrastructure	<p>Earthquake, Tsunami: Seismic activity, flooding, tsunami.</p> <p>Tropical cyclone: Strong winds, heavy rainfall.</p>	<p>Lack of soil studies for Blocks A, B, C, and D to determine the vulnerability of structures and verify the resistance and/or need for reinforcement of buildings.</p> <p>Buildings with structural vulnerabilities in protruding floors, soft floors, and joints between structural and non-structural elements.</p>
Land use and institutional fragility, implementation of regulations.	<p>Traffic and Air Accidents</p> <p>Explosions and Fires</p>	<p>Proximity to high-traffic roads, gas stations, auto repair shops, and heliports: Weaknesses in the implementation of road safety solutions for pedestrians and speed control on the high-traffic highway in front of the study area, as well as in the enforcement of regulations regarding the location and minimum distances of companies involved in the sale of hydrocarbons and chemical materials.</p> <p>The heliport is located 415 meters east of the campus, with little vulnerability to air accidents due to the following provisions established by the Republic's Aviation Accident Investigation Commission: <i>Aircraft do not fly over UNICARIBE's grounds, and the approach and takeoff surfaces</i></p>

		<p><i>are established in a south-southwest direction (parallel to the coast) and south-southeast (towards the sea). The Commission's files show that there are no records of serious accidents or incidents involving aircraft at the 30 de Mayo Heliport or in its vicinity.</i></p>
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Exposure Analysis

The United Nations General Assembly (2019) defines exposure as "the situation of people, infrastructure, housing, production capacities, and other tangible human assets located in areas exposed to hazards. Exposure measures may include the number of people or types of assets in an area. They can be combined with the specific vulnerability and capacity of the elements exposed to any particular hazard to estimate the quantitative risks associated with that hazard in the area concerned."

Due to the unique location of the study area, UNICARIBE, where the nine threats classified in this report could have an impact, a single analysis of the variables of exposure, capacity, and resilience is established, since the parameters obtained in this matrix can be applied to the probable scenarios.

Capacity, Resilience, and Resistance Analysis

VII.4.a. Capacities and Resilience

According to the United Nations General Assembly (2016), capacity is a "combination of all the strengths, attributes, and resources available within an organization, community, or society that can be used to manage and reduce disaster risks and strengthen resilience. Capacity can encompass infrastructure, institutions, human knowledge and skills, as well as collective attributes such as social relations, leadership, and management."

Resilience is defined as the ability of a system, community, or society to withstand, absorb, adapt, transform, and recover from the effects of a threat in a timely and efficient manner, particularly by preserving and restoring its basic structures and functions through risk management.

Capacity/Resilience Matrix

Capacity and Resilience

Availability of infrastructure, institutions, human knowledge and skills, as well as collective attributes such as social relations, leadership, and management for the Dominican Republic.

1. The University of the Caribbean has developed an Emergency and/or Disaster Response Plan

This was updated in 2018:

Congress of the Dominican Republic. (2002). Law 147-02 on Risk Management. Santo Domingo, Dominican Republic.

Congress of the Dominican Republic (2002). Law 147-02 on Risk Management. Santo Domingo, Dominican Republic.

Congress of the Dominican Republic (2001). Law 139-01 on Higher Education, Science, and Technology. Santo Domingo, Dominican Republic.

United Nations (2015). Sendai Framework for Disaster Risk Reduction. Sendai: United Nations.

Inter-American University of Puerto Rico (October 5, 2010). San Juan Puerto Rico Seismic Network. Retrieved from:

http://www.redsismica.uprm.edu/Spanish/educacion/Brochures/Material%20adicional/Plan_Contingencia.pdf

Interamerican University of Puerto Rico (September 14, 2015). CEDIN Elemental. Retrieved from Contingency Plan for Disaster Cases: http://metro.inter.edu/seguridad-doc/CEDIN_Plan_Contingencia.pdf

2. Existence of a unit responsible for response and contingencies

The Plan provides for a functional, non-hierarchical organization, chaired by the Institutional Emergency Committee (CEI) during an emergency, which will temporarily replace the formal organizational structure of the campus.

UNICARIBE Organizational Structure:

Members of the Executive Council

Members of the Emergency

Committee

Response and Recovery Brigades:

Evacuation First Aid

Firefighting Damage

Assessment

Collaboration of municipal response organizations with the plan

The Emergency and/or Disaster Response Plan complies with the guidelines of the National Risk Management System, which establishes a mechanism for cooperation with the entities that comprise it.

1. User awareness of risk

Disaster Risk Reduction (DRR) awareness training has been provided to UNICARIBE members, including students, administrative staff, and support staff.

Implementation of the University Facilities Safety Index (ISIU), 2018. Earthquake Evacuation Plan. In 2019, it was updated with the participation of experts from Civil Defense, COE, and Redulac DRR. In addition, a drill was conducted in the same year.

2. Immediate availability of resources and systems in case of need

Evacuation route, communication and security system, fire extinguishers, and first aid resources.

VII.4.b. Resilience Analysis Within

the report on physical, social, economic, and environmental factors or processes

that determined the vulnerability of the area of study area, results were also obtained for

values resistance resistance to threats, which

indicated the strengthening of the geophysical

of the terrain, infrastructure, and organization of the educational community into social structures for risk management, which is considered a decrease in vulnerability and, consequently, an increase in the capacity and resilience of the area.

Resistance Assessment Matrix

Threats	Type of Resistance	Characteristics of Resistance
<p>Natural</p> <p>Earthquake</p> <p>Tsunami: seismic activity and flooding</p> <p>Tropical cyclone, strong winds, and heavy rainfall</p>	<p>Geophysical of the terrain</p>	<p>The geological formation of the study area is resistant to the effects of seismic hazards, tsunami wave flooding, heavy rainfall, and tropical cyclone winds.</p> <p>Lithotype: Carbonate rocks. These are lithotypes in which hard, resistant rock masses are observed.</p> <p>Permeability: High porosity and fissuring. Soil: Loose, compact.</p> <p>Soil bearing capacity: High and good geomechanical properties.</p> <p>Susceptibility to ground movement and soil liquefaction is very low. These are materials that, even when saturated with water, are not expected to liquefy.</p>
	<p>Urban sector</p>	<p>Zoning with mixed residential and commercial land use, in accordance with urban regulations for the sector.</p> <p>Solid and resistant constructions. The environment is organized and clean, mainly due to solid waste collection.</p> <p>Basic services infrastructure: Paved streets, sidewalks, curbs, electric lighting, drinking water, sewerage, telephone, cable television, and public transportation.</p>
<p>Natural and Anthropogenic Threats</p>	<p>Infrastructure</p>	<p>Buildings with a portico system of aligned columns, providing rigidity and security to blocks A, B, C, and E.</p> <p>The construction of A, B, and C is irregular, but with a uniform structure.</p> <p>The buildings have good structural stability and resistant construction materials (concrete and steel).</p> <p>The campus is enclosed by a sturdy perimeter fence made of concrete blocks.</p> <p>The non-structural elements of the infrastructure are in excellent condition.</p>

	There is evidence of plans for the main construction of blocks A, along with its southern annex, and B.
Social organization of UNICARIBE	Emergency and Contingency Plans Medical Unit Updated ISIU Security System Earthquake Evacuation Plan Protocols developed.
Risk awareness on the part of Users	Courses on Campaign Campaign of Sustainable and Resilient Universities.
Safety of campus members	The safety of university students who travel through the student environment is ensured by increased lighting on public roads and the presence of UNICARIBE security personnel, equipped with communication radios and security camera monitoring, installed inside the facilities, on pedestrian and vehicular access roads, and in parking areas.
Social Organization	Neighborhood Association and a Religious Community.
Regulations and Institutional Strength of the Dominican Republic	<ul style="list-style-type: none"> ▪ National Plan for Comprehensive Disaster Risk Management in the Dominican Republic - Decree No. 275-13 ▪ Law 1-2012: National Development Strategy (END) ▪ The Constitution of the Dominican Republic (2010) ▪ Risk Management Law 147-02 ▪ Law No. 139-01, creating the National System of Higher Education, Science, and Technology. ▪ Decree No. 184-95. Incorporation of UNICARIBE ▪ Regulations for Seismic Analysis and Design of Structures, R-001. MOPC (2011) ▪ National Meteorological Office (ONAMET). Tsunami Warning Unit in the Dominican Republic and Forecasting Center ▪ Six regulations developed by the National Institute of Transit and Land Transportation (INTRANT) in 2019 ▪ Law No. 63-17 on Mobility, Land Transport, Traffic and Safety Road of the Republic

***Natural and anthropogenic hazards
Natural and Anthropogenic Origin***

		<p>Dominican Republic. G. O. No. 10875, of February 24, 2017</p> <ul style="list-style-type: none"> ▪ Traffic Law No. 241, dated December 28, 1967 ▪ Law No. 1915, dated January 28, 1949, creating the Dominican Civil Aviation Institute (IDAC) ▪ Law No. 505, dated November 10, 1969, establishing control and legislation on air navigation in the Dominican Republic. ▪ Law No. 491-06 on civil aviation, published in G.O. No. 10399, of 2006, which modernizes the previous laws. ▪ Ministry of Industry, Commerce, and MSMEs, Resolution No. 201, which reformulates the safety requirements applicable to LPG filling stations and stations (2017). ▪ Technical Environmental Regulations for the Management of Service Stations, promulgated by the Ministry of Environment and Natural Resources on August 14, 2013. ▪ MOPC R-030, Regulations for the Design and Installation of Liquefied Petroleum Gas Systems (Decree No. 178-10), Dominican Republic, 2010 <ul style="list-style-type: none"> ▪ Compendium of Laws on Hydrocarbons in the Dominican Republic, Legal and Administrative Provisions, 1972.
<p>Biologic al Threat COVID-19 Pandemic</p>	<p>Institutional Strength and Regulations</p>	<ul style="list-style-type: none"> ▪ <u>UNICARIBE Facilities:</u> ▪ Virtual distance learning as a measure to prevent the spread of COVID-19. ▪ Implementation of protocols to prevent contagion. ▪ Medical unit focused on providing first aid to the university community. It consists of a staff of two doctors, a stretcher, stethoscopes, a sphygmomanometer, and medications for the medical care of students. <p><u>Regulations and Institutions:</u></p> <ul style="list-style-type: none"> ▪ Resolution No. 000018, dated June 30, 2020, pursuant to General Health Law No. 42-01, which declares the national territory to be in a state of epidemic and provides for a series of measures to continue controlling and mitigating the spread of COVID-19.

- Dominican Republic, Ministry of Public Health (Santo Domingo de Guzmán, June 30, 2020).
- Resolution No. 000016, dated June 22, 2020, mandating the use of face masks as a measure to prevent the spread of COVID-19 in the country. Dominican Republic, Ministry of Public Health (Santo Domingo de Guzmán, June 22, 2020).
- Ministry of Public Health and Social Assistance, Government of the Dominican Republic: <https://www.msp.gob.do/web/>
- **Regional Office for the Americas of the World Health Organization (PAHO):** <https://www.paho.org/es>

Although this study currently provides greater insight into the factors that increase resilience and reduce vulnerability, it establishes **MEDIUM LEVEL VULNERABILITY** values due to elements from the nature that we cannot

Risk Scenarios

Risks occur when conditions of threat and vulnerability coincide, in other words, the factors that trigger them, so that, for proper management, it is necessary to understand

can control, and secondly, due to the lack of a greater number of indicators of the impact of possible threats, both natural and anthropogenic, and how these would affect the study area.

the way in which they interact and shape specific emergency situations, which represent real possibilities of impact on communities, the ecosystems that support them, and their livelihoods.

VII.5.a. Risk Levels and Possible Effects

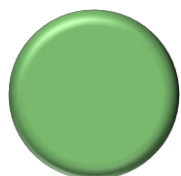
To analyze disaster risk levels, the University Institutional Security Index (ISIU) Assessment Matrix is used as a reference

University Institutional Security Index (ISIU) Assessment Matrix (Pieter, N., 2018).

Disaster Risk Assessment Levels

RISK LEVEL

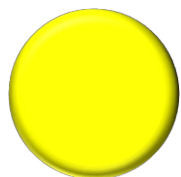
PROBABLE EFFECTS



LOW

High Safety

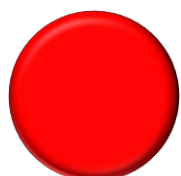
- Minor or no damage to buildings, basic services, or infrastructure.
- No fatalities or injuries.



MEDIUM

Medium Safety

- Moderate damage to non-structural elements.
- No fatalities, minor injuries.



HIGH

Low Safety

- Severe damage to structures and infrastructure of vital lines and basic services.
- Possibility of fatalities and serious injuries.

Based on the **vulnerability variable** analyzed, if the threat materializes, the possible effects and risk levels are estimated, assigning **MEDIUM vulnerability** values.

With respect to **Capacity and Resilience**, a **HIGH** level is assigned. The assessment levels for each aspect evaluated correspond to the criteria expressed in Tables 26-28.

Disaster Risk Levels of Threats by Frequency

CODING FREQUENCY	THREAT	MEDIUM VULNERABILITY	HIGH CAPACITY/RESILIENCE	MEDIUM CAPACITY/RESILIENCE	LOW CAPACITY/RESILIENCE	RISK
HIGH	Tropical cyclone					MEDIUM RISK
MEDIUM	Traffic Accident					MEDIUM RISK
LOW	Crime					LOW RISK
	Air Accidents					LOW RISK

Disaster Risk Levels by Magnitude

Magnitude coding	Threat	Vulnerability MEDIUM	Capacity/Resilience HIGH	Capacity/Resilience MEDIUM	Capacity/LOW Resilience	RISK
HIGH						
MEDIUM	Earthquake, Tsunami					RISK MEDIUM
	Explosion, Fire					RISK MEDIUM
LOW						

Disaster Risk Levels for Infectious Threats

Coding Magnitude	Threat	Vulnerability MEDIUM	Capacity/ Resilience HIGH	Capacity/ MEDIUM resilienc e	Capacity/ LOW Resilienc e	RISK
HIGH						
MEDIUM	COVID-19 pandemic					MEDIUM RISK
LOW						

By establishing the articulations of the different variables of the possible risk scenarios that could impact the Universidad del Caribe, the results of the danger levels represented in Tables 26-28 and explained below were obtained:

In the case of threats of crime and air accidents, the risk level is low. The study indicators reflect a low frequency for both threats (see Table): Disaster Risk Analysis [DRA], Anthropogenic Threats), with medium vulnerability and high capacity, determining a low level given their low probability of occurrence.

On the other hand, the threat of tropical cyclones and heavy rains presented a medium level of risk. These hydrometeorological phenomena, with medium vulnerability and high capacity due to their frequency,

increase the probability of damage and losses, but decrease their exposure due to warning systems and preventive measures in place for the possible occurrence of the event.

As for earthquake and tsunami threats, the medium risk is determined by the high resilience of the study area's location and the solidity of its infrastructure, an area of medium seismicity according to the zoning established in the Dominican Republic's seismic code, high geological resistance of the terrain, and the high structural safety of the facilities. In the case of tsunamis, the study results showed a medium level of impact in the study area.

There is little information available on the study area regarding the threats of explosions and fires, which are generally linked.

However, there are journalistic records of events caused by these threats at the national level. The proximity of companies that sell hydrocarbons and chemical materials is a medium-level threat due to the exposure of university users to their possible impact.

On the other hand, traffic accidents constitute a medium risk due to the lack of available records in the vicinity of the study area, with a medium frequency. All of this was based on information obtained regarding the decrease in this indicator during the 2013-2018 period in the National District.

A higher level of exposure occurs in the event of large-scale events with a wide-ranging impact, such as earthquakes, tsunamis, hurricanes, and torrential rains. Likewise, anthropogenic threats, such as explosions and fires, could be considered significant in this classification, since chemical accidents can affect large areas of the environment, depending on the

degree of intensity of the event. To reduce the risk of disasters, an analysis of the capacities and resistance of the different physical and social components that strengthen the resilience of the entire educational community and UNICARIBE facilities is shown (see Table: Capacity and Resilience Matrix; and Table 24: Resistance Assessment Matrix).

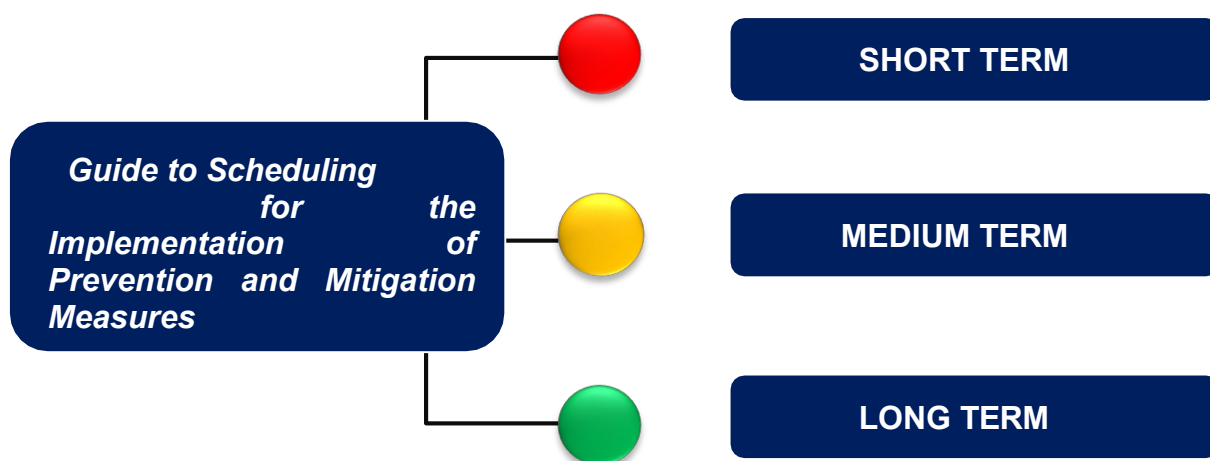
The COVID-19 pandemic is considered a medium-risk threat because, although the level of infection is very high, the university community is maintaining the social distancing protocol established by the Ministry of Public Health, as university users are not attending campus for classes or administrative tasks. All activities are being carried out remotely.

ACTIONS TO BE DEVELOPED IN THE SHORT, MEDIUM, AND LONG TERM













VIII. INITIATIVES

Proposed short-, medium-, and long-term prevention and mitigation actions to reduce the risk of disasters at the University of the Caribbean,

based on the vulnerabilities identified throughout the campus infrastructure and environment.

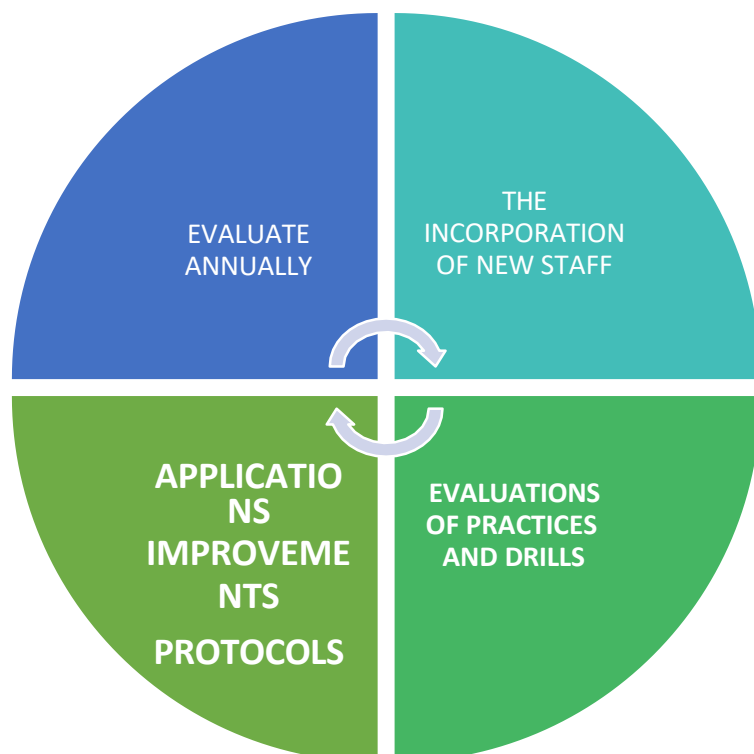


Proposed Actions to be Taken

PROPOSED ACTIONS	
<i>Develop training programs to strengthen knowledge of disaster risk management in the educational community through conferences, workshops, and courses at different levels.</i>	
<i>Prepare training for the university community on COVID-19, means of transmission, prevention and mitigation measures, as well as psychosocial well-being and mental health.</i>	
<i>Optimize the operation of a preventive isolation space, with medical supplies and equipment for people with COVID-19 symptoms, allowing for the monitoring of the established protocol for dealing with suspected or confirmed cases.</i>	
<i>Continue to strengthen institutional capacity for emergency and disaster response</i>	
<i>emergencies and disasters, developing contingency plans for all threats that may affect UNICARIBE.</i>	
<i>Share the Emergency and/or Disaster Response Plan with the entire university community in order to promote individual and collective participation in emergencies and disasters and strengthen risk management at the University of the Caribe.</i>	
<i>Develop structural and non-structural safety conditions for campus facilities already assessed for disaster risk.</i>	
<i>Promote the organized participation of the educational community in the development of a culture of prevention, carrying out</i>	
<i>drills according to the type of threat.</i>	
<i>Implement an alert system on university premises to enable evacuation or response in the event of an emergency.</i>	
<i>Define an engineering solution, in collaboration with municipal authorities, to reduce the risk of accidents at the intersection of the 30 de Mayo Highway, either with road solutions that</i>	
<i>reduce vehicle speed or the construction of a pedestrian crossing.</i>	
<i>Implement mechanisms and activation protocols for international cooperation in the event of adverse events.</i>	
<i>Promote the development of research into the culture of risk management</i>	
<i>Reduce disaster risk conditions by applying the ISIU to determine the levels of the institution, the results of which would enable the development of prevention and mitigation strategies.</i>	

- Evaluate the Institutional Disaster Risk Reduction Plan annually, or when circumstances warrant, for updating, offering recommendations for adjustments that allow for its better application, considering the following:
- The incorporation of new personnel, acquisition of equipment, or modification of operations.
- Requests for improvements to protocols for responding to different threats.
- Evaluations of practices and field drills when reviewing reports.

Develop a digital risk management information system that contains a data platform and georeferenced mapping for the analysis, evaluation, and development of indicators for planning strategies to reduce threats to Higher Education Institutions and the strengthening of emergency plans.



IX. INTERVENTION PROTOCOLS FOR THE MAIN THREATS TO UNICARIBE

Action protocols help ensure a more organized response in the event of an emergency. They are specific, simple, practical, and applicable, as well as a proactive way to ensure a timely response.

The Evacuation Plan is defined as the set of actions and procedures intended to protect the life and physical integrity of people under threat, by moving them to places of lesser risk.

The objectives of an evacuation plan are:

- a) To quickly detect threats that could endanger people's safety.
- b) Activate the evacuation alarm.
- c) Ensure that everyone proceeds to the meeting point in a quick and orderly manner.

The evacuation alarm will be activated when a threat arises inside or outside UNICARIBE, such as an earthquake, tsunami warning, fire outbreak, explosions, or any other situation that the Institutional Emergency Committee (CEI) determines requires the evacuation of the premises.

Protocol 01: Evacuation in the Event of an Earthquake

An earthquake is caused by the sudden and violent rupture of the rocks that make up the lithosphere, releasing a large amount of energy, which propagates

in seismic waves in all directions through the interior of the earth, so that when they reach the surface, a tremor occurs. (Rivas, 2014).

BEFORE

1. Consult a construction professional to identify the most vulnerable areas of the university facilities and consider making improvements to solve problems that could pose a risk during an earthquake.
2. Identify high-risk areas, such as windows, glass doors, and objects.
pendants.
3. Secure heavy objects, such as shelves, hanging items, and fragile furniture, by placing them as close to the floor as possible.
4. Monitor and maintain gas, water, and electrical installations in good condition.
electricity installations.
5. Prepare a post-earthquake evacuation plan.
6. Conduct drills to provide ongoing training on how to protect yourself in the event of an earthquake, identify safe locations and routes to hospitals. It is crucial that staff members know the location of medical care centers available to them.
7. Keep a list of emergency phone numbers handy.
including cell phones.

DURING

1. First and foremost, it is recommended that you remain calm and encourage others to do the same, so that you can think clearly about how to stay safe.
2. Stay away from windows and glass doors, bookcases, and any other heavy objects that could fall.
3. Perform "drop, cover, and hold on" exercises. During the earthquake, it is important to crouch down or get into a fetal position, covering your head and neck with your arms. If there is a sturdy table or desk nearby, get under it for better protection from falling objects.
4. Do not use elevators.
5. If one of the staff members has a physical disability, find a safe place and lock the wheelchair in place. If the individual is seated and unable to get down on the floor, they should lean forward, covering their head with their arms and holding their neck with both hands.
6. For those outside the building, it is recommended to remain there, but away from power lines, gas and water lines, lampposts, trees, buildings, and walls. If possible, they should go to an open area.

AFTER

1. If necessary, evacuate the premises via the nearest exits or stairways, heading towards the designated meeting point.
2. Confirm that colleagues have arrived at the appropriate meeting place.
3. Brigades should attend to the injured and extinguish any fires.
4. If trapped, individuals should protect their mouth, nose, and eyes from dust. In this situation, it is advisable to send a text message, knock on a pipe or wall, or use a whistle so that rescuers can find you.
5. If you are in an area prone to tsunamis, you should move to higher ground once the earthquake has stopped.

6. Do not return to the building until you are sure that the structure has not suffered significant damage. It is important to remember that, after a strong earthquake, aftershocks will follow, so staff members should continue to follow the established instructions.
7. Stay tuned to the bulletins issued by the COE.
8. Instill absolute confidence and calm in everyone around you.
9. Do not use the telephone, and if it is necessary to use it, it should only be for emergencies.

Declaration of the End of the Emergency:

Once the threat has been controlled and it is considered safe to return to the facilities, the Emergency Coordinator must contact the personnel at the final meeting point. Each brigade leader will write a report detailing the activities carried out in the assigned areas and send it to the Institutional Emergency Committee (IEC).

Protocol 02: Initiatives in the event of a tropical cyclone

A cyclone is a rotating system composed of clouds and storms that originates over tropical or subtropical waters, with a closed circulation center in the lower levels of the atmosphere (National Oceanic and Atmospheric Administration [NOAA], 2013). It is a significant threat, as it is a powerful natural phenomenon that can cause great damage and loss of life.

GLOSARIO METEORÓLOGICO

Algunos de los principales sistemas de menor a mayor importancia que nos afectan regularmente.



ONDA TROPICAL

Es un tipo de vaguada, es decir un área alargada de baja presión y nubes orientada de Norte a Sur. SE mueve de Este a Oeste entre el trópico de Cáncer y el de Capricornio, causando áreas de nubes y tormentas. Pueden transformarse en ciclones tropicales en el Océano Atlántico norte y Pacífico nororiental.



DEPRESIÓN TROPICAL

Es la primera etapa de un ciclón. Se desarrolla sobre aguas tropicales y tiene una circulación, en superficie. Organizada y definida en el sentido contrario a las manecillas del reloj. Sus vientos máximos sostenidos son menores o iguales a los 63 kilómetros por hora. Una depresión tropical puede nacer de una onda tropical.



TORMENTA TROPICAL

Cuando una depresión tropical alcanza vientos máximos sostenidos entre 63 y los 119 kilómetros por hora. En esta categoría adopta un nombre en español, inglés o francés, de acuerdo con la lista previamente establecida por la Organización Meteorológica Mundial (OMM).



HURACÁN

Violenta tormenta, que se puede desarrollar a partir de una tormenta tropical, con vientos mayores a los 119 kilómetros por hora. Los vientos giran en contra de las manecillas del reloj en el hemisferio norte, acompañado de bandas nubosas en forma de espiral y de precipitaciones intensas alrededor de un ojo donde hay calma.

Los huracanes se dividen en cinco categorías según la escala SAFFIR/SIMPSON

CAT. 1

Vientos:
119-153 km/h

CAT. 2

Vientos:
154-177 km/h

CAT. 3

Vientos:
178-209 km/h

CAT. 4

Vientos:
210-249 km/h

CAT. 5

Vientos:
Mayor a 249 km/h

Fuente: Centro Nacional de Huracanes Miami y Organización Meteorológica Mundial.

Infografía: R. Ariza

BEFOR E

1. Pay attention to official warnings related to the event and instructions issued by ONAMET and the COE.
2. Activate the Institutional Emergency Committee (CEI) when the COE issues a tropical cyclone, storm, or hurricane warning, and inform the university community to remain vigilant and, when deemed necessary, stay at home for greater safety.
3. Conduct a cleaning day in the outdoor area and offices, inspecting roofs, cornices, and drains to ensure there is no accumulation of debris and trash. Likewise, outdoor objects that could fly away in strong winds or accumulate water should be stored away, and trees that could cause damage should be pruned.

4. Designate a space to protect teaching materials, available resources, and electronic equipment placed on desks or other furniture, away from windows, covered with waterproof material. Documents should have digital copies, protected with a password.
1. Store supplies, including medications and cleaning materials, for possible use after the event.
2. Keep emergency phone numbers handy. It is also important to keep your cell phone charged when a hurricane is approaching.
3. Once the storm is imminent and all safety measures have been implemented, staff members should disconnect the electrical power and shut off gas lines, doors, and windows.
4. Develop communication and information sessions throughout the educational community about the hurricane season and its main characteristics, focusing on what should be done before, during, and after a hurricane or tropical storm.

DURING

1. Pay attention to the bulletins issued by ONAMET and COE.
2. Ensure the safety of the university community by following the instructions of the competent authorities.

AFTER

1. Hold a meeting of the Institutional Emergency Committee (IEC) for a preliminary assessment of any damage that may have occurred and the prevailing conditions at the university.
2. Submit a more detailed and formal assessment report, considering human losses and damage to people (injuries), property, equipment, and lifelines.

3. If the assessment determines that conditions are safe, proceed with caution to clean the buildings and campus so that operations can resume as soon as possible.
4. If the university infrastructure has not been damaged, resume administrative and teaching activities, informing staff members about diseases that can be contracted after the event, such as dengue, malaria, cholera, and leptospirosis; the proper use of water and how to purify it before consumption; and hygiene, especially hand washing before eating and after using the bathroom.

Protocol 03: Fire

The Royal Spanish Academy (2020) defines fires as an "event caused by fire." This causes severe damage to both property

and people, specifically death from smoke inhalation, as well as fainting from intoxication and severe burns.

BEFORE

1. Be familiar with the alarm signals and evacuation routes, actively participating in drills and training sessions.
2. Learn about the use, application, and location of fire extinguishers.
3. Ensure that repairs or installations of electrical appliances are carried out by authorized and qualified personnel.
4. Avoid overloading outlets with multiple electronic devices.

DURING

1. The person who discovers the outbreak that leads to an emergency must raise the alarm.

2. If you receive a warning or detect the outbreak, use the fire extinguishers and firefighting equipment located in designated areas, or request assistance if you do not know how to use them.
3. Open windows and doors completely to increase ventilation, remembering that smoke, heat, and gases travel faster than fire.
4. Members of the Emergency Support Committee should go to the scene and assess the situation, its consequences, magnitude, and possible evolution.
5. If the fire cannot be controlled in its early stages, the General Emergency Coordinator must activate the alarm and order the implementation of the Evacuation Protocol.
6. The General Emergency Coordinator, or the next person in the chain of command, must call the Emergency Committee (EC) and report the event.
7. Coordinators must mobilize their teams and carry out their duties.
8. Cut off the power supply.
9. If the fire exceeds extinguishing capabilities, evacuate the premises, helping disabled and elderly people, moving as close to the floor as possible (crouching), below the smoke layer, in search of oxygen, to the nearest evacuation route.
10. Do not use elevators.
11. When the fire department arrives, if the situation warrants it, provide all necessary information to avoid further risks.

AFTER

1. Verify that all panel members are at the meeting point.
2. Confirm if there are any injuries.
3. Remain calm and wait for instructions, without leaving the meeting point until you receive instructions from the emergency manager.

Protocol 04: Covid-19 Pandemic

Coronaviruses (CoV) are a large family of pathogens that cause illnesses ranging from the common cold to more serious diseases. On January 30, 2020, the COVID-19 epidemic was declared a public health emergency of international concern by the WHO, which announced that the new coronavirus disease 2019 (COVID-19) could be considered a pandemic on March 11 of the same year. This means that the epidemic has spread across several countries, continents, or the entire world, affecting a large number of people (Pan American Health Organization, 2020).

This COVID-19 Pandemic Action Protocol for the Universidad del Caribe establishes a set of working guidelines that promote order in the basic activities for the return to face-to-face classes, based on criteria of hygiene, health, and safety, as well as academic organization.

The reopening is carried out through a process that requires preparatory actions and constant monitoring of scheduled activities, once the return to face-to-face activities, both administrative and academic, has been determined.

Due to the activation of the health alert and its impact on the Dominican Republic's education system, the Universidad del Caribe, as an institutional member, decided to close its facilities and offer virtual classes for the entire curriculum of the degree programs taught on campus. It also decided to maintain essential services, such as security personnel, who must remain on duty to ensure the functioning of the buildings and the maintenance of service systems, as a minimum essential operation.

As for academic activity, teaching is being carried out in a virtual context since the start of the mandatory quarantine, for which the University

is encouraging the training of teaching staff to maintain academic quality, monitoring student participation.

The objective is to establish a safety protocol, with measures for the prevention, control, monitoring, and mitigation of risk to the university community due to COVID-19, upon their return to academic and administrative activities.

In this way, the return to face-to-face learning should be carried out gradually, taking into account health and epidemiological conditions, the characteristics of

the degree programs (number of students, teachers, non-teaching staff, researchers, characteristics and size of the buildings), highlighting the importance of following the guidelines of the World Health Organization (WHO) and local authorities; guarantee the safety and health of students and university staff, ensuring a safe return, preventing the risk of contagion in workplaces and classrooms, following a strict Health and Safety protocol; and addressing the need to gradually open buildings and facilities in order to resume face-to-face activities.

BEFORE

1. When epidemiological conditions allow, plan the spatial, health, and safety conditions to be guaranteed before students return to face-to-face classes.
2. Allow for a period of time in advance for the authorities, together with teaching and administrative staff, to prepare and organize the return to face-to-face activities at the university with the implementation of protocols issued for the correct use of the facilities.
3. Plan the use of signage for the movement of people (students, administrative staff, and teachers) at the entrance, exit, and interior corridors

of the university campus and limit access areas to maintain minimum distancing.

4. Prepare circulation maps for social distancing in different areas.
5. Plan basic and essential sanitary conditioning for the reopening of the university.
6. Refurbish office spaces, classrooms, dining rooms, cafeterias, and common areas to ensure natural ventilation and minimum distancing between people.
7. Provide a workspace with physical barriers between the public and university staff in areas open to the public.
8. The public waiting area must be properly marked with lines and seating arrangements to comply with social distancing.
9. Provide protective, cleaning, and hygiene items in cooperation with security and maintenance areas.
10. Define a preventive isolation area for people who show symptoms of COVID-19.
11. Plan an educational campaign as a preventive measure, with training and exercises for the educational community, focusing on preventing physical contact and adapting to these new conditions.

DURING

Entering the university campus

1. People with COVID-19 symptoms should not attend the university.
2. Establish that, for entry, exit, and circulation in the hallways and internal spaces of the university, all members of the campus must follow the marked routes to ensure organized circulation and minimum distancing, avoiding crowds.

3. The use of a mask or face covering is mandatory for entry and stay on campus.
4. Implement temperature checks for everyone entering the premises, indicating that if any of them register above-normal levels, in accordance with the protocol, they cannot enter and the established health regulations will be applied. Likewise, those whose health questionnaire results indicate any risk of COVID-19 infection will not be allowed to enter the campus. All these cases will be governed by the protocol established by the health authorities.
5. Provide sanitizing products so that those entering the university can practice proper hand hygiene.

Within the university campus

1. Comply with the continuous use of masks or face coverings, frequent hand washing, and social distancing, avoiding direct contact in all areas, according to protocol.
2. Maintain the recommended social distancing between visitors and university staff in areas open to the public, maintaining a workspace with barriers.
3. Clean and disinfect all areas, furniture, door handles, keyboards, and switches daily.
4. Regularly maintain the air conditioning system and replace filters when necessary.
5. Continuously implement and supervise optimal safety, cleanliness, and hygiene conditions throughout the university campus.
6. Adequately equip all restrooms with the necessary items.
7. Ensure the provision of alcohol dispensers in hallways and common areas.
8. Avoid overcrowding in elevators.

9. Maintain social distancing, cleanliness, and hygiene conditions in dining rooms and cafeterias.
10. Enforce the safety measures established in the protocol for spatial conditioning and ventilation of office workspaces, classrooms, and circulation areas for students, teachers, and administrators, respecting social distancing.

Planning for Social Distancing

1. Establish the maximum number of people who can remain in each space on campus and those who can attend classrooms, based on their respective total areas, with the established physical distancing and the use of masks or face coverings.
2. Only allow authorized students to enter classrooms.
3. Organize some spaces, using furniture as a unit of measurement to limit distancing.
4. Establish an academic schedule with new workdays and hours that incorporate the necessary flexibility to comply with social distancing requirements and avoid crowds.
5. Schedule a period of time between established shifts and schedules to allow maintenance staff to clean and disinfect offices and classrooms.

Planning for Institutional and Community Training

1. Organize training sessions to clarify any doubts about the reopening of classes during the pandemic and provide information on the protocols established to ensure the safety and protection of the educational community.
2. Continue with virtual teaching activities, as this is an existing educational structure within the institution and an option for those who are unable to attend.
3. Increase the use of laboratory simulators and reduce external practices.

4. Maximize the management of documents and administrative processes, using available technological tools, in order to reduce physical contact.
5. Reduce administrative, academic, and student group or face-to-face activities and meetings, using videoconferencing and conference calls, among other means.
6. Develop information campaigns on COVID-19, specifying symptoms to monitor, recommendations for social distancing, use of masks, and hand hygiene, including web pages, social networks, emails, and others deemed appropriate, making them available to students on campus and in common areas.

Case management

1. Establish assistance from administrative or teaching staff who, if they observe people with symptoms or suspected infection, must immediately report it and recommend the application of health protocols.
2. Consider, in the preventive isolation space, the collaboration of health and social development personnel within the campus to achieve the basic conditions for addressing suspected cases or confirmed diagnoses of COVID-19.
3. If a suspected case is detected within a group of students, they must refrain from attending group classes until COVID-19 infection is confirmed or ruled out.
4. If an infection is confirmed, the student's close contact group must remain in quarantine for 14 days after the last exposure to the confirmed case. As soon as this period is over, the group of students can return to face-to-face classes.
5. If a confirmed case is detected, or infection is suspected, activities will be suspended for the estimated time, in accordance with the institution's protocols, to carry out thorough disinfection in the corresponding areas.

6. All these cases will be governed by the health protocols established by the health authorities with regard to suspected and confirmed cases, the establishment of direct contact, and the performance of PCR tests.
7. Ensure respect for the privacy and confidentiality of medical information in the face of the COVID-19 pandemic, due to which administrators, teachers, and students may be absent.
8. Detail how to proceed and the communication mechanisms, preserving privacy in the event that a case is confirmed or contact with anyone who has been at the University.
9. Provide guidance to the university community on official information on COVID-19 prevention and treatment, available through local and international agencies:
 - a. Ministry of Public Health and Social Assistance
- <https://www.msp.gob.do/web/>
 - b. World Health Organization - <https://www.who.int/es>
 - c. Pan American Health Organization - <https://www.paho.org/es>

X. APPENDICES

Key concepts

The following terminology applies to all national plans of the National Prevention, Mitigation, and Response System (SN-PMR), which is based on the provisions established by the United Nations General Assembly on December 1, 2016:

Conditioning:

Reinforcement or improvement of existing structures to make them more resistant to threats.

Comment: Conditioning requires consideration of the design and function of the structure, the stresses to which it may be subjected, and the feasibility and costs of the various conditioning options. Examples include the use of braces to stiffen walls, the reinforcement of pillars, the incorporation of steel tie rods between walls and roofs, the installation of shutters on windows, and improvements in the protection of important equipment.

Affected persons:

People who are directly or indirectly harmed by a hazardous event. Those who have been evacuated and suffered material, social, cultural, and environmental losses, injuries, and health problems are considered directly affected. Those who have suffered consequences that are different from or in addition to the direct effects, mainly due to changes in the economy, vital infrastructure, basic services, trade, and work, or social, health, and psychological consequences, are known as indirectly affected.

Comment: People can be directly or indirectly affected. They may suffer short- or long-term consequences to their health, material, social, cultural, and environmental assets. Likewise, deceased or missing persons fall into this category.

Threat:

Process, phenomenon, or human activity that can cause death, injury, or other effects on health, property, society, the environment, and the economy.

Comment: Threats can be natural, such as cyclones and tsunamis; anthropogenic, which are those induced partially or totally by human activities and decisions, without covering the existence or risk of armed conflict and situations of instability or social tension subject to international humanitarian law and national legislation; and socio-natural, which combine natural and anthropogenic factors, such as environmental degradation and climate change.

Threats can be unique, sequential, or combined in their origin and effects, characterized by their location, intensity or magnitude, frequency, and probability. Biological threats are usually defined by their infectivity or other characteristics of the pathogen, such as the dose-response relationship, incubation period, fatality rate, and estimated transmission.

Multiple hazards refer to significant situations facing the country, as well as particular contexts in which disasters may occur simultaneously over time, either in a cascade or cumulatively, taking into account possible effects. According to the Sendai Framework for Disaster Risk Reduction 2015-2030, hazards (listed in alphabetical order) include biological, environmental, geological, hydrometeorological, and technological processes and phenomena.

Biological hazards are organic in origin or transmitted by pathogenic microorganisms, toxins, and bioactive substances, including bacteria, viruses, or parasites, as well as poisonous animals and insects, poisonous plants, and mosquitoes carrying disease-causing agents.

Environmental threats can include harmful chemicals, natural disasters, and biological hazards. They can be created by environmental degradation or

physical or chemical contamination in the air, water, and soil. However, many of the processes and phenomena that fall into this category can be described as risk drivers rather than threats, such as deforestation, loss of biological diversity, salinization, and sea level rise.

Geological or geophysical hazards originate from internal processes within the Earth, including earthquakes, volcanic activity, and geophysical processes such as mass movements, landslides, rockfalls, collapses, and mud or debris flows, some of which are influenced by hydrometeorological factors. On the other hand, tsunamis are difficult to classify: although they are caused by earthquakes and other underwater geological phenomena, they become an oceanic process that manifests itself as a coastal hazard.

Hydrometeorological hazards are of atmospheric, hydrological, or oceanographic origin, such as tropical cyclones (typhoons or hurricanes), floods (including sudden floods),

droughts, heat waves and cold spells, and storm surges. Hydrometeorological conditions can also be a factor in other hazards, such as landslides, forest fires, locust swarms, epidemics, and the transport and dispersion of toxic substances and materials from volcanic eruptions.

Technological hazards arise from industrial conditions, hazardous procedures, infrastructure failures, or certain human activities. These include industrial pollution, nuclear radiation, toxic waste, dam failures, transportation accidents, factory explosions, fires, and chemical spills. Technological hazards can also arise directly as a result of a natural disaster.

Disaster loss database:

A systematically collected set of records on the occurrence, damage, losses, and impacts of disasters,

in accordance with the minimum requirements for monitoring under the Sendai Framework for Disaster Risk Reduction 2015-2030.

Building code:

Set of ordinances and associated regulations that seek to regulate aspects of the design, construction, materials, modifications, and occupancy of structures that are necessary to ensure the safety and well-being of human beings, including resistance to collapse and damage.

Capacity:

Combination of all strengths, attributes, and resources available within an organization, community, or society that can be used to manage and reduce disaster risks and strengthen resilience.

Coping capacity, on the other hand, is defined as the ability of individuals, organizations, and systems to manage adverse conditions, risks, or disasters, using the information

available. It requires awareness-raising, resources, and good ongoing management, both in normal circumstances and during disasters or adverse conditions. Resilience contributes to disaster risk reduction.

Disaster:

Serious disruption of the functioning of a community or society on any scale, due to hazardous phenomena interacting with conditions of exposure, vulnerability, and capacity, causing human, material, and environmental losses and impacts.

For the purposes of the scope of application of the Sendai Framework for Disaster Risk Reduction 2015-2030 (paragraph 15), the following definitions are also taken into account:

Small-scale disaster: Affects only local communities and requires assistance from outside the affected communities.

Large-scale disaster: A community or society is usually the main target

of this type of disaster. It usually requires national or international assistance.

Frequent and infrequent disasters: This relates to the probability of occurrence and the recurrence period of a hazard, as well as its impact. In the case of frequent disasters, their consequences can be cumulative or become chronic for a community or society.

Slow-onset disasters arise gradually and can be related to droughts, desertification, sea level rise, epidemics, and so on. On the other hand, sudden-onset disasters are usually the result of a hazardous event that occurs unexpectedly from unexpectedl Earthquakes, volcanic eruptions y. , floods floods, chemical chemical failure of vital infrastructure, explosions, traffic accidents are examples of this type of disaster.

Evacuation:

Temporary transfer of people and property to safer locations before, during, or

after a hazardous event, in order to protect them.

Comment: Evacuation plans refer to the arrangements made to allow the temporary transfer of people and property to safer locations before, during, or after a hazardous event. These may include plans for the return of evacuees and accommodation options.

Disaster risk assessment:

A qualitative or quantitative approach to determining the nature and extent of disaster risk by analyzing potential hazards and assessing existing conditions of exposure and vulnerability that could cause damage to people, property, livelihoods, and the environment on which they depend.

Comment: Disaster risk assessments include: identification of hazards; an examination of the technical characteristics of hazards, such as their location, intensity,

frequency, and probability; analysis of the degree of exposure and vulnerability, including physical, social, health, environmental, and economic dimensions; and assessment of the effectiveness of existing and alternative coping capacities with respect to likely risk scenarios.

Exposure:

The situation of people, infrastructure, housing, production capacity, and other tangible human assets located in areas exposed to hazards.

Comment: Exposure measures may include the number of people or types of assets in an area, and may be combined with the specific vulnerability and capacity of elements exposed to any particular hazard to estimate quantitative risks.

Underlying factors of disaster risk:

Processes or conditions, often related to development, that influence the level of disaster risk

by increasing levels of exposure and vulnerability or reducing their coping capacity.

Comment: Underlying factors, also referred to as drivers, include poverty, inequality, climate change, climate variability, rapid and unplanned urbanization, and the lack of disaster risk considerations in land use planning and environmental and natural resource management, as well as other aggravating factors such as demographic changes, uninformed policies, lack of regulation and incentives for private investment in disaster risk reduction, complex supply chains, limited availability of technology, unsustainable uses of natural resources, weakening ecosystems, pandemics, and epidemics.

Disaster risk management:

Disaster risk management is the application of policies and strategies to prevent new disasters, reduce existing ones, and manage residual ones, contributing to

strengthening resilience and reducing disaster losses. **Comment:** Disaster risk management measures are classified as proactive, which address and seek to prevent the emergence of new or greater threats that could arise if local policies are not established, such as the use of resilient land or water supply networks; corrective, which seek to immediately eliminate or reduce existing disasters, such as the reinforcement of vital infrastructure and the relocation of exposed populations or assets; and compensatory, which strengthen the social and economic resilience of individuals and societies to residual risk that cannot be effectively reduced. The latter include preparedness, response, and recovery activities and a combination of different financing instruments, such as national contingency funds, contingent credits, insurance, reinsurance, and social safety nets.

For its part, community-based disaster risk management promotes the participation of those

potential victims at the local level. This includes community assessments of threats, vulnerabilities, and capacities, as well as their participation in the planning, implementation, monitoring, and evaluation of local actions aimed at disaster risk reduction.

The approach of local and indigenous populations to disaster risk management involves the recognition and application of traditional, indigenous, and local knowledge and practices as a complement to scientific knowledge in disaster risk assessments and the planning and implementation of disaster risk management at the local level.

Disaster risk management plans set specific goals and objectives for disaster risk reduction, along with related measures to achieve them. They should be guided by the Sendai Framework for Disaster Risk Reduction 2015-2030, taking into account, within development plans, the allocation of resources and the activities of relevant programs. Plans at the national level should be specific to each

administrative level and adapt to different social and geographical circumstances. Deadlines and responsibilities for implementation and sources of funding must be detailed. Wherever possible, links should be established with sustainable development and climate change adaptation plans.

Disaster risk governance:

A system of institutions, mechanisms, regulatory and legal frameworks, and other arrangements that seek to guide, coordinate, and oversee disaster risk reduction and related policy areas.

Comment: Good governance must be transparent, inclusive, collective, and efficient in order to reduce existing disaster risks and prevent the creation of new ones.

Disaster risk information:

Comprehensive information on all dimensions of disaster risk,

including hazards, exposure, vulnerability, and capacity, in relation to individuals, communities, organizations, countries, and their assets.

Comment: Disaster risk information includes all studies, information, and location reports necessary to understand the factors that contribute to and underlie disaster risk.

Critical infrastructure:

Set of physical structures, facilities, networks, and other assets that provide services essential to the social and economic functioning of a community or society.

Structural and non-structural measures:

Structural measures include any physical construction that seeks to reduce or prevent the potential impact of hazards, or the application of engineering techniques or technology to achieve resistance and resilience to them in

structures or systems. On the other hand, those that do not involve physical construction and use knowledge, practices, or provisions to reduce the risk of disasters and their effects, specifically policies, laws, public awareness, and education, are known as non-structural measures.

Comment: Common structural measures for disaster risk reduction include dams, flood walls, wave barriers, earthquake-resistant buildings, and evacuation shelters. Non-structural measures include building codes, land use planning legislation and enforcement, research, assessment, information availability, and public awareness programs. It is important to note that in civil and structural engineering, the term "structural" is used in a more restricted sense and refers simply to the load-bearing structure, while other parts, such as the cladding of

facades and interior fittings are considered "non-structural."

Mitigation:

Reduction of the adverse effects of a hazardous event.

Comment: Although it is often impossible to completely prevent the adverse effects of a disaster, particularly natural hazards, it is possible to significantly reduce their magnitude through various strategies. Mitigation measures include engineering and construction techniques that provide resistance to threats, or the improvement of environmental and social policies, and public awareness. It should be noted that in climate change policy, "mitigation" is defined differently and applies to the reduction of greenhouse gas emissions that cause climate change.

Economic losses:

Total economic impact, consisting of direct economic losses and indirect economic losses.

Direct economic losses: Monetary value of the total or partial destruction of physical assets in the affected area. These are almost equivalent to physical damage.

Indirect economic losses: Decrease in economic value added as a result of direct economic losses or human and environmental impacts.

Comment:

Examples of physical assets that serve as the basis for calculating direct economic losses include homes, schools, hospitals, commercial and government buildings, transportation infrastructure, energy, telecommunications and other infrastructure; business assets, industrial plants, and production, such as crops, livestock, and production infrastructure. They may also include environmental assets and cultural heritage.

Direct economic losses usually occur during the event or in the first few hours after the event and

are usually assessed shortly after it occurs, in order to estimate recovery costs and claim insurance payments. They are tangible and relatively easy to measure.

Indirect economic losses include microeconomic impacts (e.g., decreased income due to the impact on natural resources, disruption of activities and supply chains, or temporary unemployment) and macroeconomic impacts (e.g., increased prices and public debt, negative effects on the stock market, and decreased GDP). Indirect losses can occur inside or outside the danger zone and usually have a certain time lag. They are sometimes intangible or difficult to measure.

Contingency planning:

A management process that analyzes disaster risks and establishes in advance the necessary provisions for a timely response.

Comment: Contingency planning results in organized procedures organized and

coordinated plans that clearly define institutional resources, roles, information processes, and operational arrangements for specific actors in times of need. Based on scenarios of possible emergencies or hazardous events, it allows key actors to visualize, anticipate, and resolve problems that could arise during disasters, making it an important part of overall preparedness. Contingency plans should be updated regularly and tested through simulation exercises.

National framework for disaster risk reduction of disasters:

A term that encompasses national mechanisms for coordination and policy guidance on disaster risk reduction that are multisectoral and interdisciplinary in nature, involve civil society and the public and private sectors, and engage all relevant entities in a country.

Comment: Effective government coordination forums are composed of relevant stakeholders at the local level, with a designated national coordination center. For these mechanisms to be firmly established in national institutional frameworks, other fundamental elements and responsibilities must be established through laws, regulations, rules, and procedures, including clearly assigned responsibilities and authorities; promoting awareness and knowledge of disaster risk through the exchange and dissemination of non-sensitive information on disaster risk; contributing to and coordinating local and national disaster risk reports; creating and directing public awareness campaigns; promoting and supporting local multisectoral cooperation (e.g., among local authorities); and contributing to the definition of national disaster risk management plans, relevant disaster risk management policies, and reporting thereon.

Preparation:

Knowledge and skills developed by governments, local governments, response and recovery organizations, communities, and individuals to effectively anticipate, respond to, and recover from the impacts of probable, imminent, or present disasters.

Comment: Preparedness activities are carried out in the context of disaster risk management and seek to increase the capacities necessary for the efficient management of all types of emergencies and to ensure an orderly transition from response to sustained recovery.

Preparation is based on a well-founded analysis of disaster risk and the establishment of appropriate links with early warning systems, and includes activities such as contingency planning, stockpiling of equipment and supplies, collaborative arrangements, evacuation and public information, training and related practical exercises

. All of this must be supported by institutional capacities, legal and budgetary capacities. The related term "preparedness" describes the ability to respond in a timely manner.

A preparedness plan establishes provisions in advance to enable the effective management of emerging risk and disaster situations that may pose a threat to society or the environment.

Prevention:

Activities and measures aimed at avoiding existing and new disaster risks.

Comment: The term "prevention (of disasters)" expresses the concept and intention of avoiding the potential adverse impacts of hazardous events. Although it is impossible to eradicate certain disaster risks, prevention aims to reduce vulnerability and exposure in contexts where, as a result, these are eliminated, such as dikes or embankments against

floods, land use regulations that prohibit settlements in high-risk areas, seismic engineering designs that ensure the survival and function of an essential building in the event of an earthquake, and immunization against vaccine-preventable diseases. Prevention measures can also be taken during or after a disaster to prevent secondary hazards or their consequences, for example, measures to prevent water contamination.

Reconstruction:

Medium- and long-term rebuilding and sustainable restoration of resilient vital infrastructure, services, housing, facilities, and livelihoods necessary for the full functioning of a community or society that have been affected by a disaster, following the principles of sustainable development and "building back better," in order to avoid or reduce future risks.

Recovery:

Restoration or improvement of the livelihoods and health, assets, systems, and economic, physical, social, cultural, and environmental activities of a community or society affected by a disaster.

Rehabilitation:

Restoration of basic services and facilities for the functioning of a community or society affected by a disaster.

Disaster risk reduction:

Disaster risk reduction is aimed at preventing new hazards, reducing existing ones, and managing residual risks, thereby contributing to strengthening resilience and, consequently, achieving sustainable development.

Comment: Reducing hazardous situations is the policy objective of the management of risk of

disasters. Its objectives are defined in reduction strategies and plans.

Disaster risk reduction strategies and policies define their objectives in different implementation schedules, with specific goals, indicators, and deadlines. In line with the Sendai Framework for Disaster Risk Reduction 2015-2030, endorsed by the United Nations and approved in March 2015, they should aim to prevent the creation of disaster risks, reduce existing risks, and strengthen economic, social, health, and environmental resilience. The document sets out a global policy whose expected outcome over the next 15 years is a "substantial reduction in disaster risk and losses from disasters, including loss of life, livelihoods, and health, as well as economic, physical, social, cultural, and environmental assets of individuals, businesses, communities, and countries."

Build back better:

Using the stages of recovery, rehabilitation, and reconstruction after a disaster to increase the resilience of nations and communities by integrating disaster risk reduction measures into the restoration of physical infrastructure and social systems, as well as the revitalization of livelihoods, the economy, and the environment.

Comment: The term "social" shall not be interpreted as referring to the political system of any country.

Resilience:

The capacity of a system, community, or society exposed to a hazard to resist, absorb, adapt, transform, and recover from its effects by preserving and restoring its basic structures and functions through risk management.

Response:

Measures taken before, during, or after a disaster to save lives, reduce health impacts, ensure public safety, and meet the basic subsistence needs of the affected population.

Comment: Disaster response focuses primarily on immediate and short-term needs, referred to as "relief" in emergency situations. An effective response must be based on preparedness measures informed by disaster risk, including the development of the response capacities of individuals, communities, organizations, countries, and the international community.

The institutional elements of the response often include public assistance from the public, private, and community sectors, as well as the provision of emergency services and the participation of the community and volunteers. For their part, the vital group of specialized agencies with specific responsibilities for the care and protection of

people and property in disaster situations are known as emergency services. These include civil protection authorities, police, and firefighters, to name a few. The division between the response and recovery phases is not always clear-cut. Some response measures, such as the provision of temporary housing and water supplies, may extend well into the recovery phase.

Disaster Risk:

The possibility of death, injury, or destruction and damage to property in a system, society, or community over a specific period of time, determined as a function of hazard, exposure, vulnerability, and capacity, based on probabilities.

It is important to consider the social and economic contexts in which disaster risks occur, as well as the fact that people do not necessarily share the same perceptions of risk and underlying factors.

Acceptable risk is therefore an important associated concept. The extent to which it is considered tolerable depends on existing social, economic, political, cultural, technical, and environmental conditions. In the field of engineering, the term is also used to assess and define the structural and non-structural measures needed to reduce potential damage to people, property, services, and systems to a chosen tolerance level, in accordance with codes or "accepted practices," based on known probabilities of hazards and other factors.

Residual risk is the risk that remains even after effective disaster risk reduction measures have been put in place, which is why response and recovery capacities must be maintained. Its presence implies a constant need to develop and support effective emergency services, preparedness, response, and recovery capacities, along with socioeconomic policies, such as protection measures social and mechanisms for

transfer mechanisms xml-ph-0003@deepl.internal as part of a comprehensive approach.

Early warning system:

An integrated system of threat monitoring, forecasting, and prediction, disaster risk assessment, communication activities, systems, and preparedness that enables individuals, communities, governments, businesses, and other stakeholders to take timely action to reduce risk before hazardous events occur.

Comment: Effective "end-to-end" and "people-centered" early warning systems can include four key elements: 1) Disaster risk knowledge based on systematic data collection and assessments; 2) Detection, monitoring, analysis, and forecasting of hazards and potential consequences; 3) Dissemination and communication, by an official source, of authoritative, timely, accurate, and actionable warnings and related information about probability and impact; and 4) Preparedness at all levels to respond to warnings

. These components must be coordinated within and across sectors and multiple levels for the system to function effectively, and include a feedback mechanism for continuous improvement. Failure of one of these elements or lack of collaboration could cause the entire system to fail.

Hazardous event:

Manifestation of a threat in a specific place during a specific period of time.

Comment: Serious hazardous events can lead to a disaster when the existence of the hazard is combined with other risk factors.

Risk transfer:

Process by which the financial consequences of a specific risk are transferred from one party to another, either formally or informally, whereby a household, community, business, or government authority will obtain resources from the other party after a disaster in exchange for sustained social or economic benefits, or compensation, to that other party.

Vulnerability:

Conditions determined by physical, social, economic, and environmental factors or processes that increase the susceptibility of a person, community, property, or systems to the effects of hazards.

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