

Learning in Twenty-First Century Schools

Note 8.
*Disaster Risk Management in
School Systems*

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Disaster Risk Management in School Systems

This note provides a brief explanation of the basic concepts related to disaster risk management. The primary threats and conditions of vulnerability to disasters will be detailed, with a focus on six selected countries: Chile, Colombia, the Dominican Republic, Guatemala, Honduras, and Mexico.

To place the subject in perspective, the report identifies coordinated efforts that have sought to reduce disaster risks at the global, regional, and national level, including in OECD countries. An analysis was performed on the existing management systems in the focal countries while examining their regulatory frameworks, the structure and efficiency of their disaster risk management (DRM) systems, and their implementation. The report also offers technical suggestions by the author and other strategic actors consulted during the missions.

Strategic framework for disaster risk management

Key concepts

Underlying this new conceptual framework is the notion that disasters are social processes generated by the manifestation of a phenomenon of natural, socio-natural, or technological origin, or are man-made and occur at specific times and in specific places, making

the population, property, and services vulnerable to its effects.¹ Disasters generate the following:

Damages and losses

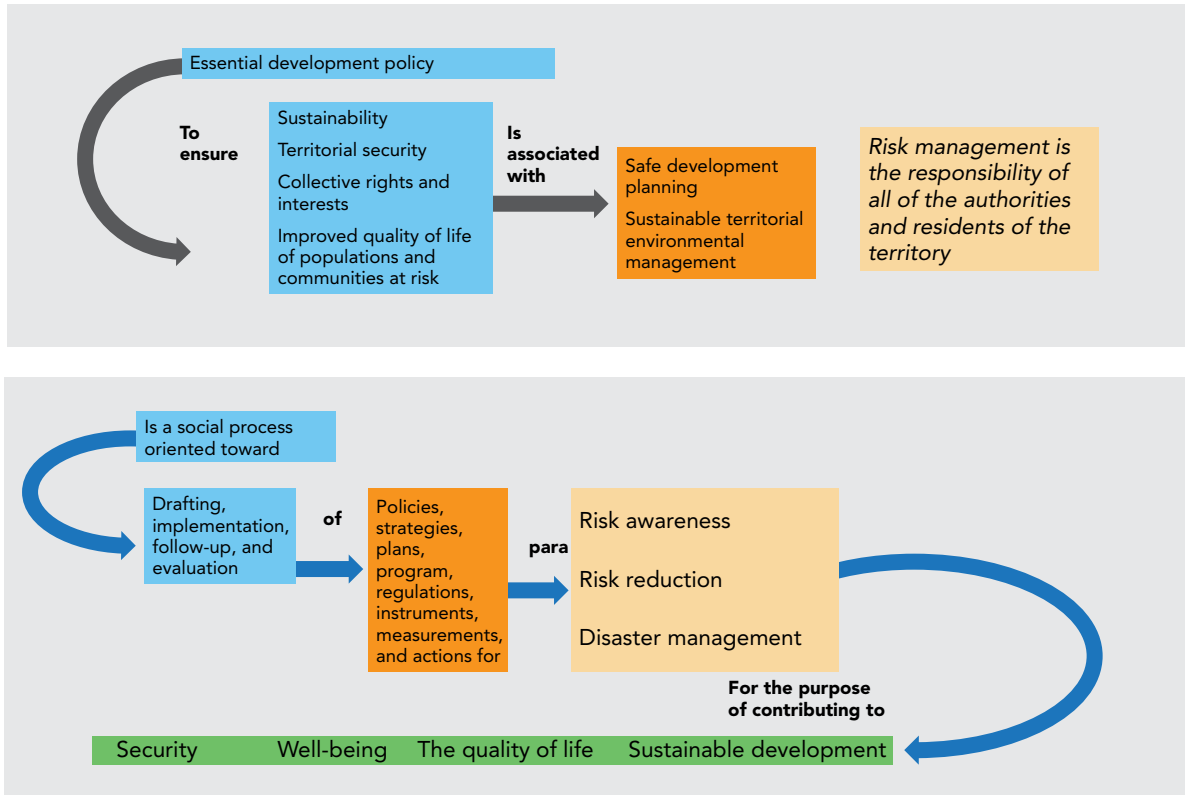
- **Economic:** Destruction, unusable or fully lost communication lifelines and other public goods and services;
- **Social:** Loss of human life, missing persons, overall effect on the physical and mental health of the population through physical and emotional trauma;
- **Environmental:** Alteration, destruction, or degradation of ecosystems and the environment.

Social crises

- Intense and severe public disturbances that affect the normal operations of the community;
- Suspension of basic services and social programs;
- Increase in school dropouts and child and adolescent labor;
- Increased social risks, including domestic violence including within families, sexual harassment or abuse, vandalism, robberies, distribution and consumption of drugs and alcohol, and bullying;

1. Lavell, Allan. 2009. *Local Disaster Risk Reduction: Lessons from the Andes*. Lima: PREDECAN.

FIGURE 1.
Disaster risk management ...



- Negative effects on livelihoods, forced displacement, migration, abandonment of productive activities, decreased income, and family breakdowns.

Institutional crises

- Misinformation;
- Loss of credibility and public image;
- Inability to provide optional solutions;
- Loss of authority; and
- Lack of governance.

Disasters necessarily require the implementation of pre-established and tested actions and plans providing an immediate response by the authorities, the population, and the private sector so as to offer timely assistance and protection to injured persons and re-establish acceptable living conditions, well-being, and opportunities for the community.

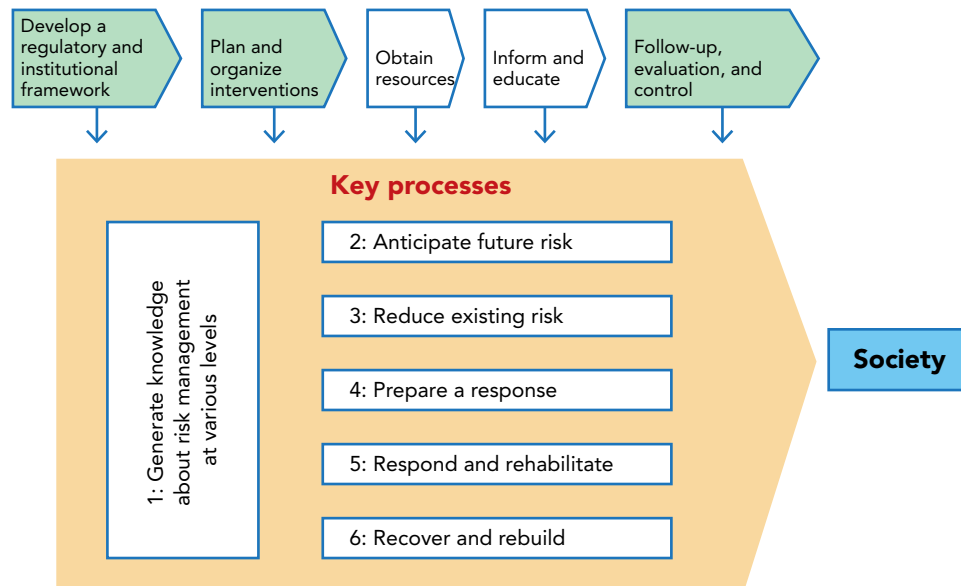
Disaster risks

Risk is the probability of suffering damages and future losses (Lavell 2009). It is a latent but foreseeable condition in which society can intervene in advance in various ways, for example through preventative measures, mitigation, reduction, control, or preparing to mitigate, reduce, or eliminate the negative impacts that may occur as a result of adverse events such as chronic crises, emergencies, disasters, or catastrophes.

Disaster risk management (DRM) is transversal and a prerequisite for all sustainable development projects. Its goals can be achieved provided that:

- Society develops and strengthens its capacities and increases its resilience in order to absorb and overcome the impact of an adverse event; and

FIGURE 2.
Guidance and support processes



- Action is taken against the dimensions of vulnerability, including environmental degradation, non-sustainable land development models and land use, uncontrolled urbanization, mass demographic shifts, armed conflicts, and social inequality and inequity (among others).

The previous management approach used in the region, which was based on a disaster cycle, centered on the occurrence of the disaster itself and primarily emphasized the preparation and response phases. The current concept of disaster risk management refers to a series of processes whose ultimate purpose is to contribute to reducing, anticipating, and controlling the causes of risk by promoting, developing, and implementing policies, strategies, instruments, and actions that enable society to confront the effects of natural, socio-natural, and technological threats as well as those caused by humans, thereby minimizing the losses that might occur as a result of a disaster by responding to its impact (Lavell 2009).

Disaster risk management requires organizational and institutional structures that incorporate various

capabilities and actors, always taking development as their point of reference and recognizing the special influence experts in development and humanitarian response may have at various times.²

What is needed is political and legal commitment, interaction between public and private institutions, social communication, public understanding, scientific knowledge, careful development planning, responsible compliance with the legislation and policies in force, people-centered early warning systems and effective preparation, and response and post-disaster recovery mechanisms at the institutional and community level.³

Disaster risk management system

A disaster risk management (DRM) system is a set of public, private, and community entities, policies, norms, processes, resources, plans, strategies, instruments, mechanisms, and relevant information applied in an organized manner in order to ensure risk

2. Lavell, Allan. 2009. *Local Disaster Risk Reduction*.

3. Risk Management Unit, SNGR, Colombia.

Indicators of reductions in underlying risk factors

- Disaster risk reduction is included as an integral objective of environmental policies and plans, including natural resource management, land use, and adaptation to climate change.
- Social development policies and plans are implemented for the purpose of reducing the vulnerability of populations confronting major risks.
- Economic and productive sectoral policies and plans are implemented to reduce the vulnerability of economic activities.
- The planning and management of human settlements include the enforcement of building codes.
- Disaster risk reduction measures are included in recovery through transformation processes.

management in a country.⁴ The primary objective of national DRM systems is to ensure that the population is protected and to improve security, well-being, and the quality of life, thereby contributing to the sustainable development of the country.

Essential processes of national DRM systems

According to Lavell (2009), DRM founded on processes seeks to align the efforts of all of the units forming the national system with a view to fulfilling its mission and vision with greater motivation and effectiveness. The key processes of DRM are:

- Knowledge of current risks;
- Anticipating future risks;
- Reducing existing risks; and
- Managing the disaster by preparing the response, responding and rehabilitating, and helping persons recover physically and emotionally, recovering property, services, and livelihoods, and ensuring sustainable reconstruction.

According to the current conceptualization, the responsibility for managing disaster risks does not fall upon any single civil defense or emergency prevention and response organization but on an interinstitutional system, which consists of a coordinating but

not executing organization made up of pre-existing entities from the public and private sectors and civil society, thus avoiding the duplication or omission of efforts. Each entity in the system participates according to its field of competence and territorial jurisdiction (IDB 1999-2003). This integrated vision fosters a balanced approach that strengthens the preventative strategy, the reduction of vulnerability, and the transfer of risk.

DRM systems are responsible for executing the actions and activities planned in the various risk management processes, based on:

- Regulatory frameworks, policies, plans, and strategies related to the subject matter;
- Organizational and institutional structures and management mechanisms sustainable at the national, regional, subregional, and local level;
- The allocation of financial resources, earthquake-resistance, and safe physical infrastructures, a sufficient amount of qualified human resources capable of carrying out the functions of the DRM, next-generation digital technology, and effective means of communications and transportation for carrying out the operation; and
- The integration of various public and private actors as well as strategic partners with different strengths,

4. Secretaría Nacional de Gestión de Riesgo (SNGR) de Ecuador presente en la "V Movilización de Brigadistas Forestales Colombia 2012," Cali, Colombia del 19 al 21 de octubre de 2012.

stances, skills, abilities, and resources. There is a common vision and focus on sustainable development, the exercise and enjoyment of human rights, gender equality, universal accessibility, diversity, and multiculturalism as points of reference, as well as recognition of the role that specialists sometimes play in humanitarian response and civil protection.

From the global to the local framework

Global framework

During the 1990s, the United Nations International Decade for Natural Disaster Reduction (IDNRD 1990–1999) was the principal means of raising global awareness of the need to reduce disaster risks and to increase the resilience of nations to the impact of catastrophic events.

At the conclusion of the IDNRD, UN agencies assigned the task of following up on the agreements and actions initiated during the decade devoted to the International Strategy for Disaster Reduction (ISDR). Today, the ISDR acts as the liaison within the United Nations system for promoting synergy and coordination between the various strategic actors as concerns social, humanitarian, ecological, economic, and political factors. It also serves as an international center for disseminating information about disaster management.

The mission of the ISDR is to catalyze, facilitate, and mobilize resources and to reach compromises among actors within the ISDR system at the local, regional, national, and international level in order to build resilience to disasters in nations and communities by implementing the 2005–2015 Hyogo Framework for Action (HFA).

The strengthened disaster risk reduction (DDR) structure of the ISDR consists of: (i) the Global Platform for Disaster Risk Reduction (GP/DRR) and its support bodies; (ii) an Advisory Management Board; (iii)

national platforms for disaster reduction; (iv) regional networks; and (v) sectoral theme-related platforms.

The World Conference on Disaster Reduction was held in Kobe (Japan) in January 2005, in which 168 countries approved the adoption of the 2005–2015 Hyogo Framework for Action (HFA) entitled “Building the Resilience of Nations and Communities to Disasters,” which has become a principle instrument for DRR worldwide. The HFA has three major objectives:

- Integrating DRR into policies and planning for sustainable development;
- Systematically incorporating DRR approaches when implementing emergency preparation, response, and recovery programs; and
- Developing and strengthening institutions, mechanisms, and capabilities in order to raise resilience before threats occur.

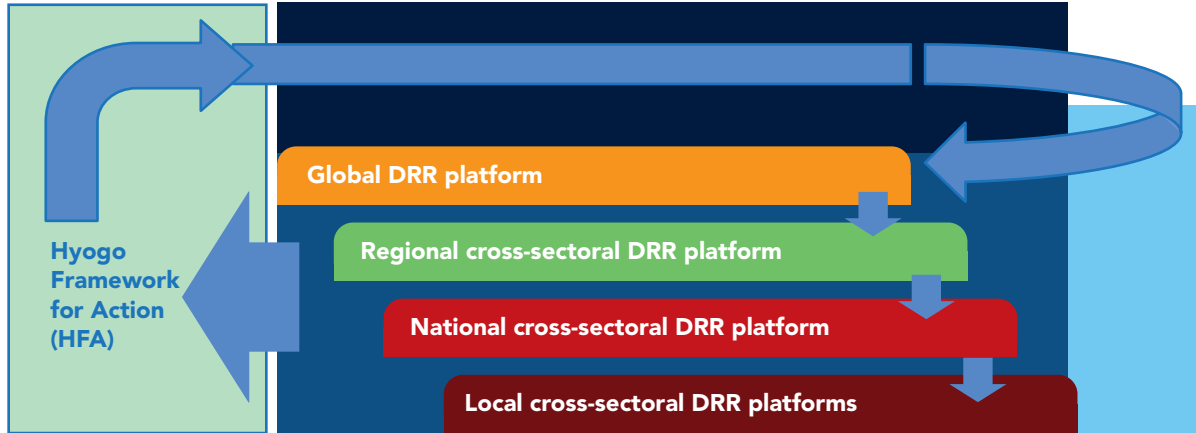
An ISDR report on the progress made by the HFA in various countries states that “global, national, and regional efforts to reduce disaster risks and strengthen resilience are growing.”⁵

The HFA has been a key element in improving knowledge of DDR, and a growing understanding of relevant approaches and priorities has contributed to the adoption of a roadmap for change that is now irreversible.

Through the ISDR platforms as well as regional and subregional DRM mechanisms and systems, the HFA has contributed to raising awareness in various countries of the need to evaluate conditions of vulnerability by using indicators. In addition, it has helped systematize the economic cost of disasters, reduce vulnerability, and improve risk indicators as well as the financial analyses of sectoral losses and information systems. The HFA has helped governments introduce national disaster risk reduction legislation and establish early warning systems. Finally, the HFA has contributed to linking disaster risk reduction to climate-related risk management and adaptation to climate change.

5. ISDR. 2013. Report: *Hacia un marco después del 2015 para la reducción del riesgo de desastres*.

FIGURE 3.
Structure of established coordinating bodies dedicated to DRR

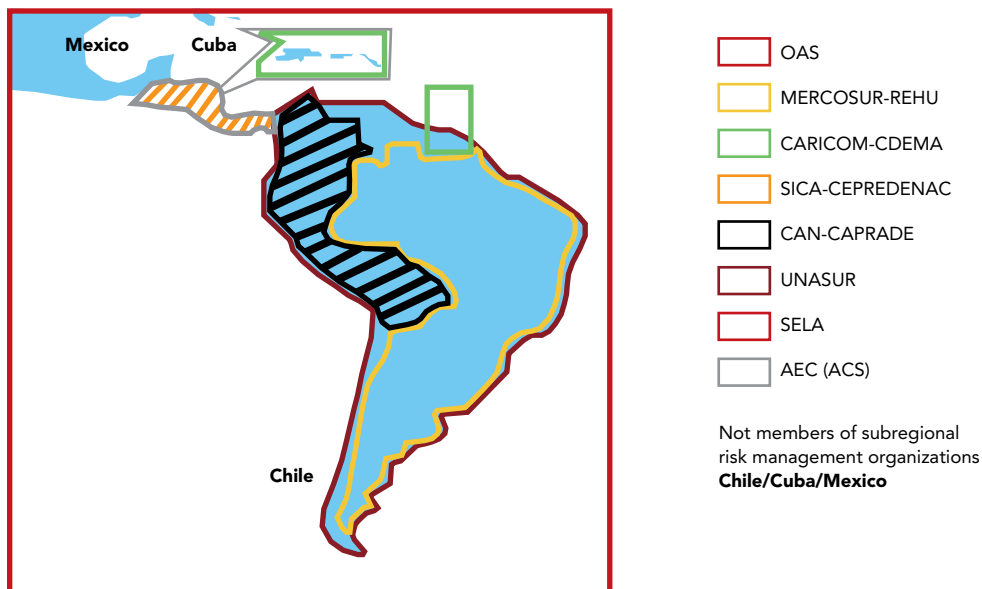


Regional coordination systems for DRR and DRM and the OAS inter-American system for DRR

At the regional level in Latin America and the Caribbean, the Inter-American System for DRR of the Organization of American States (OAS) and a series of Summits of the Americas made important

contributions to risk management processes and the development of technical instruments for DRM, securing approval for important related mandates that have contributed to promoting subregional and national actions as well as interinstitutional agreements, which have proved to be relatively effective.

FIGURE 4.
Regional coordination mechanisms



Since the adoption of the HFA, the OAS General Assembly has adopted a series of resolutions addressed to the technical bodies of the Secretariat General, which have succeeded in establishing cooperative agreements and mechanisms jointly with the United Nations Development Program (UNDP), the International Strategy for Disaster Reduction (ISDR), and other international organizations, all of which have facilitated meetings that included NGOs, the private sector, and representatives from various levels of government, thus promoting a series of Hemispheric Meetings within the framework of the Inter-American Network for Disaster Mitigation (INDM).⁶

The sessions of the Regional Platform, Hemispheric Meetings, and the Inter-American Network for Disaster Mitigation all contained elements linked to and in keeping with regional dialogues and exchanges. In the same way, the Inter-American Committee on Natural Disaster Reduction has become an inter-institutional coordinating body linking the agencies of the Inter-American System and the United Nations in terms of DRR.

Despite the large number of regional and subregional instruments and mechanisms related to DRR, knowledge about these remains inadequate, and there are limitations in effectively articulating the agreements and mandates between subregional organizations, the agencies of the Inter-American System, and the OAS Secretariat General.

Subregional DRM organizations

The Union of South American Nations (USAN) was established in 2008 and is the only organization of which all of the countries of South America are members. It was established to promote regional integration in a large number of areas, including democracy, security, and the elimination of social inequality and exclusion. One of its specific objectives is to facilitate cooperation in preventing disasters,

*including fighting the causes and effects of climate change and protecting water resources and biodiversity. An initiative was recently put forward to create a permanent mechanism for coordination and exchange in risk management for South America.*⁷

The Andean Committee for Disaster Prevention and Relief (CAPRADE) was created on July 7, 2002, by Resolution 529 of the Andean Committee of Ministries of Foreign Affairs (CAMRE) of Bolivia, Colombia, Ecuador, Peru, and Venezuela.⁸

In 2003, CAPRADE drafted a long-term strategy for promoting disaster prevention and response from a perspective of sustainable development, taking a modern approach that gives preference to planning at various levels and to promoting and implementing national and subregional policies for disaster prevention.

At the MERCOSUR Summit held in Asunción (Paraguay) on July 24, 2009, the presidents of Argentina, Brazil, Paraguay, and Uruguay approved the MERCOSUR Presidential Statement on Humanitarian Assistance, which recognizes the need to disseminate, streamline, and strengthen the prevention of and response to disasters of socio-natural origin in the region and the establishment of a mechanism for institutional coordination, cooperation, and decision making. The Specialized Meeting for Socio-Natural Disaster Risk Reduction, Civil Defense, Civil, Protection and Humanitarian Assistance (REHU) was then established, as mandated in MERCOSUR Resolution CMC No. 03/09 by the Presidents and Heads of State of the regional bloc.

REHU endeavors to coordinate the issues debated within the bloc with international organizations and specialized forums, thereby increasing and improving

6. OAS: 2012 Summit of Latin American and Caribbean Heads of State.

7. See: http://www.eird.org/wikiesp/images/Visi%C3%B3n_regional_de_la_situaci%C3%B3n_de_riesgo_de_desastres_America_del_Sur_FINAL.pdf.

8. Venezuela withdrew from the Andean Community of Nations (CAN) and CAPRADE in 2011.

the quality of coordination between these organizations and relevant governmental institutions for disaster risk management and facilitating humanitarian assistance and civil protection for populations affected by catastrophes.

The Coordination Center for the Prevention of Natural Disasters in Central America (CEPREDENAC) was established in 1987 by mandate from the Central American Heads of State. This is a regional intergovernmental organization, which is part of the Central American Integration System (SICA) as a specialized secretariat. It coordinates regional disaster risk reduction processes through international cooperation and information exchanges, lessons learned, and technical and scientific advice concerning prevention, mitigation, preparation, response, rehabilitation, and reconstruction prior to any adverse effects in the subregion.

The Caribbean Disaster Emergency Management Agency (CDEMA) is an intergovernmental regional agency tasked with managing disasters in the Caribbean Community (CARICOM). It consists of eighteen (18) participating States.⁹ The agency was created in 1991 as CDERA (Caribbean Disaster Emergency Response Agency) with the primary responsibility of coordinating emergency response efforts and assistance to those in need.

Since its establishment, CDERA has defended its abandonment of the traditional approach of response and assistance in favor of a broader one that includes all risks, all phases of the ongoing disaster management process (mitigation, prevention, preparation, response, and recovery), and all sectors of society. This shift toward integral disaster management resulted in the transitioning of CDEMA in 2009 in order to address the objective of incorporating integrated disaster management, establishing a new structure of governance, and anticipating greater participation by the partners involved.

9. Anguilla, Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Granada, Guyana, Haiti, Jamaica, Montserrat, Saint Christopher and Nevis, Saint Lucia, Saint Vincent and Grenadines, Suriname, Trinidad and Tobago, the Turks and Caicos Islands, and the Virgin Islands.

This integrated disaster management strategy is closely linked to the Hyogo Framework for Action and has been fully agreed to by the meeting of Heads of States and members of CARICOM as the driving force for building and strengthening the disaster recovery capacity of the region.

The Forum for Coordination and Cooperation of Subregional Risk Management Mechanisms of the Americas¹⁰ is a space for coordination and technical cooperation among subregional DRM-related organizations in the Americas, and includes: the Caribbean Disaster Emergency Management Agency (CDEMA-CARICOM), the Coordination Center for the Prevention of Natural Disasters in Central America (CEPREDENAC), the Andean Committee for Disaster Prevention and Care (CAN-CAPRADE), and the Specialized Meeting for Socio-natural Disaster Risk Reduction, Civil Defense, Civil Protection, and Humanitarian Assistance (REHU MERCOSUR).

DRM in focus countries

Dominican Republic

Background

The Dominican Republic is located on the island of Hispaniola, which it shares with the Republic of Haiti, in the central portion of the Major Antilles. It covers an area of 48,442 km², with a population of 8,562,541, 64% of whom live in urban areas, a trend that has been on the increase since 1960.¹¹

Politically, the country is divided into a National District, including Santo Domingo de Guzmán, the capital of the country, and 31 provinces, each of which has a Provincial Governor as representative of the government appointed by the President, and Trustees elected by popular vote, who administer both the National District as well as the municipalities and

10. See: <http://www.indeci.gob.pe/sgcccc/foro.pdf>.

11. IDB. 2013. *Operational Manual for the Operation of Disaster Prevention, Mitigation, and Response*.

municipal districts at the provincial level.¹² There are a total of 155 municipalities and 228 municipal districts in the country.

Risk scenario¹³

Over the last 30 years, the Dominican Republic has recorded 52 natural disasters that resulted in the death of 6,886 persons, affected 5.2 million people, and caused significant direct and indirect economic losses estimated at US\$3 billion.¹⁴

The geographic location as well as the topography and orography of the country shape its risk scenario, as evidenced by the interaction of geological, hydro-meteorological, and environmental dynamics, including entire phenomena and sets of social dynamics such as increased population, changing demographic and economic patterns, uncontrolled urbanization, generalized poverty, and high Haitian immigration levels (among others), resulting in the most vulnerable groups from among the Haitian population being located in extremely fragile areas exposed to the impact of disasters.

Indicators of high levels of poverty and social inequality indicate weak progress in meeting the Millennium Development Goals (MDG) in addition to the development policies that do not include measures aimed to reduce the vulnerability of those residents most exposed to disaster risks and related social risks.

With respect to land planning and land use, there are no national or local plans. Samaná Province is the only one in which a Provincial Land Planning Plan is being developed with a focus on sustainable development.

The country is subject to multiple natural and socio-natural threats. The most frequent of these are hydro-meteorological phenomena, including floods,

heavy rains, tropical storms and cyclones, landslides due to ground saturation and global warming, and earthquakes, tsunamis, forest fires, and droughts.

Regulatory and institutional framework

The Hyogo Framework for Action was endorsed by the Dominican Republic and is the most important international instrument for disaster risk management in the country. The National Regulatory Framework comprises: (i) The Political Constitution of the Dominican Republic; (ii) Law 147-02 on Risk Management; and (iii) other laws.

In 2002, Law 147-02 on Risk Management was enacted, defining the national DRM policy, the objective of which is to

prevent or reduce the loss of life, material and environmental losses, damage to private and public property, and damage to the physical and mental health of citizens as a result of existing socio-natural or man-made risks and disasters that may occur within the national territory.

The law modifies the risk management and intervention model and maintains the military component in the response process while attempting to establish a participatory balance in decision making with broad representation of public entities. The principles of the law are protection, prevention, competence, coordination, participation, and decentralization, which are ensured by five instruments, as detailed below.

National DRM system

National Disaster Prevention, Mitigation, and Response System

The National Prevention, Mitigation, and Response System (SN-PMR) is the mechanism through which the government rearranges and integrates institutions and resources with regard to risk management and emergency response. It includes the following bodies:

12. See: http://es.wikipedia.org/wiki/Pol%C3%ADtica_de_la_Rep%C3%BAblica_Dominicana.

13. OFDA/USAID. 2007. Analysis of the Disaster Risk Situation in the Dominican Republic.

14. IDB. 2012. *Disaster Risk Management Indicators in the Dominican Republic: Pending Challenges and Actions for Progress*.

- The National Council for the Prevention and Mitigation of Risks, the governing body of the National Risk Management System, chaired by the President and including ministers, heads of government departments, the President of the National District, and representatives from civil society;
- The National Emergency Commission, a coordinating body chaired by the Executive Director of Civil Defense and consisting of the Technical Committee for the Mitigation of Risks, the Emergency Operations Center, and an Advisory Team;
- The Technical Committee for the Prevention and Mitigation of Risks, an advisory body that coordinates risk reduction activities and consists of 22 institutions, including the academic sector and the Dominican Red Cross;
- The Emergency Operations Center, a disaster preparation and response coordinating body comprised of 13 institutions and headed by the Civil Defense, the Ministry of the Armed Forces, and the Santo Domingo Fire Department. The National Emergency Operations Committee includes an Advisory Team consisting of advisory or permanent units created by the Technical Committee and the Emergency Operations Center as well as regional, provincial, and municipal Committees for Disaster Prevention, Mitigation, and Response.¹⁵
- Strengthening the reduction and forecasting of risk factors;
- Improving warning and response practices and mechanisms;
- Human resources, education, and capacity building; and
- Strengthening interinstitutional risk management capacities.

Unfortunately, the plan does not include an established budget or financing mechanisms, which clearly limits its implementation and sustainability.

The National Seismic Risk Reduction Plan developed in 2011–2012 by the General Directorate for Land Use Planning and Development of the Ministry of Economy, Planning, and Development, the Technical Committee, and the National Emergency Commission, has been given a set of political and technical guidelines and tasked with offering strategic guidelines to the authorities, institutions at various territorial levels, and civil society in general with the aim of reducing seismic risk factors, thereby promoting improved response and recovery capacities and the resilience of communities to adverse events.

National Emergency Plan

The National Emergency Plan was developed by the National Emergency Commission in 1984 and revised and updated in 2006. It defines the mechanisms for coordinating and exchanging information between the various public institutions and the National Emergency Commission when adverse events occur. The Plan establishes the responsibilities and roles of all institutions involved in disaster risk management with a view to improving their organizational and functional effectiveness and efficiency during the preparation, warning, response, rehabilitation, and recovery phases.

National Integrated Information System

To systematize the awareness of threats, vulnerabilities, and risks in the country and to include information about monitoring and warning systems, response capacities, and interinstitutional management, Law

National Integrated Disaster Risk Management Plan

The National Risk Management Plan was updated in 2011 and is the instrument that defines the objectives, strategies, programs, and subprograms guiding institutional risk prevention and mitigation activities, disaster risk prevention, mitigation, rehabilitation, and reconstruction preparations. Its core program areas are:

- Promoting knowledge and risk evaluation and sharing;

¹⁵ Law 147-02 also states that autonomous and decentralized public institutions must modify their organic structure and include the necessary risk management units. They must also comply with other provisions set forth by the Law and include the necessary funding for such in their budgets.

147–02 assigns the task of developing and implementing an Integrated Information System to the National Emergency Commission together with the institutions of the National Prevention, Mitigation, and Response System (SN-PMR).

The system is key to prioritizing the programs and intervention projects of all the relevant institutions as well as those of the National Risk Management Plan since it enables a diagnosis of disaster risks and the response capacity of the country.

National Disaster Prevention, Mitigation, and Response Fund

In accordance with the regulations under Law 147–02, the National Disaster Prevention, Mitigation, and Response Fund was set up as the financing instrument, with administrative, technical, and financial autonomy for receiving and administering national budget allocations as well as national and international financial contributions and support to enable it to take risk reduction measures and to provide assistance and rehabilitation to the population in disaster situations.

Important progress has been made in recent years in defining the operating rules. The Administrative Board of the Fund was created in 2012, and in October of that year, the first annual call for financing proposals for improving the operation of the National Disaster Prevention, Mitigation, and Response System was issued for the 2012–2013 period.

Early warning system

Early warning systems and protocols currently exist in the country for six types of threat: (i) floods; (ii) hurricanes and tropical storms; (iii) earthquakes; (iv) landslides; (v) forest fires; and (vi) drought. No early warning system exists for tsunami threats.

Progress made¹⁶

The National Development Strategy (2010–2030) addresses DRM in its strategic priorities and fosters the link between the SN-PMR, the National Development Strategy, and land-use planning policies.

Studies, analyses, and evaluations of threats, vulnerability, and risk, maps of threats and vulnerabilities to various scales, and a variety of methodologies are available. This input was used in the strategic planning process.

The standards for earthquake-resistant construction (Decree 20 1-11) were updated in accordance with the country's geological and seismic conditions as well as current technological advances. Unfortunately, the entity responsible for implementing these standards, the Ministry of Public Works and Communications, does not have adequate human or financial resources to implement the building code or to ensure that it is effectively enforced.

Studies have been conducted using complete analytical models of tsunami risks, which make it possible to identify the areas of highly populated coastal cities with greater exposure and fragility, including Barahona, Guayacanes, and San Pedro de Macorís.

A gradual increase in preparation and response capacities has been observed in the provinces, municipalities, and communities where international cooperation projects are being implemented. Although this represents a first level of response, these efforts are insufficient, and should be linked to and supported by the PMR Committees and other bodies.

Following the formation of PMR committees, a large number of local authorities acquired knowledge about preparation and response practices. However, capacity building did not necessarily take place since in all cases these organizations lack adequate human, logistical, economic, and political resources to implement these practices.

In terms of response planning and preparation, even though the country has a National Emergency Plan (2006), a National Seismic Event Contingency Plan (2009), and a Hurricane Contingency Plan, these should be subject to revision and updating in cooperation with all actors involved in DRM in order to provide tools for guiding and directing preparations and to ensure a timely and effective response. Similarly, all

16. This was done by using information and support provided by the Disaster Prevention and Risk Management Program (1708/OC-DR).

plans should be disclosed and disseminated at the subnational levels to increase awareness by all parties concerned and to ensure ownership at every level.

In the educational sector, the Ministry of Education (MINERD), with the support of international aid programs, has made considerable effort to incorporate risk management into the educational system through a variety of actions, including the development of the Sectoral Strategic Risk Management Plan, the inclusion of DRM in the school curriculum, school safety plans, capacity building for national, regional, and local technical personnel, and the retrofitting of school structures to comply with national seismic standards. Despite the progress and the efforts made by MINERD, these have been dependent on international funding, which is why it is a priority to identify domestic funds that will guarantee the continuity and sustainability of all of the actions initiated. At the community level, the training and capacity building processes aimed at improving knowledge, practices, and attitudes within the population are subject to initiatives taken by NGOs, which can lead to dependency and a lack of ownership on the part of the responsible bodies.

Recommendations¹⁷

- Revise and update Law 147–02 in accordance with the recommendations of national experts, technical personnel, and international organizations in light of the new Constitution of the Dominican Republic, which was amended in 2010;
- Correct deficiencies in monitoring, analysis, and seismic risk reduction measurements uncovered by experts on the Island of Hispaniola both in Haiti and the Dominican Republic;
- It is a priority to consider actions that will facilitate coordinated and strategic work between both countries;

- Strengthen the operating capacity and sustainability of the existing early warning systems and disseminate protocols and procedures within the SN-PMR;
- Consider a financial investment in the planning process in order to guarantee the sustainability and effectiveness of the existing monitoring systems;
- Create an early warning system for tsunami threats and study the possibility of integrating the country into the network of sea-level measuring stations in the Caribbean, which are operated by the Intergovernmental Oceanographic Commission (IOC) under the auspices of UNESCO¹⁸ and which has recently installed two stations in the country close to Haiti;
- Promote actions that link risk management to climate change;
- Ensure the strengthening and sustainability of the DRM units created within institutions and municipalities, and increase institutional support at the political level;
- Empower local governments and link the plans they have developed to the National DRM Plan;
- Promote ownership, dissemination, and diffusion at every level of the National DRM Plan and allocate resources for its implementation and sustainability;
- Disseminate the existence of the National DRM Fund and its regulations at every level, publicize procedures for access to the fund, and promote and ensure transparency mechanisms;
- Create and strengthen the National Integrated Information System;

17. Some recommendations are supported by data provided by the Disaster Prevention and Risk Management Program (1708/OC-DR).

18. See: <http://www.ioc-tsunami.org>.

- Strengthen the implementation of the National Seismic Risk Reduction Plan and disseminate its regulations at all levels;
- Promote an integral evaluation of lifelines;
- Actively incorporate communities (community networks) in terms of planning, preparation, and response;
- Establish agreements and partnerships along with means of communication for disseminating awareness and disclosure messages concerning prevention, preparation, and response intended for the general population; and
- Prioritize the implementation of the National Risk Management Communication Strategy, in particular as concerns seismic and tsunami threats.

Guatemala

Background

The Republic of Guatemala is located in northwestern Central America, with a total land area of 108,889 km² and a population of 15,500,000. Guatemala is divided administratively into 8 regions, 22 departments, and 338 municipalities. According to FAO data, 60.6% of the population lives in rural areas and 39.4% in urban areas. The population concentration in rural areas is one of the highest in Latin America and the Caribbean after Haiti. There is sharp disparity and inequality between the services offered in urban and rural areas. The country's social problems are primarily related to high poverty levels, inequality, social violence, and crime in addition to the fact that a high percentage of the population lives in informal settlements and in environmentally fragile areas susceptible to disaster risks.

Disaster risk scenario

Guatemala has a highly varied climate which results from a variable terrain that ranges from sea level up

to 4,200 meters in elevation. In the mountainous and hillside areas, deforestation and other changes in the environment due to human activities have had an impact in that there has been increased water run-off and unstable ground due to water accumulation, thus favoring conditions leading to landslides, erosion, and degradation of the soil and of the overall environment.

Three tectonic plates converge in Guatemala: the Caribbean Plate, the Cocos Plate, and the North American Plate, the interaction of which has given rise to the volcanic belt that cuts across the country from west to east, consisting of 37 volcanos, eleven of which are active (Universidad Rafael Landívar 2005; Bohnenberger 1969)¹⁹ and which has produced high-magnitude earthquakes.

The origin of threats leading to the greatest disaster risks in Guatemala are:

- **Geological:** Earthquakes, landslides, land subsidence, mud flows, tsunamis of both distant and nearby origin, and volcanism;
- **Hydro-meteorological:** The location of Guatemala in a subtropical convergence zone means that it is vulnerable to the impact of storms, hurricanes and tropical cyclones, heavy rains, droughts, and hailstorms. Studies conducted by the IDB and the National University of Colombia in 2004 indicate that the most recurrent phenomena in the country are floods and landslides due to water accumulation, which produce constant effects at the local level, some of which are of small or medium significance but which cumulatively can have significant impacts.²⁰

19. Guatemala Country Document. 2012. DIPECHO, Action Plan VII.

20. UNESCO 2003. "Análisis de riesgo por inundaciones y deslizamientos de tierra en la microcuenca del Arenal de Montserrat." RAPCA. San Salvador.

Regulatory and institutional framework²¹

For the purposes of DRM, the country relies on:

International standards

The United Nations Framework Convention on Climate Change and the HFA 2005–2015.

National standards

- Political Constitution of the Republic of Guatemala (1985), amended in 1993;
- Decree-Law 109–96 of the National Coordinating Office on the Reduction of Natural Disasters. The spirit of this law seeks to prevent, mitigate, respond to, and participate in the rehabilitation and reconstruction of damaged entities due to the effects of disasters; and
- Other laws.

National DRM system

National Coordinating Office for Disaster Reduction (CONRED)

CONRED is the governing entity in the country in this area and coordinates ongoing actions with the major public and private institutions and organizations responsible for DRM, giving special emphasis to emergency preparedness, response, and management and to the gradual introduction of an institutional culture by putting in place broadly applicable disaster management procedures.²²

CONRED consists of all of the public and private sector entities, including (among others) educational centers, universities, relief organizations, and all of society. It is oriented toward preventing, mitigating, responding to, and participating in the rehabilitation and reconstruction of damages due to the effects of disasters. Its implementing body is the Executive Secretariat for the National Coordinating Office for Disaster Reduction.

The system works to define its intervention strategies around three phases or moments: (i) prevention and mitigation; (ii) assistance and response; and (iii) reconstruction with transformation.

CONRED provides a national coordination mechanism that makes it possible to work at the national level and to undertake plans and actions oriented toward strengthening and improving response capacities and emergency humanitarian assistance. To this end, Guatemala has a National Response Plan, an Integrated Emergency Response System, Rescue Systems, and a National Multi-Sectoral Risk Reduction Management System.

Support instruments and tools

- The Emergency or Disaster Information Management System (SISMICED) consists of a set of databases that record, store, and preprocess information relevant to decision making and to a timely and effective response to events triggered by disasters or catastrophes;
- Early warning systems are a means of generating and communicating information that enables CONRED to make the decision as an organized community structure to evacuate the population as a preventive measure and to inform municipal, regional, and national authorities regarding response-related decision making;²³
- The National Institute of Seismology, Volcanology, Meteorology, and Hydrology (INSIVUMEH) lends scientific support to the system. It is supported by other regional and international systems, primarily from the United States, for the specific purpose of monitoring hydro-meteorological threats. It has hydrological monitoring stations at several watersheds and, with the assistance and support of the Inter-Governmental Oceanographic Commission of UNESCO, it is currently carrying out a hurricane

21. See: http://www.eird.org/perfiles-paises/perfiles/index.php/Guatemala#Legislaci.C3.B3n_y_normativos.

22. <http://www.conred.gob.gt/www/documentos/secretaria-ejecutiva/Ley-de-CONRED.pdf>.

23. See: http://conred.gob.gt/www/index.php?option=com_content&view=section&layout=blog&id=4&Itemid=21.

early warning system project in the Atlantic zone of the country;

- Consolidated ECORED is a project for organizing, equipping, and operating Community Disaster Risk Reduction Teams as well as build their capacities. It is coordinated by the Executive Secretariat as the CONRED System representative and includes the institutional participation of the Secretariat for Social Communication of the Office of the President, the Humanitarian Assistance Unit of the Guatemala Army, Municipal Governments through the Municipal Planning Authorities, Municipal Firefighters, United Firefighters without Borders, the Guatemalan Red Cross, territorial relief organizations in the project's area of influence, and NGOs present in the country;
- The Emergency Operations Center. Within the framework of the institutional strengthening process, the Center has fully completed a process of organizing, capacity building, and equipping in order to improve its preparation and response capacities;
- Geographic Information System (GIS). This system was created for the purpose of improving the levels of information about threats in the country, reducing the vulnerability of the population, and increasing resilience to disasters. This instrument consolidates the information management strategy with the participation of public sector institutions, CONRED, NGOs, the National Institute for Seismology, Volcanology, Meteorology, and Hydrology, the Ministry of Agriculture, Livestock, and Food (MAGA), the Secretariat for Planning and Programming (SEGEPLAN), and the United States Geological Survey (USGS) (among others).

DRM-related management instruments

- National Disaster Prevention and Mitigation Program (2009–2011)
- National Disaster Risk Reduction Policy in Guatemala
- National Climate Change Policy (Decree 329-2009)

Some sectors have also developed specific DRM management instruments, including the Education Sector via the Ministry of Education, which developed the Strategic Education Plan for Disaster Risk Reduction (2010–2012). This plan prioritized five lines of action: (i) curricular impact, which defines how to integrate the topic of DRM into the educational curriculum and develop teaching materials; (ii) an institutional response plan; (iii) assistance to students in the national education system through post-disaster psycho-emotional support and restoring normality to the school environment; (iv) an infrastructure in which evaluation and recording processes are defined; and (v) the use of this infrastructure as shelters and as a step toward subsequent return.

Coordination spaces

The National Round Table Discussion on Disaster Risk Reduction Management is an inter-institutional initiative that includes a specific program framework that coincides with various sectors of the country in order to carry out disaster risk reduction on a structural basis. It is convened by the Vice-President and the Executive Secretariat for the National Coordination Office for Disaster Reduction (SE-CONRED).

The National Round Table follows up on the actions established by the Hyogo Framework for Action as well as on the strategies defined in the Central American Policy for Integral Risk Management (PCGIR). It consists of 4 working commissions, namely risk identification and monitoring, risk reduction, institutional planning and strengthening, and financial strategy, and is made up of those institutions most closely connected to the actions established by the National Disaster Prevention and Mitigation Program 2009–2011.

Recommendations²⁴

- Obtain approval from the Legislative Body for the National Disaster Risk Reduction Policy²⁵ approved by the National Council of CONRED in 2011, and request that it be made a State policy;
- Evaluate and systematize the actions that through the National Disaster and Mitigation Program 2009–2011 were coordinated by the office of the Vice-President and SE-CONRED at the interinstitutional level, and draft a new program;
- Ensure that risk management units are set up in at least 4 public institutions for the purpose of orienting all risk management efforts corresponding to specific sectors;
- Publicize the country document that contains the primary vulnerabilities impacting the country, incorporating their principal indicators grouped together by social fragility and exposure factors;
- Follow up on the project of the office of the Vice-President entitled “Using Science and Technology for Disaster Risk Reduction as part of the Municipal Planning Processes;”
- Strengthen technical capacities in the public sector using the CAPRA model;
- Analyze methodological proposals for mapping flood and landslide threats for those communities most frequently affected;
- Implement the reconstruction and transformation plans of 53 prioritized municipalities, using the risk management approach;
- Encourage the sectoral public institutions to give importance to their respective roles, to be fulfilled at the early recovery and post-disaster stages, as set forth in the Recovery Protocol;

- Develop the National Safe Construction Code, with special emphasis on the health and education sectors; and
- Ensure that public and private investments are regulated and that they comply with AGIES standards.

Honduras

Background

Honduras is located in the widest portion of the Central American Isthmus. It has a total land area of 112,492 km² and an estimated population of 8,555,000.²⁶

Honduras is a free, sovereign, independent, unitary, and indivisible state with a republican, democratic, and representative form of government exercised by three branches (legislative, executive, and judicial), which are complementary, independent, and not subordinated to each other.

The country is divided politically and territorially into 18 departments and 298 municipalities. The highest political authority in each department is the Governor, who is appointed by the President.²⁷ The Law on Municipalities (Decree No. 134–90) establishes the municipality as the basic structure of the State and reinforces its autonomous nature and recognizes it as the governing body and administrator of the municipality.

Risk scenario

The country is located in a subtropical convergence zone and is therefore frequently affected by hydro-meteorological phenomena, including tropical storms, heavy rains, cold winds, and tropical cyclones.

Honduras is situated on two active tectonic plates, the Cocos Plate and the Caribbean Plate, and is part of the Pacific Ring of Fire. However, the seismicity of

24. Guatemala Country Document. 2012. DIPECHO, Action Plan VII.

25. See: http://www.segeplan.gob.gt/downloads/clearinghouse/politicas_publicas/transversales/Pol%C3%ADtica%20Nacional%20para%20la%20Reducci%C3%B3n%20de%20Riesgo%20a%20los%20Desastre.pdf.

26. See: <http://es.wikipedia.org/wiki/Honduras>. The most recent demographic data are taken from this Spanish-language article. The English version has not been updated. See: <http://en.wikipedia.org/wiki/Honduras>.

27. See: http://en.wikipedia.org/wiki/Municipalities_of_Honduras.

the country is primarily associated with the local fault system, the most dangerous of which is the Motagua Fault, which caused a 7.1 magnitude earthquake in May 2009, one of the strongest in history.

Regulatory and institutional framework

International standards

As concerns DRM, the country adheres to the 2005–2015 Hyogo Framework for Action.

National standards

Decree-Law No. 33 of March 1973, through which the Permanent National Emergency Council (COPEN) was created.

- Decree No. 9-90E2, through which the National Contingencies Law (COPECO) was enacted also creates the Permanent Contingencies Commission (COPECO);
- Agreement No. 600-91 of July 26, 1991 and Regulations of the National Contingencies Law establishing the Permanent Contingencies Commission (COPECO); and
- Decree 151-2009 of December 26, 2009 (the SINAGER Law).

Until the SINAGER Law was enacted in 2009, the National DRM System was highly dependent on COPECO, operating in a highly disjointed but hierarchical manner and influenced by the military elite, with a prominent role being played by governmental entities and highly limited participation by non-governmental actors or civil society.²⁸

- Executive Agreement 32-2010 on General Regulations of the SINAGER Law, October 2010.

Highlights of the SINAGER law

- Recognition of the various organizational structures at all levels;
- The territorial organization of SINAGER is structured by the Departmental Emergency Committees (CODED), Municipal Emergency

Committees (CODEM), Local Emergency Committees (CODELES), Educational Center Emergency Committees (CODECE), and Workplace Emergency Committees (CODECEL) in addition to the management round tables that currently exist in some regions of the country;

- The mechanism for declaring warnings, emergencies, disasters, or calamities is decentralized and, although national, competes with the Commissioner of COPECO in issuing nationwide declarations. Within the framework of the CODEMs, municipal authorities may also issue declarations within the scope of their municipal competence according to the procedures defined for such purpose;
- The law provides for the creation of a National Emergency Preparedness and Response Fund (FONAPRE), which can be used for both humanitarian response and early recovery in the affected zones as well as for preparation activities at all levels, including first-response support to institutional operations and members of the system, both governmental and non-governmental;
- Formal recognition of the volunteer work of SINAGER, which under the coordination and management of COPECO, is in principle a space for citizen participation in the system and is open to anyone wishing to become part of it;
- The law states that participation in SINAGER and its coordinating and management bodies is mandatory for all public and private entities and institutions as set forth in the law and that non-participation is subject to penalties also as set forth in the law; and
- Recognition of the advisory committees as opportunities for all DRM-related sectors in the country to participate and become integrated with the committees consulted for support and assistance in developing policies, strategies, and tools such as the National Risk Management Plan, for which COPECO is ultimately responsible.

28. Honduras Country Document. 2012. DIPECHO.

Legal texts

- Building Code, Volume 11 (2000)
- Law on Municipalities (Decree No. 134-90)
- Legal Framework of the Municipal Environmental Units
- Land Use Planning Law (Decree No. 180-2003)
- General Environmental Act (Decree No. 104-93)
- Forestry Law, Protected Areas, and Wildlife (Decree No. 156-2007)
- Law for Sustainable Rural Development (Decree No 12-2000)
- Drinking Water and Sanitation Sector Framework Law (Decree No. 118-2003)
- Law on Transparency and Access to Public Information (Decree No. 170-2006)
- Involuntary Resettlement Policies Framework

National DRM System

National Risk Management System (SINAGER)

SINAGER is a legal and inter-institutional framework in which civil society participates with the objective of fostering the development of capacity building in disaster risk prevention and reduction by improving preparation, response, and recovery processes. Other objectives include standardizing criteria, defining concepts, regulating prevention and mitigation activities, adapting to climate change, disaster risk financial management, and coordinating assistance, humanitarian aid, and civil protection for the population in the event of disasters by orienting the recovery, rehabilitation, and recovery processes in the affected zones.²⁹

Permanent Contingencies Commission (COPECO)³⁰

This body is responsible for coordinating public and private efforts oriented toward disaster and emergency prevention, mitigation, preparation, response, rehabilitation, and reconstruction at the national

level.³¹ Its institutional mission is to coordinate and strengthen the National Risk Management System through shared public and private management oriented toward risk prevention and reduction, emergency response, recovery, and adaptation to climate change in order to protect the life and material and environmental assets of the country.

The principal risk management activities of COPECO

- Dictate national risk management policies protected under the SINAGER Law;
- Use all means available to promote a culture of prevention in every sector of the population;
- Promote community organization in various types of regional, municipal, and educational committees, including CODED, CODEM, CODEL, CODECE, and CODECEL;
- Lend technical assistance to CODED, CODEM, CODEL, CODECE, and CODECEL in drafting and updating their emergency plans;
- Set levels of coordination between various humanitarian assistance organizations;
- Maintain a close relationship with scientific and technical institutions so as to ensure constant monitoring of phenomena. Implement the response plans of sectors involved in the emergency. Coordinate damage assessments and needs analyses in order to measure the impact of the phenomenon on the affected sites;
- Inform higher authorities about the prevailing situation and the actions taken in accordance with priorities. Manage and coordinate the activities related to rehabilitating and reconstructing physical, social, and economic damage;
- Maintain constant monitoring of the major threats to which the country may be exposed; and

29. Honduras Country Document. 2012.

30. See: [http://www.poderjudicial.gob.hn/CEDIJ/Leyes/Documents/LEY%20DE%20CONTINGENCIAS%20NACIONALES%20\(ACTUALIZADA-07\).pdf](http://www.poderjudicial.gob.hn/CEDIJ/Leyes/Documents/LEY%20DE%20CONTINGENCIAS%20NACIONALES%20(ACTUALIZADA-07).pdf).

31. Decree-Law No. 990-E of December 12, 1990, creating the Permanent Contingencies Commission (COPECO).

- Maintain a close relationship with various institutions, including the National Meteorological Service, the Sula Valley Commission, the Miami Hurricane Center, and other international emergency institutions.

Early warning

There are 30 early warning systems in Honduras, 77% of which are for flood threats, 13% for landslides, and the remainder for hurricanes and droughts.

Other programs and projects

- Risk Management Volunteer Program
- Project for Harmonizing Scientific and Indigenous Knowledge for Disaster Risk Reduction (DRR) and Adaptation to Climate Change (ACC)³²
- Gender and Climate Change Project
- MITIGAR Project

The most important DRM-related project being implemented is the Socio-Natural Disaster Risk Prevention and Mitigation Project (MITIGAR), implemented by the Permanent Contingencies Commission (COPECO) by means of the Loan Agreement between the Honduran Government and the Inter-American Development Bank (No. 2152/BL-HO).

The purpose of the project is to reduce losses caused by the effects of socio-natural disasters, promote prevention and mitigation investments, and strengthen the disaster risk management capacities of public institutions at the municipal and institutional level.

The project has implemented projects in the departments of Santa Bárbara, Lempira, Atlántida, Copán, and Ocotepeque and has financed consulting services for developing municipal prevention and mitigation plans and risk management action plans in priority municipalities and for updating the designs of prevention and mitigation actions.

National and regional risk management round tables

Following Hurricane Mitch in 1998, civil society organizations, NGOs, and social organizations with the support of the International Strategy for Disaster Reduction (ISDR) began to coordinate efforts to organize into spaces and platforms in order to be able to actively participate in an organized manner in the DRM processes at both the national and regional level and to be able to influence the policies, strategies, and decisions of institutions and the public authorities. The first regional DRM round table took place in the Occidente region in 2005. There are currently 7 territorial round tables in the Occidente, Sur, Paraíso, Olancho, Cortés, and Yoro regions, which are made up of NGOs, sponsors, and municipal governments and in which COPECO participates through its regional offices.

Although each territorial round table may act autonomously and its actions are determined on the basis of local needs, the majority of them carry out activities related to assisting and supporting communities and municipal governments, advocacy and lobbying with regard to mining activities and their impact on the environment, capacity building, the disclosure of existing legal frameworks, support to local land use processes, participating in damage assessment missions, technical assistance to mayors and municipal authorities, exchanges of experiences, and context analysis (among others).

The National Risk Management Round Table is formally recognized within the framework of the SINAGER Law and sits on the governing board of SINAGER. All regional round tables are represented in the national round table.

At present, one of the greatest challenges faced by the national round table and the regional round tables is to ensure that the local governments and sectoral actors disclose, implement, and take ownership of the SINAGER Law.

32. COPECO et al. "Informe sobre gestión integral del riesgo de desastres en Honduras 2013."

National Humanitarian Disaster Response Network

This network was created in 2010 and is a space for dialogue, information exchange, and strategic and cooperative coordination between the humanitarian actors that operate in the country. The principal objective of this network is to facilitate the coordination of emergency response preparation policies, strategies, plans, and actions and responses in the event of a disaster. It is a support body of SINAGER and in emergency situations provides support to the National Humanitarian Aid Coordination Center (CCAHI) of the National Emergency Operations Center (COEN).

Recommendations³³

- Ensure that the issue of disaster risk management becomes institutionalized, supported by the pillars of sustainable human development (equality, human security, sustainability, economic growth, and participation);
- Integrate all structural systems in order to achieve sustainable intersectoral human development, including education, health, housing, and security (among others);
- Promote DRM plans in the education sector that are customized to each environment and region of the country;
- Ensure that new integral DRM policies, local land use plans, and local ordinances are promoted with community participation so as to strengthen the resilience of cities;
- Promote cooperative conventions and agreements by way of CEPREDENAC and other International Organizations for the purpose of replicating good practices in neighboring countries;
- Strengthen the public sector's financial mechanisms for risk reduction and post-disaster recovery;

- Create an emergency fund based on annual public expenditure for emergency response that makes it possible to respond to frequent disasters;
- Promote public and private disaster insurance;
- At the municipal level:
 - Ensure that the issuing of construction permit processing includes risk analyses;
 - Ensure that local land use plans are implemented so as to guarantee that risk reduction actions are focused on the most vulnerable zones; and
 - Support resettlement programs through clear legal frameworks and public-private partnerships.

Mexico

Background

Mexico is situated at the southern extremity of North America, covering an area of 1,964,375 km² and home to a population of 112,336,538.

The 1917 Political Constitution of the United Mexican States determines the country's political and administrative division as a federal state governed as a republic. The country is divided into 31 federal states and a Federal District. The federal states are free and sovereign states, with the right to their own constitution and governing body. In contrast, the Federal District is a controlled area shared between the Mexican Federation and local government bodies. The States are divided internally into 2,438 municipalities.

Risk scenario³⁴

Mexico is geo-morphologically diverse. Its climatic conditions vary from arid in the north to warm, humid, and subhumid climates in the south and southeast and cold or temperate climates in the higher geographical

33. Some recommendations are based on conversations held as part of the DIPECHO VII Program.

34. Banco Mundial. 2012. FONDEN: El Fondo de Desastres Naturales de México – una reseña. Primera edición en español Octubre de 2012. Versión en inglés 2011.

regions, with intensely cold conditions in winter at the higher elevations. The country is likely to be affected by changes in the world's climate.

Given its location on the Pacific Ring of Fire, an area where 80% of the world's seismic activity occurs, the country is highly exposed to the risk of geological disasters. Mexico experiences an average of over 90 quakes a year, with magnitudes of 4 or higher on the Richter scale (FONDEN 2011). Almost all of Mexico's territory, including Mexico City, is highly exposed to seismic risk.

Other disaster-generating threats to the country include volcanoes, tsunamis, tropical storms and hurricanes, flooding, forest fires, landslides and shifts, and drought.

During the period from 1970 to 2009, it is estimated that some 60 million people were affected by social or natural disasters in the country,³⁵ which is ranked as one of the 30 countries in the world most exposed to three or more types of threats of natural origin.³⁶

Legislative and institutional framework

- International legislative framework
- Mexico has adopted the 2005–2015 HFA.
- National legislative framework

National DRM system

National Civil Protection System—SINAPROC

The National Civil Protection System is an organic, interconnected complex of institutions, functional relationships, methods, and procedures established by public-sector departments and agencies working together along with various organizations consisting of volunteers and social and private groups and with the State authorities, the Federal District, and the municipalities for the purpose of:

*Protecting people and society against the possibility of a disaster caused by natural or human agents through efforts to reduce or eliminate loss of life, impacts on production, the destruction of property, harm to nature, and the interruption of the population's environment and living conditions as they existed before the disaster.*³⁷

The system includes: the President, a national council, the departments, bodies, and institutions of the Federal Public Administration, the National Center for Disaster Prevention, volunteer and neighborhood groups and NGOs, and the Civil Protection systems of the States, municipalities, and the Federal District.

State civil protection systems

Article 6 of the Civil Protection Act specifies that the national system includes, among other stakeholders, the Civil Protection systems of States, municipalities, and districts. These systems play an essential role in reducing the disaster risk and in focusing public attention on emergency situations.

Natural Disaster Fund (FONDEN)

FONDEN was established in the late 1990s as a budget mechanism to effectively and appropriately support the federal and state infrastructure responsible for dealing with natural disasters.

To date, FONDEN consists of two complementary budget tools: The FONDEN Reconstruction Program, and the Natural Disaster Prevention Fund Program (FOPREDEN) and their respective trusts. The original and still the most important FONDEN tool is the FONDEN Reconstruction Program. In addition, recognizing the need to promote proactive risk management, the Mexican government began in the early 2000s to allocate resources specifically to preventive activities.

Although prevention resources continue to be significantly lower than those allocated to reconstruction, the Mexican government continues to focus its efforts

35. United Nations. 2011. *Global Assessment Report on Disaster Risk Reduction*.

36. World Bank. 2005. *Natural Disaster Hotspots*.

37. Civil Protection Act, art. 10.

on transitioning from a focus on post-disaster risk funding to anticipating the management of the financial risk. The financial resources of the two FONDEN instruments (reconstruction and prevention) are handled by the FONDEN Trust and the Prevention Trust (FIPREDEN). In both cases, the fiduciary institution is BANOBRAS, the Mexican government's development bank.

Natural Disaster Prevention Fund (FOPREDEN)

On June 13, 2003, Mexico's Official Gazette published a decree reforming articles 3 and 4 of the Civil Protection Act, the primary purpose of which was to include the Natural Disaster Prevention Fund in the national budget each year, setting the amounts for operating each one under the responsibility of the Interior Ministry.

On October 10, 2003, the accord establishing the Natural Disaster Prevention Fund's operating rules was published. The purpose of the fund is to provide resources to the departments and units of federal public administrations, States, and municipalities and to avoid or minimize the destructive impact of natural phenomena on the population's lives and property, public services, and the environment.

DRM Priority Actions in Mexico

The Peña Nieto administration has set six priorities for DRM, which were announced by the President in late May, 2013:

- Establishing and operating the National Alert System in order to give the country real-time information and increase the safety of Mexican citizens in situations of imminent danger;
- Commencing the operation of the Mexico Safe against Disasters Strategy so as to have a nationwide infrastructure with greater capacity to withstand natural disasters;
- Undertaking an intensive campaign to spread a culture of civil protection and prevention with special emphasis on the residents of more vulnerable areas;
- Updating the National Risk Atlas to make it a more useful tool for development planning and especially land use planning;
- Implementing a National Catastrophe, Emergency, and Disaster Response Program to allow for appropriate coordinated action at all three levels of government; and
- Creating five regions with national civil protection representation for the purpose of strengthening interinstitutional coordination among the various existing systems.

Recommendations

The analysis conducted by the OECD between 2012 and 2013 at the request of the National Civil Protection System (SINAPROC)³⁸ summarizes the main recommendations made to the country for improving its overall management of disaster risk.

Legal and institutional framework

Based on the 2012 Civil Protection Act, the country has an opportunity to strengthen cooperation, monitor state-level implementation, and set priorities for overall risk management in order to effectively align subnational programs with federal policies.

Risk assessment

SINAPROC shows a strong commitment to disaster risk management policies and has made significant progress in gaining a better scientific understanding of natural phenomena, mapping risk exposure for both populations and valuable assets, and formulating vulnerability models. It has taken advantage of this understanding to produce tools for informing the public about the risks to which they are exposed and to develop adequate emergency response plans.

There needs to be stronger linkage between the system's innovative tools and other measures in order to reduce disaster risks, including land use, urban

38. OECD (2013), OECD Study on the National Civil Protection System in Mexico, OECD Publishing. Available from: <http://dx.doi.org/10.1787/9789264200210-es>.

development plans, and risk-mitigation infrastructure. This should be considered an absolute priority as the States begin to implement the 2012 Civil Protection Act, which calls for preparing risk atlases providing information for land use planning.

Suggestions for better integrating risk assessment among levels of government in Mexico

- Facilitate connections among the various risk atlases at all levels and develop synergies with the SAVER and R-FONDEN systems;
- Ratify federal support for the preparation of risk atlases at the subnational level;
- Strengthen technical and financial support in order to develop and update the municipal risk atlases;
- Include at-risk zones likely to be affected by tsunamis in the risk atlases;
- Prepare a National Atlas of Climate Change Impact and Vulnerability; and
- Reinforce the private sector's commitment to risk assessment processes at all levels.

Risk assessment

Mexico's interest in putting disaster-risk prevention on the same plane as emergency response requires adjustments to the institutional structures of SINAPROC. The central aim is to ensure collaboration at all levels of government, which leads to greater prevention capacities at the local level. Stronger incentives may be required together with monitoring mechanisms and sanctions in the municipalities so that they can formulate their own local land use policies based on risk assessment. Training human capital in the local civil-protection institutions under the 2012 Civil Protection Act may help offset frequent changes in municipal governments, which lead to short-term planning.

Emergency preparation and response

Interinstitutional plans need to be developed based on various risk scenarios, including standard operating procedures aiming to describe how the various systems can be coordinated by the stakeholders.

Joint emergency information and incident monitoring systems should be created to better connect the immediate response teams at the various government levels, share information, and establish a clear chain of command with all SINAPROC stakeholders operating during the emergency. The location of the regional emergency response centers of the various federal agencies should be planned in joint consultation in order to maximize the coverage of emergency services in rural areas by establishing priority access to telecommunication networks.

Enhancing emergency-response effectiveness through planning, coordination, and communication mechanisms

- Further develop emergency response planning based on various scenarios;
- Establish a joint system for information control during emergencies and for incident control among SINAPROC participants;
- Strengthen communication capacities in crisis situations for stakeholders participating in SINAPROC;
- Strengthen mechanisms for coordination with volunteer organizations and NGOs;
- Expand planning efforts for business continuity in the public and private sectors, especially for SMEs;
- Maximize synergies among the offices of the General Coordination of Civil Protection (CGPC) by switching locations to a common site in a less-earthquake-prone area; and
- Enhance mechanisms for feedback and the exchange of best practices and lessons learned.

Disaster risk recovery, reconstruction, and funding

The federal government has successfully promoted key actors in order to ensure the continuity of business activities at all levels through the Internal Civil Protection Programs in heavily populated areas. FONDEN ensures that funds are available and quickly accessible

for recovery and reconstruction while ensuring reporting on the use of public resources.

Recommendations for moving toward a more balanced strategy for disaster risk funding

- Implement financial instrument integration for FONDEN and FOPREDEN to allow for greater investment in prevention, especially in those years when disaster-related losses are relative low;
- Maintain FONDEN's resources with a clear instrument for risk funding, along with reporting;
- Promote the development of an insurance-based culture through incentives and regulatory reforms to increase insurance coverage for homes;
- Expand planning efforts for business continuity in the public and private sectors, especially for SMEs; and
- Continue to hold periodic reviews of FONDEN to ensure its efficiency as a cornerstone of the national risk-funding strategy.

Regional and international cooperation

Mexico has demonstrated its desire and capacity to cooperate with the United States in water management and weather monitoring and in responding to environmental disasters affecting both countries. It has also taken a stance as a trusted regional partner through many humanitarian assistance missions.

Mexico's competence in technical and scientific fields can be better exploited in order to strengthen civil protection capacity throughout Latin America. To take full advantage of its potential in regional and international cooperation, Mexico should:

- Promote the signing of long-term bilateral or regional cooperation agreements along its southern border with Belize and Guatemala in order to give an official character to emergency response cooperation and establish well-defined protocols, procedures, and functions;

- Continue establishing cooperative relationships between the AMEXCID cooperation agency and the participants in SINAPROC in order to share international best practices and develop capacity-building programs with other countries, focusing not just on risk management but also on information exchanges; and
- Clarify the regulatory framework for NGOs providing humanitarian aid.

Chile

Background

Chile is located in the southwestern part of South America and covers 756,102.4 km², including parts of Oceania and Antarctica. It is divided into 13 regions divided into 51 provinces further divided into 335 municipalities. It has an estimated population of 16,634,603, with 86.6% living in urban areas and 13.4% in rural areas.³⁹

Chile is considered a high-income developing country. Its quality of life, economic growth, human development, degree of globalization, and per capita GDP are among the highest in Latin America.⁴⁰

Risk scenario

Chile has historically been impacted by disasters caused by various natural, socio-natural, and man-made threats.

The country is situated on the Pacific Ring of Fire in one of the plate subduction areas where the world's most intense earthquakes and tsunamis have occurred, some of them impacting the country on various occasions. Volcanic activity has also been intense, and there are frequent landslides, floods, and droughts in various regions. The country's unique geographical features combined with demographic

39. See: http://siit2.bcn.cl/nuestropais/index_html.

40. See: <http://es.wikipedia.org/wiki/Chile>.

and social phenomena as well as political and economic aspects constitute disaster risks, exposing the population, public and private assets, and systems to substantial losses of life as well as in economic, environmental, and social terms.

Legislative and institutional framework

Internationally, Chile has adopted the 2005–2015 Hyogo Framework for Action as its DRM tool.

The institutional and legislative framework for Chile's National Emergency and Civil Protection System is supported by various laws and decrees, including the following:

- Decree-Law 369 of 1974 establishing the National Emergency Office, a public department under the Interior Ministry responsible for planning, coordinating, and executing activities aimed at preventing or resolving problems deriving from earthquakes or other catastrophic events. It also plans and coordinates the use of the human and material resources of public utilities and private institutions in relation to all types of public catastrophes or disasters in order to avoid or reduce these events. It can request the necessary information from those agencies and institutions when this is relevant.
- Interior Ministry Supreme Decree 509, which establishes regulations for the application of Decree-Law 369 creating the National Emergency Office (ONEMI).
- Supreme Decree 156 of 2002, which approves the National Civil Protection Plan, an indicative tool for DRM in Chile, which is viewed as a dynamic and controllable reality supporting the sustainable development process by strengthening safety conditions as a factor in improving the quality of life and sustainable development. Its overall objective is to provide for indicative multisector planning in the area of civil protection aimed at

deploying ongoing efforts to prevent and respond to emergencies or disasters in the country based on an integral view of risk management. Its specific objectives are as follows:

1. Provide a national framework for civil protection management serving as a basis for regional, provincial, and municipal planning from a decentralized perspective in keeping with local risks and resources;
 2. Establish an overall environment of coordination among the various sectors and stakeholders;
 3. Define the political, legal, scientific, technical, and operational responsibilities of the National Civil Protection System at every stage of risk management;
 4. Establish a framework for global action in order to systematically deal with the various stages of risk management; and
 5. Standardize the basic factors to be considered in the Response Plan in the face of emergencies or disasters.
- Supreme Decree 38 of 2011, which establishes the Emergency Operations Center (EOC). This law provides for an Emergency Operations Center to be set up whenever emergencies, disasters, or catastrophes cause substantial damages to persons or property, affecting all or part of the country whenever one or more regions of the country are involved or in the event that one or more municipalities are affected and the Interior Ministry determines that the event is having a major impact on the population. The following authorities are members of the EOC: Interior Ministry, National Defense Ministry, Undersecretary of the Interior, Head of the Joint Chiefs of Staff, Energy Ministry, Transportation and Telecommunications Ministry, Ministry of Health, Ministry of Public Works, Directorate General of the Police Force, and Head of the National Emergency Office.

- Interior Ministry Supreme Decree 68 of 2009, which establishes a Permanent System for Seismic Monitoring and Volcanic Processes in order to enhance the technical capacity for ongoing observation and monitoring of the country's geological dynamics. Coordination of the monitoring system for such processes is the responsibility of the National Emergency Office. The system consists of the National Seismological Service and the National Geology and Mining Service.
- National Defense Ministry Supreme Decree 26 of 1966, designating the Hydrographic and Oceanographic Service (SHOA) of the Chilean Navy as the country's representative institution at the Pacific Tsunami Warning Center (PTWC). This decree also establishes the National Seaquake Warning System (SNAM), stipulating that SHOA is solely and exclusively responsible for evaluating seismic and tidal information to determine the possibility that a tsunami will be generated and for disseminating warnings or alerts concerning seaquakes.
- SHOA Publication 3014 of 1964, which provides general instructions regarding the National Seaquake Warning System.
- Organic Constitutional Law 18.415 on States of Emergency. In an emergency, when the authorities' ability to ensure order and public safety is impaired, the affected area may be declared to be in a State of Emergency, in which the rights and guarantees granted to the people by the country's Constitution can only be exercised in those situations in which the Constitution authorizes this. When a State of Emergency is declared, the powers conferred on the President can be wholly or partly delegated to the Commanders-in-Chief of the Armed Forces he or she appoints, with the exception of prohibiting entry into the country or expelling certain people from the country.
- Organic Constitutional Law on Government and Regional Administration 9.175. This law (Art.16f), provides for the regional government acting through mayors and governors to adapt the measures necessary to deal with emergency or catastrophic situations and to develop prevention and protection plans in the face of emergencies or catastrophes.
- Statutory Decree 22 of 1959, which sets the text of the Organic Law of the Interior Governance Service of the Republic. Provisions call for mayors and governors to be authorized to require the heads of departments subject to oversight to give necessary and immediate attention to responding to an emergency, disaster, or catastrophe and to request extraordinary funding. They must also provide documented accounts of such operations to the Comptroller General.
- Law 18.695. Constitutional Organic Law on Municipalities. Art. 4i) states that the municipalities are responsible for preventing risks and providing assistance in emergencies.
- Law 16.282, which makes permanent provisions for earthquakes and catastrophes. The law is promoted by the Finance Ministry setting provisions so that in the event of earthquakes or catastrophes occurring in the country and causing substantial damage to people or property, the President may by special decree introduce budget items empowering the Interior Ministry to collect donations and make transfers within the national budget mainly to assist in reconstruction efforts and humanitarian aid (among other things).
- Law 19.601, which sets standards for promoting irrigation works in areas affected by earthquakes and catastrophes for the purpose of mitigating the effects of drought and replacing or repairing works destroyed completely or partially by earthquakes or other destructive natural events.
- Decree with Force of Law 7.912 of 1927 by the Ministry in charge of executive departments of government. Pursuant to Art. 3a), the Interior Ministry is

responsible for all matters relating to maintaining public security, calm, and order.

- Supreme Decree 294 of 1984 of the Ministry of Public Works. In accordance with the Organic Law of the Public Works Ministry, special powers are granted to this institution to contract works in the event of emergencies classified by Supreme Decree.
- Law 18.168 of 1982 by the Ministry of Transportation and Telecommunications. Art. 7 of this law stipulates that in emergencies, telecommunications license and permit holders are duty-bound to broadcast warning messages at no cost as instructed by the bodies given this power by the law.
- National Defense Ministry Supreme Decree 753 of 1975, which updates the standards and methods recommended by the International Civil Aviation Organization regarding search-and-rescue missions.

National DRM system⁴¹

National Emergency Office of the Interior Ministry—ONEMI⁴²

ONEMI was created by Decree-Law 369 of 1974 and is the technical body responsible for coordinating the National Civil Protection System. Its mission is to plan, promote, develop, and implement prevention, response, and rehabilitation efforts in the face of situations of collective risk, emergencies, disasters, or catastrophes, whether natural, socio-natural, technological, or caused by human actions.

Strategic objectives

- To strengthen, develop, and coordinate the government's crisis management efforts in the face of natural and human threats through technical

assistance for sector institutions and regional and municipal teams;

- To train, authorize, and advise authorities and staff at various administrative levels in the country and community in the areas of risk management, early warning, and emergency management in order to provide the national community with more and better protection and security; and
- To develop strategies and approaches geared to preparing the community.

ONEMI supports its management with a National Civil Protection and Emergency Committee that encompasses 40 public, private, and volunteer institutions. At the national level, municipal, provincial, and regional civil protection committees have been established. These analyze specific approaches, draw up plans, and prioritize prevention, mitigation, and preparation efforts adequate to the unique features of each area under their jurisdiction (the Mutual Aid principle).

In emergencies or disasters, the Emergency Operations Committee is set up and includes representatives from the Civil Protection and Emergency Committee with specific competencies and capacities relating to the emergency event in question. This Committee carries out its mission at an Emergency Operations Center, where response and rehabilitation decisions and actions are coordinated. All available resources in the affected municipalities are used first.

If the event's magnitude exceeds local capacities, the necessary additional support is mobilized through escalation, from the provincial and regional levels to the national level (the Graduated Use of Resources Principle).

ONEMI also has an Early Warning Center whose primary mission is to continuously and systematically monitor the various risk scenarios all over the country or abroad and to collect, assess, and disseminate the available information as quickly as possible regarding

41. See: http://www.eird.org/perfiles-paises/perfiles/index.php/Chile#Plataforma_Nacional.

42. See: <http://www.onemi.cl/index.html>.

a real or potential occurrence of a destructive event classifiable as a social-impact emergency or disaster.

National early warning system

The National Civil Protection Agency is responsible for the system's development, coordination, and management. The Hydrographic and Oceanographic Service (SHOA), the National Forestry Corporation (CONAF), the National Geology and Mining Service (SERNAGEOMIN), the Meteorological Office of Chile, or the Water Department issues the corresponding warning and disseminates it to the bodies under it. The National Civil Protection Agency disseminates the warning among the population.

National defense—armed forces and police force

- The armed forces and the police force participate in preventing and preparing for emergencies, in response efforts, and in delivering humanitarian aid to the population;
- The armed forces provide support in emergencies;
- They sit on the Emergency Operations Committee;
- The armed forces are part of the system; and
- The Defense Ministry works together with the military liaison authorities.

The armed forces advise and support the emergency operational commanders at the national and regional levels. In the area of emergency prevention, this establishes the following:

- National Civil Protection Council
- Civil Protection Committees
- National Civil Protection Strategy
- Civil Protection Sector Plans
- Regional Civil Protection Strategies
- Funding for prevention through the National Civil Protection Fund

Other provisions

The National Seismic Monitoring System was created mainly to compile and supply seismological information to be used as the basis for early warning announcements by the corresponding agencies and to review and update seismic legislation and research relating to seismic activity.

New national emergency and civil protection system⁴³

The earthquake and tsunami of February 2010 left a deep split in ONEMI and exposed its precariousness as well as serious weaknesses in its operations.⁴⁴ This was caused by the fact that ONEMI was designed to focus on managing the response. This makes it necessary to formulate a new institutional approach, currently through a legislative bill setting up the National Emergency and Civil Protection System and the new National Civil Protection Agency.

This proposed new institutional approach enhances the efforts ONEMI and other stakeholders in the National Civil Protection System have been making to prevent and mitigate emergencies and disasters and to protect the population. It is hoped that this will facilitate and boost the contributions of all DRM stakeholders to making Chile more resilient, in keeping with the international commitments it made regarding disaster risk reduction by adopting the 2005–2015 Hyogo Framework for Action.

Main implications of the bill creating the national Civil Protection Agency

- The bill creates a new institution responsible for emergencies;
- It emphasizes prevention in dealing with emergencies;
- It sets levels of emergency;
- It stipulates the capacities of the institutions responding to emergencies and catastrophes; and
- Its objective is to promote and implement emergency prevention, response, and mitigation.

43. Data supplied by Rodrigo Ubilla, Interior Minister of Chile, 2011.

44. In effect, the operations of the Emergency Operations Committee collapsed in the areas most affected by the quake. There were no 24/7 staff in the regional offices of ONEMI, prevention programs had less impact, the Seismological Service was working only during regular hours, there were no sustainable telecommunications systems or satellite phones. In addition, only vulnerable HF and VHF radio broadcasting was available, no consideration was given to new communication platforms and systems such as SMS, and there was limited traffic on the www.onemi.cl webpage, a lack of coordination with supporting institutions, delays in making helicopters available for the President. The National Radioaficonados Network was not part of the emergency telecommunications system, and only a weak administrative support system was in place.

Composition

- National Civil Protection Strategy
- National Civil Protection Council
- Civil Protection Committees
- Emergency Operations Committee

Recommendations

While a National Civil Protection Fund has been created to address prevention, it is important to act politically on the need for relevant legislation to set up a funding reserve for post-disaster recovery, which might be administered by a permanent institution independent of the government, economic system, or situation the country may be experiencing.⁴⁵

A clear and effective Emergency Communication Strategy must be formulated to enable the responsible public agencies to keep the population duly informed about measures that must be taken to ensure their safety and security after the emergency or disaster occurs. During the recent seismic and tsunami events of 2010 and 2014, this process was weak and confused, with tsunami warnings and evacuation orders to move people to higher ground along the coast being issued and then canceled. In particular, it will be necessary to act in order to ensure prompt approval of the decree-law setting up the new National Risk Management System.

Colombia

Background

Colombia is located in the far northwest of South America. It has wide geological, geo-morphological, hydrological, and climatic diversity, with an area of 2,129,748 km², including 1,141,748 km² of land and 988,000 km² of maritime territory in the Caribbean and the Pacific Ocean.

The country is governed under the rule of law and organized as a unitary republic with political

centralization and administrative decentralization. Politically, it is divided into 32 departments⁴⁶ and 1,123 registered municipalities. The country's total population is estimated at 47,387,109.

Risk scenario⁴⁷

Social issues such as urban violence, accelerated urbanization, poverty, armed conflict, and migration all interact strongly with natural dynamics to raise levels of exposure to risk, primarily in the Capital District of Santa Fe de Bogotá, with some eight million residents, and in other densely populated cities such as Buenaventura, Tumaco, Medellín, Armenia, Bucaramanga, Cali, Cúcuta, Manizales, Neiva, Pasto, Pereira, and Popayán.

Colombia's location in an area of subtropical confluence creates a pattern of intense rains and flooding affecting the regions of Amazonia, Orinoquia, and most of the Caribbean Coast as well the Andean region. The El Niño and La Niña phenomena also contribute to extreme rainfall or drought for extended periods of time, threatening the sustainability of means of subsistence, especially in rural areas.

The country is part of the Pacific Ring of Fire and sits over two major areas of friction: the subduction zone of the Nazca Plate with the South American Plate, and subduction of the South American Plate with the Caribbean Plate. The departments of Nariño, Choco, Caldas, and Santander have the highest level of seismic risk. According to data from the National Disaster Risk Management Unit, it is estimated that 70% of the Colombian population is exposed to high seismic risk and 28% to moderate seismic risk (12.2 million) and 2% low risk.⁴⁸ Meanwhile, some 31% of the population is exposed to high flooding risk and a threat of major shifts in land mass.⁴⁹

46. See: <http://es.wikipedia.org/wiki/Colombia>.

47. CEPAL. 2006. *Information for Disaster Risk Management: Case Studies from Five Countries*.

48. See: http://www.osso.org.co/docu/proyectos/corpo/2009/atlas/web/chapters/los_inquietos_andes/3.html.

49. Risk Management Unit, 2012.

45. Moraga, Marcela. 2012. See: http://www-cpsv.upc.es/tesis/TM12presentacio_moraga.pdf.

Legislative and institutional framework

Internationally, the country has adopted the 2005–2015 Hyogo Framework for Action and the United Nations Framework Convention on Climate Change.

National legislation supporting DRM includes:

- The 1991 Colombian Political Constitution and its 1997 reforms, Article 95 and 215;
- Decree 1547 of 1984, creating the National Calamities Fund;
- Law 46 of 1988, creating and organizing the National Disaster Prevention and Mitigation System, granting extraordinary powers to the President, and establishing other provisions;
- Decree 919 of 1989, organizing the National Disaster Prevention and Mitigation System and establishing other provisions;
- Presidential Directive 33 of 1991 setting the responsibilities of public institutions and agencies in developing and operating the National Disaster Prevention and Mitigation System;
- Ministerial Directive 13 of 1992, setting the responsibilities of the education system as an integral part of the National Disaster Prevention and Mitigation System;
- Law 164 of 1994, approving the United Nations Framework Convention on Climate Change;
- Decree 2190 of 1995, governing the formulation and deployment of the National Contingency Plan against oil spills and hazardous substances in sea, river, and lake water;
- Decree 969 of 1995, organizing and regulating the National Reserve Centers System in order to deal with emergencies;
- Law 322 of 1996, establishing the National Fire-fighting System and other provisions;
- Law 388 of 1997, establishing the Land Use Plan;
- Decree 93 of 1998, adopting the National Disaster Prevention and Mitigation Plan;
- Decree 321 of 1999, adopting the National Contingency Plan against oil spills and hazardous substances in sea, river, and lake water.
- Law 629 of 2000, approving the United Nations Framework Convention on Climate Change;
- CONPES Document 3146 of 2001, setting up the Strategy for Consolidating Execution of the National Disaster Prevention and Mitigation Plan (PNPAD) in the short and medium terms;
- Presidential Directive 005 of 2001, mobilizing the various levels of government against a sudden nationwide disaster;
- Law 812 of 2003: National Development Plan: Toward a Member State Title II: Public Investment Plan, Chapter II: Description of the Main Investment Programs, Subparagraph C, Building Social Equity, Paragraph 8, and Natural Risk Prevention and Mitigation.
- MEN Directives No. 12 of 2009 and No. 16 of 2011, identifying the responsibilities of the education sector in emergencies;
- Law 1450 of June 16, 2011, issuing the 2011–2014 National Prosperity for All Development and Investment Plan;
- Law 1505 of 2012, establishing the National First Response Volunteer System and authorizing incentives for volunteers for Civil Defense, Colombian Firefighters, and the Colombian Red Cross;
- Law 1575 of 2012, Colombian Firefighters Act;
- Law 1523 of April 24, 2012 defining the National Disaster Risk Management Policy and establishing the National Disaster Risk Management System (SNGRD); and
- 2013 Strategic Plan for International Cooperation in Disaster Risk Management 2013–2014.

National DRM system

National Disaster Risk Management System⁵⁰

The National Disaster Risk Management System (NDRMS) is the main tool set up by Law 1523. It governs the social process of risk management in order to protect the population of Colombia, improve security, well-being, and the quality of life, and contribute to sustainable development. It relies on three basic processes: understanding risk, reducing risk, and managing disasters at various levels of government.

To facilitate the implementation of these processes, the NDRMS includes four components:

- Organizational structure
- Planning tools
- Information systems, and
- Funding mechanisms

National Disaster Risk Management Unit

The National Disaster Risk Management Unit (NDRMU) guides the implementation of disaster risk management and coordinates the operation and ongoing development of the National System by ensuring that the National Disaster Risk Management Program is aligned with the 2011–2014 National Prosperity for All Development and Investment Plan in pursuit of the execution of public policies as well as with guidelines agreed in the context of the various spaces generated by the United Nations International Disaster Risk Reduction Strategy, especially the 2005–2015 Hyogo Framework for Action, which enabled the country to reach its Millennium Development Goals (MDGs). The system establishes principles and definitions and creates three sub-departments with their respective committees:

- National Risk Awareness Committee
- National Risk Reduction Committee
- National Disaster Management Committee

These three committees coordinate, advise, plan, and monitor. They are intended to ensure the effectiveness and thoroughness of risk management processes under the direction of the National Disaster Risk Management Unit (NDRMU).

Recommendations⁵¹

- Improve local management at the sectoral, public, and private levels in order to reduce existing risk factors;
- Apply and monitor effective policies and tools for local planning and water basin management;
- Elevate conceptual advances on the relationship between risk management and development to the State policy level, incorporating them as an integral part of public management;
- Reduce gaps in the area of disaster risk management in sector policies and plans that threaten the sustainability of investments in both production and services and that increase exposure and vulnerability;
- Establish strategic guidelines for involvement in formulating projects that yield the expected results and priority activities in tandem with the processes of the NDRMS;
- Link national disaster risk management policy to public management, supporting local governments so that they can jointly provide leadership and promote concrete sectoral policies and action plans;
- Disseminate the National Disaster Risk Management policy so that it is assimilated and internalized by all DRM stakeholders at the sectoral national, regional, local, and community level, defining their responsibilities and degree of participation in the actions necessary to ensure the population's rights and security, minimize loss of life, prevent or

50. See: http://www.eird.org/wikiesp/images/COL_Documento_de_pais_L%C3%ADneas_Estrat%C3%A9gicas_DIPECHO_031012.pdf.

51. Based on reports and information provided by Dr. Claudia Coca of UNGR, 2012.

mitigate damage to infrastructure and lifelines as well as impacts on the means of production when disaster strikes, and ensure the ongoing provisioning and operation of basic services for the population in emergency situations;

- Promote capacity building at the institutional level in the area of disaster risk management so that local, regional, and national authorities can prepare and adopt Local Risk Management Plans as long-term tools for steering Watershed Regulation and Management Plans, Local Regulation Plans, and Development Plans and link these to public and private investment for DRM;
- Promote actions that strengthen municipalities in the area of disaster risk management so that it meets the needs of the municipalities according to their capacity (high, medium, and low);
- Put in place effective coordination mechanisms for the management of rivers and bodies of water by a State agency, and determine the roles and coordinating mechanisms for the various agents involved;
- Make local, departmental, and national officials and agencies responsible for managing disaster risk horizontally through processes of environmental management, sustainable development management, and adaptation to climate change and as an integral part of decision making at the sectoral and local level;
- Focus risk management by sector on an integral policy that covers assessment, awareness raising, and reduction of existing risk, avoiding the creation of new risks and ensuring sustainability in projects involving public and private investment and ensuring that an effective and appropriate response is given when disasters occur;
- Generate capacities at the local level for specific sectoral risk management efforts by establishing mechanisms of coordination and co-funding with local agencies for DRR and synergy among the various levels of government;
- Encourage and promote DRM communication strategies at the municipal and sector level in order to generate awareness, participation, and capacity in the civilian population and increase their resilience in the face of disasters. In particular, the following should be aimed at:
 - Deploy awareness-raising campaigns in cities with a high degree of risk from recurring threats or other, less frequent threats, providing clear information about the scope and responsibilities of the public and private sectors, assessing the unique vulnerability of human settlements most exposed to such risk, and providing recommendations on clear and effective DRM measures in these locations;
 - Implement risk management programs with community involvement that will have real and sustainable impacts, including risk prevention, preparation, and response strategies (through drills and brigades); and
 - Raise awareness among labor unions regarding the importance of risk management strategies to improve the capacities of their members.



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