



SUSTAINABLE DEVELOPMENT UNIT ■ LATIN AMERICA AND THE CARIBBEAN

Disaster Risk Management in Latin America and the Caribbean Region: GFDRR Country Notes

Dominican Republic



THE WORLD BANK



GFDRR

Global Facility for Disaster Reduction and Recovery



**COUNTRIES AT RELATIVELY
HIGH ECONOMIC RISK
FROM MULTIPLE HAZARDS**

(Top 75 Based on GDP
with 2 or more hazards)^a

1. El Salvador

2. Jamaica

**3. DOMINICAN
REPUBLIC**

4. Guatemala

8. Costa Rica

9. Colombia

13. Trinidad and Tobago

14. Antigua and Barbuda

15. Barbados

17. Ecuador

18. México

19. Dominica

20. Nicaragua

21. Chile

33. Haiti

^a Dilley et al. (2005). Table 7.2.

**Tropical storms and floods join the hurricanes among
the disasters that have had the greatest impact in the
Dominican Republic.**

DOMINICAN REPUBLIC

Natural Disasters from 1980 - 2008^b

Affected People

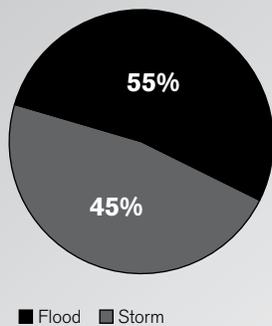
Disaster	Date	Affected (Number of People)
Flood	1988	1,191,150
Storm	1998	975,595
Flood	1981	150,000
Storm	2007	79,728
Flood	2003	65,003
Storm	2007	61,605
Storm	1996	25,000
Flood	1993	20,000
Flood	2007	16,000
Storm	2004	14,009

Economic Damages

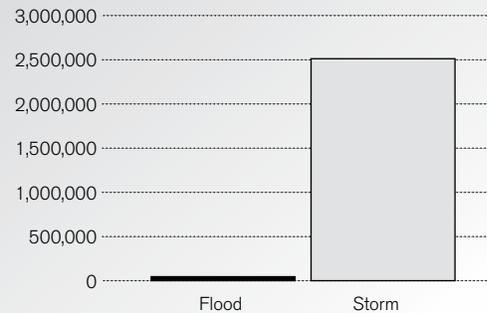
Disaster	Date	Cost (US\$ x 1,000)
Storm	1998	1,981,500
Storm	2004	296,000
Storm	2007	77,700
Storm	1980	47,000
Storm	2007	45,000
Flood	2003	42,620
Storm	2007	40,000
Storm	1987	23,700
Flood	2003	2,100
Storm	2004	1,000

Statistics by Disaster Type^b

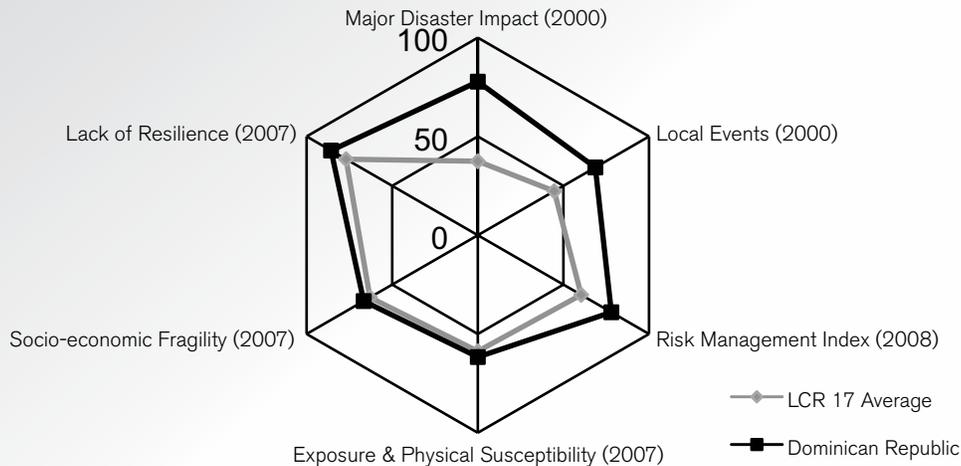
Population Affected by Disaster Type



Economic Damages / Disaster Type (1000s US\$)



Relative Vulnerability and Risk Indicators^c



^b UN (2009). <http://www.preventionweb.net/english/countries/statistics/?cid=52>. Source data from EM-DAT. Data displayed does not imply national endorsement.

^c Relative Vulnerability and risk Indicators are adapted from IADB-IDEA-ERN (2009). Values are normalized on scale of 0 – 100 and presented against the average for 17 LCR countries. Major disaster Impact taken from disaster deficit Index: the ratio of economic losses which a country could suffer during a Maximum Considered event and its economic resilience. Local events taken from Local disaster Index: the propensity of a country to experience recurrent, small-scale disasters and their cumulative impact on local development. risk Management Index is presented as the negative (i.e. 0 = optimal, 100 = incipient) of IADB's risk Management Index: measures a country's risk management capability in (i) risk identification, (ii) risk reduction, (iii) disaster management, and (iv) financial protection. resilience, Fragility and exposure are taken from the component indices of Prevalent Vulnerability Index. Date for local event data depends on information available for each country. Data, and the respective LCR 17 average, from 2000 is used for Dominican Republic, El Salvador, Guatemala, Jamaica and Nicaragua. Data, and the respective LCR 17 average, from 2006-08 is used for Bolivia, Colombia, Costa Rica, Ecuador, Panama and Peru. All LCR 17 averages are calculated based on available data.

DISASTER RISK PROFILE

The Dominican Republic has the third highest economic risk exposure to two or more hazards, according to the 2008 update of the Natural Disaster Hotspot study² by the World Bank. In addition to the exposure of 94.7% of the national population, in 87.2% of the national territory and 95.6% of the GDP to two or more hazards, vulnerability in the DR is also influenced by the debt burden, health status, climate change, weak building code enforcement and other factors.

Major Natural Hazards

Due to its geographical location and geotectonic characteristics, the Dominican Republic is exposed to a variety of natural hazards, including hydrometeorological and geophysical. Located in “hurricane alley,” the DR, along with Haiti and Jamaica to the West and Puerto Rico and the Antilles to the East, is located in one of the most seismically active regions in the hemisphere, situated on the boundary of the Caribbean Plate, to the South, and the North American Plate to the North. The island nation is further affected by the Gonave Microplate, extending West from the Caymans to a fault near Longitude 71W where the Hispaniola Puerto Rico Microplate begins and continues East to the Mona Passage West of Puerto Rico. Both microplates are limited by the Septentrional Fault to the North and the Enriquillo-Plantain Garden Fault and Muertos Trough to the South³. Both faults run on land and pose a direct seismic threat to the island. Two additional seismic faults bound the island to the north (North Hispaniola fault, westward continuation

of the Puerto Rico subduction trench) and to the south (Muertos fault)⁴.

Natural disaster data from the Dominican Republic published on the PreventionWeb website⁵ indicates 40 natural disaster events for the period 1980 to 2008, which affected 2.65 million people with total economic damages estimated at US\$2.56 billion. Economic damage by disaster type was reported as follows: storms accounted for US\$2.51 billion and floods US\$44.2 million. The number of people killed was reported as 1,446, with 42 percent by storms, 55 percent by floods, and the remaining 3 percent caused by epidemics.

Flooding and landslides pose serious risks to the Dominican Republic during the rainy season (June to November). Flooding is common for the following primary watersheds nationwide: Haina, Nizao, Ocoa, San Juan, Yaque del Sur, Yaque del Norte, Yuna,⁶ Soco, and the riverbanks of the cities of Santo Domingo and Santiago.⁷ Likewise landslides are common due to precipitation and a great hazard in conjunction with seismic events of relevant magnitudes. The primary mountain ranges at risk include the Septentrional, Central, Oriental, Neiba and Bahoruco.⁸

Storms and Floods

Hurricanes that marked the Dominican Republic’s history and development include: The hurricane in 1502 that forced the relocation of Santo Domingo, the capital. Other historic hurricanes were Lilis in 1894; San Severo in 1909; and San

² GFDRR (2008).

³ Mann et al. (1995).

⁴ Manaker et al. (2008).

⁵ Prevention Web (2010c).

⁶ Cocco (N. D.a).

⁷ Dunn (2009).

⁸ Cocco (N. D.b).

Zenon in 1930 – a Category 4 whose eye passed over the city and claimed an estimated 6,000 lives. Hurricanes Flora and Edith in 1963 and Inés in 1966 followed. The first Category 5 hurricane to make a direct hit in the DR was David in 1979. It killed 2,000 people and caused nation-wide flooding. The combined losses from David and Tropical Storm Frederick – 1 week later - were US\$2,654,700,000. More recent hurricanes affecting the DR have not been as powerful. Hurricane Georges in 1988 packed winds of 110 mph and left 8 million people without power.⁹ Some 595 persons were injured, 64 persons disappeared, and 85,420 persons were dislocated. Georges caused losses estimated at US\$3,116,100,000. Hurricane Jeanne in 2004 caused major flooding in the Eastern DR destroying large bridges with losses amounting to US\$331,500,000.¹⁰

Tropical storms and floods join the hurricanes among the disasters that have had the greatest impact in the Dominican Republic. In November 2003 floods the lower watershed of the Yaque del Norte and Yuna rivers forced the Taveras Dam to release 820 cubic meters per second, prompted the evacuation of 47,270 people,¹¹ and generated US\$49,300,000 in damages. On October 29 2007 Noel caused floods from Barahona to Pedernales in the southwest worth US\$439,000,000,000 in losses. Noel affected over 6 million people (70 percent of the population). The death toll was 87 persons, 34,172 persons were displaced, 20,000 houses were affected, and 42 persons disappeared. Less than two months later, on December 12 2007, Tropical Storm Olga brought severe flooding to the Eastern DR. CEPAL (2008) estimates this extreme precipitation was equivalent to 170% of normal rainfall, which was attributed to climate change. Olga obliged yet another emergency operation of the Taveras dam and caused

losses of US\$105 million.¹² In 2008 Fay, Gustav and Hanna caused flooding in the East, South and North before continuing to Haiti.¹³

Earthquakes and Tsunamis

The Dominican Republic has a long history of destructive earthquakes and owes part of its current geology to past volcanic eruptions.

The DR has a historic record of strong earthquakes including those of 1551, 1562 (destroying Santiago, Jacagua and La Vega), 1673, 1691, 1751, 1761, 1770, 1842, 1860, 1910, 1911, 1915, 1916, 1918, 1946 and 2003. The event on May 9, 1673 destroyed Santo Domingo and caused 120 aftershocks for 40 days. Another on October 18 1751 affected the entire southern coast with aftershocks and tsunamis. The cities of Azua in the DR and Port Au Prince in Haiti were destroyed. The estimated intensity was IX or X on the Modified Mercalli scale. The country's third most important earthquake was magnitude 7.9 (originally classified as 8.1) on Sunday, August 4th 1946 generating a deadly tsunami in the Bahía Escocesa on the northeast coast. There were numerous landslides and liquefaction sites throughout the Northeast region of the country as well as 1,200 aftershocks during the ensuing year.¹⁴

The Dominican Republic's ongoing seismic hazard following the tragic and historic magnitude 7 earthquake in Haiti on January 12, 2010. This event only released limited stress on the western portion of the Enriquillo-Plantain Garden Fault, which remains a significant source of hazard. This earthquake and dozens of strong aftershocks were felt strongly as far away as Santo Domingo, the Capital. Both the

⁹ Cocco (2001).

¹⁰ Dunn (2009).

¹¹ Cocco (N. D.c).

¹² Dunn (2009).

¹³ Cocco (2009).

¹⁴ Corominas (1998). See also Cocco (2001).

Septentrional and the Enriquillo-Plantain Garden Fault systems are capable of producing a magnitude 7.5 event without prior warning. There is concern in the scientific community that the Septentrional fault in the Cibao valley, which has not experienced a large event in about 1,000 years but is steadily building up stresses, is overdue for a large earthquake. In addition, the offshore subductions to the north and south of the island are capable of magnitude 7.5 or greater earthquakes, such as the 1946 event in the north or the 1751 event that strongly affected the southern part of Hispaniola.¹⁵

Tsunamis have been reported along the North, East and Southern coasts of the Dominican Republic since 1751.

Two reported tsunamis were localized as in 1751, affecting Azua, and 1946. The Sunday, August 4 1946 tsunami resulted from the 7.9 earthquake in the Bahía Escocesa. One week later a 7.8M aftershock and another tsunami affected the same area. Reports frequently do not detail deaths due specifically to tsunamis, especially if associated with a large earthquake. However, documents for the 1946 event which killed the population of Matancitas in Nagua, report deaths from 500 to 1,790 people.¹⁶ The DR has also witnessed tsunamis generated at a distance. This includes the Portugal magnitude 9 earthquake on November 1, 1755.¹⁷

Volcanoes

The country has over a dozen volcanoes, none of which are active. However, the past volcanic activity yielded fertile lands for agriculture as well

as gold and copper mining throughout much of the central Dominican Republic. Additionally there are active traces of past volcanic activity such as sulfuric and thermal wells throughout the country, several are promoted for eco-tourism and health purposes. In Azua there is a natural asphalt field and areas in the deep southwest such as Oviedo have ancient lava fields that stretch for kilometers. Duarte's Peak is an extinct volcano and is also the highest elevation of the Caribbean at 3,110 meters.

Landslides

The landslide on the Haiti-DR border on May 24, 2004 was the result of over 500 mms of precipitation between May 18 and 25th. The La Selle mountain range in Haiti is reported as 90% deforested, reaches 2700 meters in height, and drains into the Soliette River. This event caused a flash flood washing parts of Fonds Verrettes in Haiti 12 kms through the canyon crossing into Jimaní and the Bahoruco mountain range in the Dominican Republic. The Arroyo Blanco stream continued the swath of catastrophic erosion, washing some residents and their belongings into Enriquillo Lake 5 kms downstream. The transnational event killed 237 Haitians, 393 Dominicans and 274 people were reported missing.¹⁸ In addition to landslide hazards above sea level a new oceanography study sponsored by the Spanish government found evidence that off the south coast of the Dominican Republic of an active deformation, the "Muertos Megasplay." The finding means greater vulnerability to large undersea landslides of high seismic danger and, in certain ways, of tsunamis.¹⁹

¹⁵ Manaker et al. (2008) and edit of this section by Dr. Eric Calais, August 2010.

¹⁶ Fay and Lander (2003). See also Cocco (2001).

¹⁷ Mercado-Irizarry and Liu (2006).

¹⁸ Cocco (2004).

¹⁹ *Diario Libre* (2010). See also abstract of study available in Spanish at http://eprints.ucm.es/5880/1/COMUNIC_BATHY2.pdf.

Exposure and Vulnerability

In addition to the exposure of 94.7% of the national population, in 87.2% of the national territory and 95.6% of the GDP to two or more hazards,²⁰ the Dominican Republic's vulnerability to disasters is also linked to its debt burden. The public debt is high at approximately 40.6 percent of GDP (2007 est.). This limits the resources available to provide social protection to the poorest and most vulnerable citizens, and to recover from disasters.

Poverty is therefore a factor that increases vulnerability and more females than males are poor. The Millennium Development Goal (MDG) Monitor indicates that a significant portion of the population is poor and that the country is unlikely to meet its MDG #1 target to reduce poverty. The analysis in the MDG Monitor is that the country is unlikely to meet most of its MDG targets. The Dominican Republic is currently ranked 94 out of 177 on the 2008 Human Development Index. The population living on less than US\$1 per day was 2.8 percent.²¹

The health status of the population influences vulnerability. The major types of infectious diseases affecting the Dominican population were food or waterborne diseases (e.g. bacterial diarrhea, Hepatitis A, and Typhoid Fever); vector borne diseases (Dengue fever and Malaria); and water contact diseases (e.g. Leptospirosis).²²

Vulnerability to floods, storms, hurricanes and earthquakes – as evidenced following the recent January 12 2010 earthquake in Haiti which damaged hundreds of schools throughout the DR coupled with land degradation, unplanned

urban growth in areas unsuitable for development and weak enforcement of building codes and zoning regulations are the main drivers of most of the current vulnerability in the Dominican Republic. Stakeholders across sectors and disciplines have called for the enforcement of existing laws and the application of administrative measures to improve the quality of construction, reduce illegal construction and improve the performance of the engineering community.²³

Climate Change and Global Warming

The Dominican Republic has recently been cited as one of six Caribbean countries in the world's top 40 climate "hot spots" by the Germanwatch Global Climate Change 2009 Risk Index (CRI).

The country was ranked 12 out of 150 countries based on an analysis of weather events between 1998 and 2007. Two factors were cited: the impact of global warming on rising sea levels which increase the risk of storm surges, and secondly the increase in the strength of hurricanes. The 2010 CRI is based on figures from 2008 and is also an analysis of the worldwide data collection on losses caused by weather-related events from 1998 – 2008. In 2008 the Dominican Republic was ranked 72nd for the decade with GDP losses of 7.25%.²⁴ CEPAL (2008) estimates that 170 percent the normal amount of rain fell during Tropical Storm Olga which was attributed to climate change.²⁵

Climate Change models²⁶ have predicted that the Dominican Republic will undergo a warming and drying trend and is expected to endure more

²⁰ GFDRR (2008).

²¹ Dunn (2009).

²² Ibid.

²³ FUNGLODE and CODIA (2005).

²⁴ Harmeling (2009). Table 5.

²⁵ Dunn (2009).

²⁶ Hadley Centre Coupled Model, Version 2 (HADCM2), as reported in Mulligan (2003). Same modeling data as used by the Intergovernmental Panel on Climate Change (IPCC).

frequent heat waves and droughts, rainfalls with increased intensity, and rising sea levels as predicted for the rest of the Caribbean consistent with the projected global median.²⁷ It

is known that inter-annual climate variability of either the Pacific or Atlantic explains a significant amount of the total variance in rainfall in the Caribbean and Central America.²⁸ Probable climate change impacts in the DR include higher temperatures; higher storm intensities and, possibly, more frequent El Niño-Southern Oscillation (ENSO)²⁹ events, exacerbating existing health, social and economic challenges affecting the Dominican Republic.

Changes in sea surface temperature as a result of climate variability could increase the intensity of cyclones and heighten storm surges, which in turn will cause more damaging flood conditions in coastal zones and low lying areas. According

the World Bank's study, "Sea Level Rise and Storm Surges",³⁰ the impact of sea level rise and intensified storm surges in Latin America and the Caribbean will be relatively higher in the Dominican Republic with 17.98% percent of the coastal population exposed and potential losses of coastal GDP projected to exceed 16.94 percent. Furthermore, the inundation risk in the DR from storm surges will cover 100 percent of the coastal wetland.

The Dominican Republic's first National Communication on Climate Change (NCCC) was released in 2003 after two years of combined efforts between several institutions, local experts and members of the international scientific community, under the coordination of the Dominican Republic Secretariat of the Environment and Natural Resources.³¹ The Dominican authorities also corroborate regional and global data with national

studies on various scales confirming a projected increase of 2.6° C in temperature and a decrease in pluvial activity on the order of 10% over the next hundred years. For this reason, the values of potential evaporation and real evapotranspiration will increase, and the total volume of available water in the country will decrease by 28% with respect to the baseline. In this climate scenario, there is an increase in temperature of 4.2° C and a decrease in rainfall of approximately 60% over the next 100 years. Consequently, the total volume of runoff will be reduced by 95% for the year 2100.³²

DISASTER RISK MANAGEMENT FRAMEWORK

The Dominican Republic has developed a comprehensive legal and institutional framework for disaster risk management (DRM). Various laws and decrees establish the relevant framework as well as clarify the mandate and operations of the various agencies as outlined below:

- Law No 257 dated 17 July 1966 established the Office of Civil Defense (Oficina de Defensa Civil), which is the government mechanism responsible for disaster risk management.
- In addition, Decree No. 2045 (GO No 9083 of 5 June 1968) established the Commission of Civil Defense (Comision de la Defensa Civil), which oversees the Office of Civil Defense.
- Decree No 2784 of 6 October 1981 created a National Emergency Plan for the National Commission (G.O. No. 9566 of 15 October 1981).

²⁷ Chen et al. (2008).

²⁸ Giannini et al. (2002).

²⁹ El Niño-Southern Oscillation; commonly referred to as simply El Niño, a global coupled ocean-atmosphere phenomenon.

³⁰ Dasgupta et al. (2009).

³¹ UNDP (2007). See also <http://www.eclac.org/mexico/cambioclimatico/dominicana.html>.

³² Dominican Republic Secretariat of the Environment and Natural Resources (2003).

- Decree No 159 of 13 April 2000 modified Article No 3 & 4 of Decree No 2784.
- Decree No. 360 of 14 March 2001 created the Centre for Emergency Operations.
- Decree No 361 of 14 March 2001 named permanent representatives of institutions for the National Emergency Commission.
- Decree 487 of 1 May 2001 established the status of the National Emergency Commission as part of the Civil Defense Agency.
- Decree No. 715 of 5 July 2001 created the National Office for the Evaluation of Seismic Evaluation and Vulnerability of Infrastructure and Buildings.
- Disaster Risk Management Law 147 of 22 September 2002³³ created an Emergency Budget and the National Council of Disaster Prevention, Mitigation and Response.³⁴
- Decree No 932 of 13 September 2003 approved the regulations to apply Law No 147-02 for the Emergency Budget
- Decree No 1080 of 24 September 2003 declared 22 September of each year as the day to promote disaster prevention and emergency response.³⁵

The Office of Civil Defense, the National Emergency Plan and National System of Prevention, Mitigation and Response of the Dominican Republic. The Office of Civil Defense (*Oficina de Defensa Civil, OCD*) was established in 1966 under Ley No. 257-66 and Decree No 1525. These laws give OCD responsibility for civil protection and it is therefore one of the main agencies responsible for national emergency response initiatives. The Office is directly responsible for managing shelters and the coordination of

volunteers during a disaster. It is also the agency mainly responsible for humanitarian assistance during a disaster. The Office in 1981 developed a National Emergency Plan. In 2002 a legal framework was established to integrate the general principles and definitions of risk reduction policy as well as the National System of Prevention, Mitigation and Response (*Sistema Nacional de Prevención, Mitigación y Respuesta, SNPMP*).³⁶

The National Council of Disaster Prevention, Mitigation and Response (NCDPMR) was created by Disaster Risk Management Law 147 of 22 September 2002. It serves as the lead of all disaster risk management efforts in the country. The law separates the national institutions subject to the NCDPMR based on each one's nature, be it prevention, mitigation or response.³⁷ The Congress may declare that a state of national emergency exists. If the Congress were not assembled, the President of the Republic may dictate the same disposition.³⁸

The National Emergency Commission (Comisión Nacional de Emergencia, CNE) of the Dominican Republic. The CNE is comprised of the Technical Committee for Disaster Prevention and Mitigation (TCDPM), the Emergency Operations Center (EOC), the regional, provincial and municipal Disaster Prevention, Mitigation and Response Committees, and a Consultation Team. It operates under the Office of the Presidency of the Dominican Republic. It is an institutional coordinating body that operates under Ley 147-02. The CNE speaks on the behalf of the government during disasters and is responsible for planning, coordinating and managing activities related to protection, rescue, and rehabilitation. It also administers in-kind contributions of donors during disasters including

³³ OAS-DSD (2002a).

³⁴ UN ISDR and partners (2010).

³⁵ Dunn (2009).

³⁶ Ibid.

³⁷ UN ISDR and partners (2010).

³⁸ OAS-DSD (2002b).

international aid, in coordination with the external relations Secretariat.³⁹

The Emergency Operations Center (EOC) is located in the Office of Civil Defense and coordinates humanitarian action as well as prevention, preparedness and rehabilitation programs. It serves as the focal point for the receipt and dissemination of information on emergencies to the public, the media, and other emergency response stakeholders. It operates under Law 257 and its primary aim is to integrate and house key institutions involved in national emergency response and preparedness such as the emergency services. These include the army, police, civil defense, the Red Cross and other public institutions. The EOC also seeks to ensure coordination and coherence prior to during and after a disaster.⁴⁰ The EOC is the designated focal point for the Hyogo Framework for Action (HFA).⁴¹

The National Technical Committee (NTC) was activated in 2008 and recently 6 provincial and 6 municipal committees have been established. The NTC serves as an advisory function and coordinates risk reduction efforts among other responsibilities such as updating the National Disaster Risk Management Plan and the National Emergency Plan. It has played an important role in multi-sector participation beginning with its 22 member institutions. The NTC has identified constitutional elements for the Disaster Risk Management Strategy, secured budget to finance its activities, and established internal controls to ensure proper administration. As an example of the technical contributions, the NTC has assisted several municipalities by creating a guide for municipal emergency planning.⁴²

The National Disaster Risk Reduction Platform is in process. The platform's development and efforts are guided by the National Technical Committee (National Platform) which is made up of technical personnel from 22 agencies, designated as official and permanent representatives responsible for updating the National Risk Management Plan and the National Emergencies Plan.⁴³

The Dominican Republic is active in several regional and international forums for Disaster Risk Management, including participating in the Central American Coordination Center for Natural Disaster Prevention (CEPRENAC) and the United Nations International Strategy for Risk Reduction (UN ISDR).

ACTIVITIES UNDER THE HYOGO FRAMEWORK FOR ACTION

The Dominican Republic was the first country to be assessed in May 2010 by the United Nations International Strategy for Disaster Reduction (UN ISDR) to examine the country's efforts in implementing the "Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters". This section includes the reported challenges, accomplishments and next steps provided in the Government of the Dominican Republic's 2009 report: National progress report on the implementation of the Hyogo Framework for Action 2007-2009⁴⁴ together with recommendations from the UN ISDR report⁴⁵ toward achieving the goals set forth in each of the five HFA priorities.

³⁹ Dunn (2009).

⁴⁰ Ibid.

⁴¹ PreventionWeb (2010d).

⁴² UN ISDR and partners (2010).

⁴³ UN ISDR (2010a).

⁴⁴ Luna Paulino (2009).

⁴⁵ UN ISDR and partners (2010).

**Hyogo Framework for Action (HFA)
Priority #1: Policy, institutional capacity,
and consensus building for disaster risk
management**

Challenges:

DRM is not included in the National Development Plan or in the planning of the NEC member institutions. DRM efforts and responsibilities are centralized, underfunded, and understaffed. The National Disaster Prevention, Mitigation and Response Fund does not have an established implementation mechanism that permits the financing of DRM activities at the national, provincial and local levels.

The international and national legal frameworks for DRM are not well known at the national, provincial or municipal levels.

While all provinces and municipalities must establish their Disaster Prevention, Mitigation and Response Committees, only six have done so and these efforts were dependent upon international cooperation. All of them need to develop and implement their own emergency and DRM plans.

Accomplishments:

There is institutional commitment comprised of the Disaster Risk Management Law 147-02 which adopts a National Disaster Risk Management Policy and creates a National System for Disaster Prevention, Mitigation and Response. The law contemplates various levels of coordination such as:

1. The National Council of Disaster Prevention, Mitigation and Response (NCDPMR)
2. The National Emergency Commission (NEC)
 - a. The Technical Risk Prevention and Mitigation Committee (TRPMC)

- b. The Emergency Operations Center (EOC)
 - c. The National Emergency Operations Committee
 - d. Consultation Teams
3. Regional, Provincial and Municipal Disaster Prevention, Mitigation and Response Committees.

Of these, the National Council, the NEC, and the EOC exist along with some of the consultation teams. Likewise, the Technical Committee, 6 Provincial, and 6 Municipal Committees have been established. The National Council meets twice a year and in the event of a significant disaster. The NEC meets on a monthly basis and whenever deemed necessary.

There is limited human and technical capacity within the public institutions to consider risk within the project design and development investment decision-making.

Next steps include:

Seek political, institutional and financial commitment for DRM at all levels.

Promote the establishment of a permanent DRM unit to coordinate the work of the Technical Committee and regularly update the National Disaster Risk Management Plan.

Pursue the financial and technical support to enable the provinces and municipalities to establish their Disaster Prevention, Mitigation and Response Committees as well as develop and implement their own emergency and DRM plans.

Create and enforce a zoning law and integrate DRM criteria into the building codes and regulations.

The UN ISDR report recommendations include:

Integrate the achievements and efforts of the National System for Disaster Prevention, Mitigation and Response into the National Development Strategy (NDS).

Develop a National Disaster Management Plan, guided by the NDS.

Secure technical, financial and political support to build capacity at all levels to integrate DRM.

Provide DRM policy guidelines, instruments and tools at the unique region, provincial and municipal levels within development plans and policies. The primary tools to apply are the Environmental Impact Evaluations (EIEs) and the Risk Assessments (RAs).

Re-launch the process of the Dominican Republic National Disaster Risk Reduction Platform.

HFA Priority #2: Disaster risk assessment and monitoring

Challenges:

There are few indications of advancement at the planning or policy level.

Stakeholders are either unaware of or unaccustomed to using the information available.

Idiomatic and cultural differences inhibit regional cooperation.

Accomplishments:

Information is available regarding evaluations of the National Disaster Prevention, Mitigation and Response system. Hazard and risk maps for some areas of the country are available.

All information systems in the country have been identified. There is a hydrometeorological early warning system technical committee. Inter-institutional agreements exist for the use of new tools and information as well as efforts with companies to install early warning systems using telecommunications networks.

International organizations have supported some cross-border programs and training workshops have been conducted to build the capacity of local institutions.

Next steps include:

Seek political support to promote and strengthen the National Integrated Information system as established in Article 19 of Law 147-02. Strengthen inter-institutional connections to develop a joint vision and enable an efficient use of risk data at all levels.

Promote investment for the systematic generation, interpretation, management, and dissemination of technical data.

The UN ISDR report recommendations include:

Prepare and prioritize a list in terms of information gathering; studies to be developed; hazard, risk and vulnerability assessments for city governments in high-risk areas in order to integrate them into the strategic planning process.

Articulate DRM in the development of the National Disaster Risk Management Information System. This includes the initiatives and projects related to the generation of disaster risk cartography (such as hazard, vulnerability, risk, and capacity maps).

Address the equipment, technology, communication and technical needs to improve poor service regions, and ensure

the maintenance and sustainability of the monitoring networks and systems. This includes improvements needed to enable the local, most vulnerable populations to have access to early alerts related to flash floods, floods, and landslides.

Establish a high-level Haitian-Dominican bi-national risk identification working group from an island-wide perspective.

HFA Priority #3: Use of knowledge, innovation, and education to build a culture of safety and resilience at all levels

Challenges:

There is little institutional commitment and systematic policies are lacking.

Governmental institutions have not arrived at a consensus regarding the systematic use of indicators.

Specific information is scant at the local level.

Communication efforts are fragmented.

Accomplishments:

The Public Information Consultation Team was established and ascribed to the NEC to develop strategies.

DRM laws, regulations, national and local evaluations, results from completed projects, case studies, risk maps, and other efforts have been documented and disseminated.

Generic disaster information is available, particularly for hurricanes. Emergency institutions have materials about the disaster response phase. Some

informal didactic materials are available and didactic manuals under development include DRM concepts.

The Autonomous University of Santo Domingo has a DRM unit and plans to do research. This unit participates in regional exercises to identify a system of DRM indicators.

Next steps include:

Seek support and commitment for the development and implementation of the NEC's communication strategy and annual activities including public outreach and awareness-raising as well as the development and dissemination of orientation and educational materials.

Integrate DRM as an overarching theme in education. Modify university curricula to introduce disaster risk reduction.

Promote the development of multi-hazard assessments and cost-benefit analyses.

Develop a simple and unique system of indicators, building on the work and experiences in the Dominican Republic.

The UN ISDR report recommendations include:

Prepare an inventory of the available disaster risk management information and materials among the various ministries, governmental and non-governmental partners, and others. Promote events to exchange and disseminate information.

Define a National Communication Strategy (NCS) and information to address DRM. Include key messaging for the population through radio and television spots among other media. Integrate the communication networks and mass media to achieve a wide dissemination of the topic to the general public.

Systematize successful experiences that can be replicated at the regional, provincial, municipal, and community levels.

Develop, adapt, and promote the use of a system of vulnerability and risk indicators, building on the successful experiences of some of the country's academic institutions.

HFA Priority #4: Reduction of the underlying risk factors (reduction of exposure and vulnerability and increase of resilience)

Challenges:

There is little institutional commitment for plans and policies.

The integration of climate change in policy development to contribute to risk reduction is a challenging effort.

Accomplishments:

Some procedures for conducting damage assessments have been adopted.

Next steps include:

Promote the adoption of policies for post-disaster recovery and rehabilitation, integrating criteria for DRM and vulnerability reduction.

Create tools to integrate DRM as a cross-cutting component of planning as well as to implement development with a DRM approach.

Update and enforce existing building codes and regulations integrating DRM.

Promote the development and application of a land use policy as well as the relocation of vulnerable communities out of high-risk areas.

Develop and implement pilot projects to demonstrate the validity of land use planning at the municipal level.

The UN ISDR report recommendations include:

Integrate disaster risk management into the environmental plans and policies in a way that permits the adequate management of ecosystems and natural resources. An example would be to include DRM in the reforestation plan, contributing to flood control, management of sedimentation processes and ecosystem degradation due to hillside agriculture.

Develop a National Land Zoning Plan which integrates the risk variable to guide land use and the development of criteria for relocating high-risk communities. Provide the municipalities with the necessary human, financial, and technical resources, as well as appropriate tools, in order to implement the zoning and urban planning ordinances.

Foster the development of DRM policies, financing, and mechanisms for sectors that are particularly relevant to social and productive development, such as environment, public works, tourism, agriculture and others. This will require the creation and capacity-building of sector-specific DRM committees, each with its roles and responsibilities.

Develop strategies, policies and plans for environmental and natural resource management with an island-wide focus (DR and Haiti).

Improve the codes and technical standards for public infrastructure, procedures for siting and design studies, the evaluation of construction quality and maintenance, and instruments to guarantee the legal responsibility of contractors.

HFA Priority #5: Disaster preparedness, recovery, and reconstruction at national, regional, and local levels

Challenges:

There is little technical and human capacity for disaster response and recovery at the local level.

There is no procedure to structure access to the National Disaster Prevention, Mitigation and Response Fund.

Information exchange during emergency and disaster situations is limited.

Accomplishments:

There is institutional commitment to disaster risk management.

There are some national structures that implement DRM policies.

Some training has been completed to prepare personnel.

Plans of various types are prepared, but not at all levels. Likewise, drills and other activities have been carried out in some communities.

A National Disaster Prevention, Mitigation and Response Fund was established (by Law 147-02) to support risk reduction measures and to provide recovery assistance to populations affected by disasters.

There are procedures for the EOC to manage information exchange during emergency and disaster situations, as well as to conduct ex-post assessments.

Next steps include:

Provide equipment and training to response institutions.

Promote the establishment of provincial and municipal disaster prevention, mitigation, and response committees.

Integrate communities into the development of their own plans and DRM drills and exercises.

Develop mechanisms to structure access to the National Disaster Prevention, Mitigation and Response Fund.

Strengthen the mechanisms as well as the technical and institutional capacities to improve the exchange of relevant information during emergency and disaster situations.

The UN ISDR report recommendations include:

Articulate and improve, in practice, the roles and areas of coordination between the NEC and the EOC for disaster preparedness and response.

Decentralize and strengthen disaster preparedness processes at the provincial, municipal and local levels to comply with the objectives of the law through feasible and concrete efforts.

Design and apply a national system of indicators of disaster preparedness in order to measure the progress during the implementation of related work.

Train decision-makers and political leaders regarding their duties in terms of preparedness and response under the current legislation.

Facilitate opportunities, and improve articulation, for the participation of the civil society, private sector, NGOs, communities, and international cooperation in disaster preparedness and response activities.

Identify resources within the national budget to allocate to the National Disaster Prevention, Mitigation and Response Fund.

Develop mechanisms that guarantee the sustainability and continuity of preparedness and response projects at all levels through sector-specific plans.

ADDITIONAL OBSERVATIONS

The Dominican Government is very interested in financing risk management cooperation projects.

International cooperation for DRM in the DR is financed with support from the Delegation of the European Commission, ECHO, AECID, IADB, and the World Bank. This includes the recent establishment of the DRM Cooperation Platform, training members of the National Technical Committee, and initiatives related to the HFA priorities.

AECID is financing the Dominican Government's actions according to the National DRM Plan through the National Disaster Prevention, Mitigation and Response Fund (NDPMRF). The related financed initiatives include:

- Formulation of the National DRM Plan;
- Establishment and launch of the NDPMRF;
- Creation of DRM units in institutions and municipalities, and implementation of coordination mechanisms for members of the National System;
- Establishment, support and preparedness of regional, provincial, municipal, and local networks and

- Prevention, Mitigation and Response Committees;
- Integration of DRM into public investments; and
- DRM methodology creation and approval.

The IADB is financing a project through the General Directorate for Land Use Planning and Development (DGODT) that has established DRM units in five pilot municipalities, integrated the zoning and land use perspective in the work of the DRM committees and education sector, and created a unit responsible for integrating DRM criteria into public investment processes and development planning. The IADB has financed an analysis of how to fund, and insure, DRM in a coordinated and structured manner in spite of the projected national budget deficit increase. In light of the projected average annual emergency expenses of approximately US\$400 million, the IADB has created a US\$100 million Contingency Credit Facility (CCF) for Natural Disaster Emergencies in the Dominican Republic (GN-2502).⁴⁶ The CCF is innovative in that the government can access the funds in advance of a natural disaster for DRM purposes.

The UN ISDR report emphasized the crucial role of the international cooperation in enabling DRM efforts and initiatives in the DR. It states that while, for example, the AECID has financed the startup of the NDPMRF, the GoDR has not yet specified how budget will be allocated to ensure its sustainability. The report further observes that the National Calamity Fund was established by Law 147-02 and is funded with 1% of the Government's national net income. However, the mission could not document its recent use in order to determine eligibility requirements for the new Fund.

Conclusions and Expected Tangible Outputs and Outcomes in DRM

The Dominican Republic is confronted with the challenge of strengthening its existing institutional capacities for disaster risk

⁴⁶ Collich et al. (2010).

management (DRM) mandated by Disaster Risk Management Law 147 of September 22, 2002 and its regulations, and recommended best practices within the Hyogo Framework for Action.

It is expected that the Dominican Republic will continue enhancing its role within regional DRM organizations, developing synergies that can strengthen the country's natural disaster preparedness and resilience.

International cooperation has played a major role during natural catastrophes in the Dominican Republic. The same holds true for DRM efforts, especially at the provincial, municipal, local,

and community levels. The Dominican Republic is developing mechanisms both for risk management and reduction, to complement those available for response. The country has been advised to prioritize efforts to develop risk transfer mechanisms to protect the country's public infrastructure and the nation's social and economic networks.

The World Bank should continue supporting the Dominican government's efforts to develop an effective legal and institutional framework that incorporates DRM as a cross-cutting theme into the national planning process and within critical sectors and various levels of government administration.

KEY DONOR ENGAGEMENTS

Existing Projects with Donors and International Financial Institutions	Funding Agency / International Partners	Allocated Budget and Period (US\$)	HFA Activity Area(s)
Contingency Credit Facility (CCF)	IADB	100 million	4, 5
National DRM Plan and National Disaster Prevention, Mitigation and Response Fund	Government of Spain (AECID)	4 million Euros 2008-2012	4, 5
Disaster Prevention and Preparedness (Prevención y preparación a desastres, PPD) ⁴⁷	UNDP, through the Civil Defense, the Ministry of Environment and Natural Resources (SEMARN), the Ministry of Public Health and Social Assistance, and the Dominican Red Cross	2,979,706.16 2006-2010	1, 2, 3, 4, 5
DRM in land use planning	IADB with Dept. for Land Use Planning and Development (DGODT), and the Ministries of the Economy, Planning and Development	5 million (IADB) and RD\$680,000 (DGODT) 2008-2011	1, 4
Resiliencia – Strengthening Disaster Management Capacity of Vulnerable Communities in Azua Province, DR	USAID through Plan International ⁴⁸	447,953 2009-2011	3, 5
Disaster Risk Reduction in Sabana Yegua Project, DR	USAID through Catholic Relief Services (CRS) ⁴⁹	225,415 2009-2011	3, 5
Strengthening community-based disaster risk reduction in south-western rural Barahona and Pedernales, DR	ECHO through Plan International	975,032 2009-2011	1, 2, 3, 5
DRM in the San Juan and Elias Piña Provinces, DR	AECID through Plan International	839,744 2009-2011	2, 3, 4, 5
Strengthening the implementation of the disaster management strategy of <i>Plan Internacional</i> , DR	MOFA (Government of Finland)	81,077 2010	5

* Amount unavailable

⁴⁷ UNDP (2009a).

⁴⁸ USAID/OFDA (2009).

⁴⁹ Ibid.



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