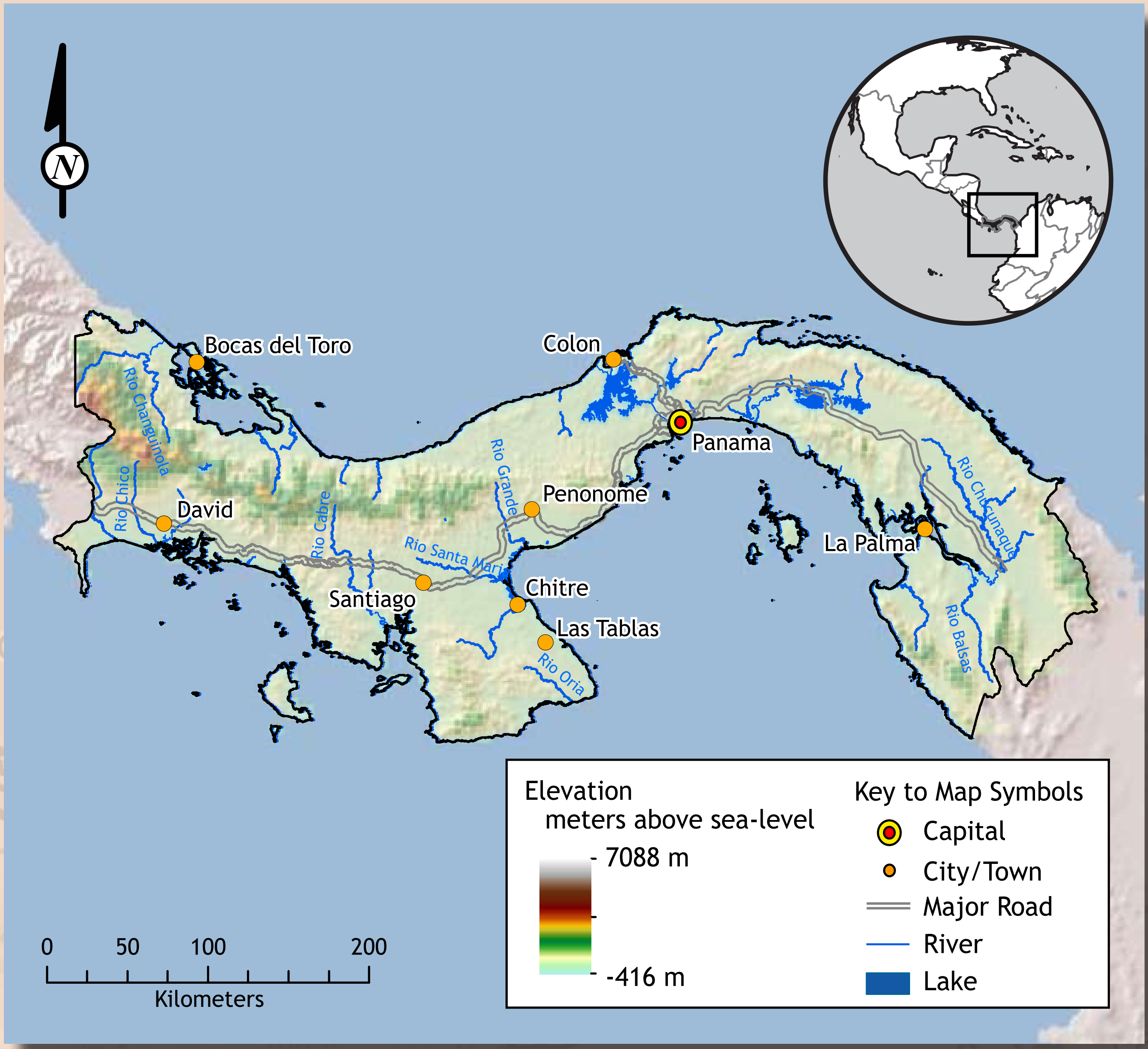
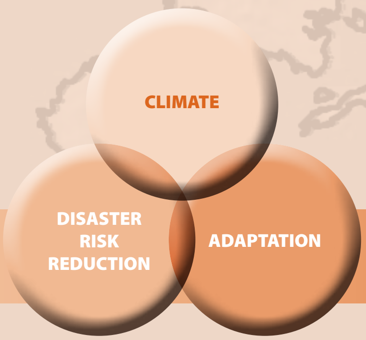


Vulnerability, Risk Reduction, and Adaptation to Climate Change



PANAMA

GFDRR
Global Facility for Disaster Reduction and Recovery

Climate Change Team ENV

Country Overview

The Republic of Panama is home to 3.5 million people, a world-famous canal, and a modern financial sector that contributes to the country's strong economic performance. It is classified as a developing country, with a per capita income GDP of US $7155 (2009).[1] At the same time, despite boasting the highest per capita income in Central America, Panama has a high level of rural poverty in; in 2003, 54% of non-indigenous rural residents were poor, and 22% were extremely poor. Barriers to poverty alleviation include limited economic opportunities, a deteriorated natural resource base, an inequitable land tenure system, lack of access to microfinance and structural constraints that impede competition in the agriculture sector.[2]

Widespread poverty and inequality have negative spillover effects on the environment. Panama is considered to be one of the most biologically diverse countries in the world, and more than 12% of its landmass is protected. Nonetheless, poverty pressures have driven many to exploit the natural resources of the Mesoamerican Biological Corridor in harmful ways.[3] In addition, deforestation is a growing concern, as forests cover 40% of Panama's territory.[4]

Panama ranks 14th among countries most exposed to multiple hazards based on land area. Fifteen percent of its total area and 12.5% of its total population are vulnerable to two or more hazards.[5] In addition, Panama ranks 35th among countries with the highest percentage of total population considered at a relatively high mortality risk from multiple hazards. Climate change threatens to increase vulnerability of both human and ecological system in Panama. The agriculture, water resources, forestry, coastal zone management, and health sectors will be particularly impacted. More frequent and intense storms, floods, and droughts are causing huge economic losses and affecting the livelihoods of the poorest and most marginalized members of society in particular. Vulnerable areas include the San Blas Archipelago, coastal areas of Bocas del Toro, Colón, and western areas of Panama Province.

Priority Adaptation Measures

According to Panama's First National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), a number of the country's sectors are vulnerable to climate change and variability and extensive actions will be needed to improve their resilience to climate change. Prioritized activities include:

Key Sectors
Agriculture
Ecosystems
Water Resources
Coastal Zones

➡ Agriculture and Food Security

- Align educational & outreach activities to account for future climate risks
- Enhance irrigation efficiency and/or expand irrigation

[1] World Bank Data portal.
[2] World Bank. 2007. Country Partnership Strategy for the Republic of Panama.
[3] Ibid.
[4] http://www.ruralpovertyportal.org/web/guest/country/geography/tags/panama
[5] Dilley et al. (2005).

- Promote agricultural research and transfer of technology
- Develop new crop varieties resistant to climate variability
- Develop early warning systems and disaster preparedness
- Improve pest and disease forecast and control

➡ Water Resources

- Improve water supply, e.g. by using groundwater, building reservoirs, improving or stabilizing watershed management, desalination
- Reduce water demands, e.g. by increasing efficiency, reducing water losses, water recycling, changing irrigation practices
- Improve or develop water management structures and practices
- Reconsider and in some cases change system operating rules, e.g. pricing policies, legislation

➡ Coastal Zones and Marine Ecosystems

- Develop Integrated Coastal Zone Management
- Develop planning/new investment requirements

Climate Baseline and Climate Future

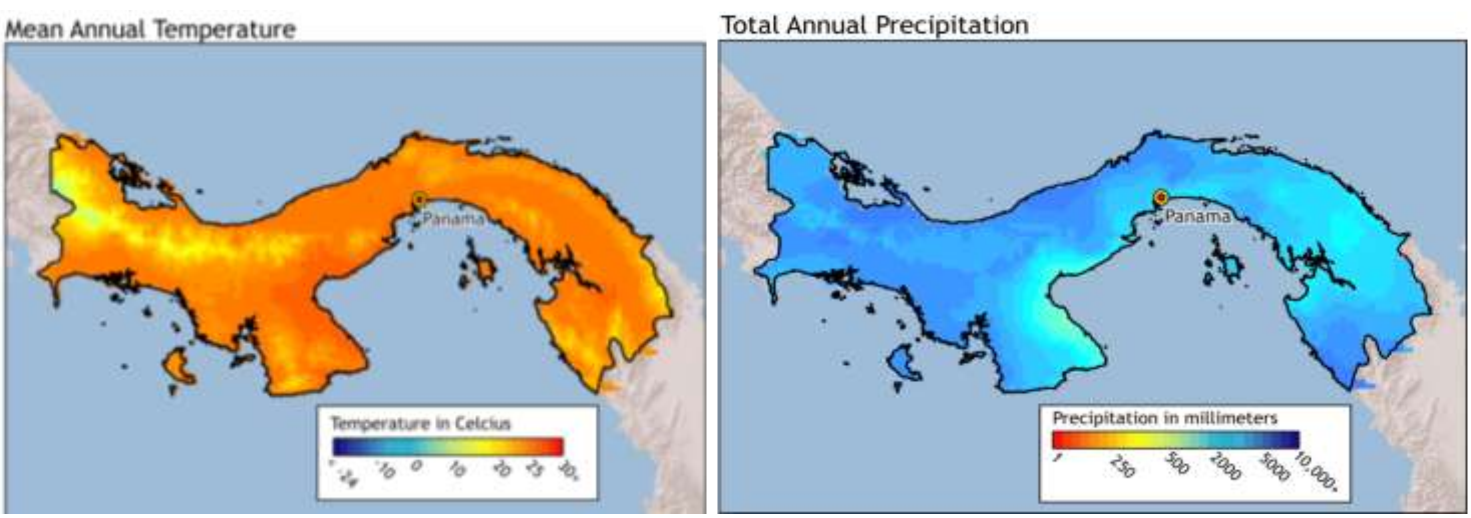


Figure 1: Climate baseline for Panama[6]

[6] WorldClim 1960-1990 Averages. Robert J. Humans, Susan Cameron, and Juan Parra. At Museum of Vertebrate Zoology, University of Califonia, Berkely, in collaboration with Peter Jones, and Andrew Jarvis (CIAT), and with Karen Richardon (Rainforest CRC). www.worldclim.org/current

Climate Baseline

Panama has a hot and humid, tropical climate, with a long rainy season from May to January and a short dry season from January to May. The rainy season is between May and December and brings an estimated 250-700 millimeters of rainfall across the country.[7] Average annual temperature for the country is 27°C and average total rainfall is 1900 mm annually. However, these statistics vary by region and altitude. Maximum mean temperatures across the country oscillate between 31.1°C and 34.5°C. Minimum temperature ranges from 20.1°C and 22.4°C. Occasional severe storms and forest fires in the Darien Gap are common.

Major Climate Processes	Impacts on Climate
Tropical cyclones El Niño/La Niña Sea surface temperatures	*Drive summer rainfall (June-September)* *Droughts in the south, flooding in the north* *Regulate temperatures*

Climate variability in Panama is driven mainly by the ENSO/El Niño-La Niña events, tropical cyclones, and sea surface temperatures.

Recent Climate Trends

According to historical data, maximum accumulated precipitation in the month of December is about 450 mm for the Republic of Panama, in particular in the provinces of Colón, Coclé, and Comarca Nogöbe Bublé. However, in December 2010 the accumulated precipitation reached levels above 500 mm, with a maximum of 1,000 mm in the provinces of Panamá, Colón, Darién, Comarca Kuna Yala, and Comarca Emberá.

Climate Future

The climate science community sources a suite of models to inform decision makers on future climate. Several comprehensive reviews along with GCMs, RCMs (Regional Climate Models), downscaling techniques (both empirical and statistical), and several comprehensive reviews provide information on the subject. The primary sources of information about future climate are GCMs. They comprise simplified but systematically rigorous interacting mathematical descriptions of important physical and chemical processes governing climate, including the role of the atmosphere, land, oceans, and biological processes. The following insights into a changing climate are derived for the Central and South American region as a whole, from a suite of GCMs used by the Intergovernmental Panel on Climate Change[8,9] as well as downscaled analysis using the PRECIS RCM (and the Hadley CM3 model) as explored by CATHALAC.[10]

[7] Ibid
[8] World Bank's Climate Change Knowledge Portal
[9] Magrin et al., 2007. Latin America. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the IPCC
[10] Capacity Building for State II Adaptation to Climate Change in Central America, Mexico and Cuba. 2008. Cathalac, UNDP, GEF

- Major climate trends were evaluated up to 2080 under two scenarios, A2 and B2, for both temperature and precipitation. Notably, results showed a greater increase in regard to mean annual precipitation under the A2 scenario. In addition, precipitation showed an 80% overall increase by 2080 (Figures 2-4). Precipitation could increase by 60%-70% around January, April, and May. The number of extreme precipitation events is expected to decrease by 2080.

- Dry season temperatures are projected to increase between 0.4°C and 1.1°C by 2020, 1.0°C and 3°C by 2050, and 1.0°C and 5.0°C by 2080.

- It is not possible yet to get a clear picture of annual precipitation change due to large model uncertainties. GCMs project changes in dry season rainfall from -7% to +7% by 2020, -12% to +5% by 2050 and -20% to +9% by 2080.[11] What is clear, however, is that future climate will increase variability and intensity of extreme events. Under one particular downscaling study (PRECIS), extreme precipitation events (greater than 40 mm per day) are expected to increase by as much as half under the A2 emissions scenario[12].

- Increase in sea level rise might reach 35 cm by the end of this century.[13]

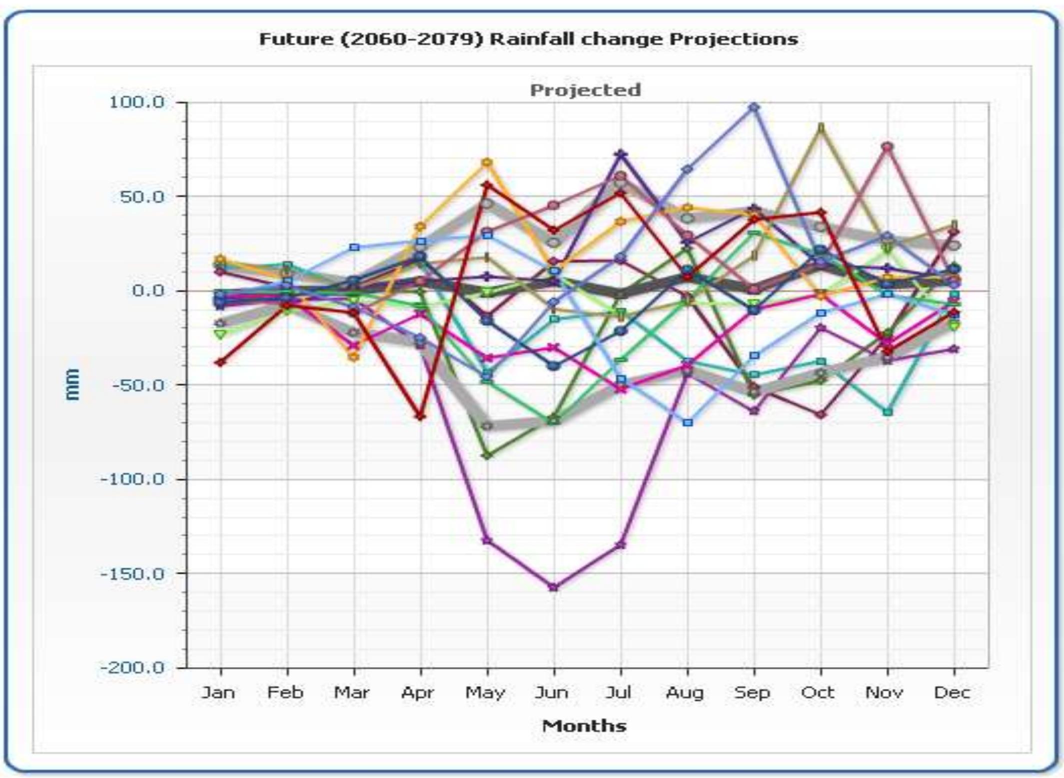


Figure 2: Projected changes in rainfall in central Panama from the control period of 1980-1999 to 2040-2060 across 15 global circulation models[14]

[11] Disaster Risk Management Panama Program
[12] Capacity Building for State II Adaptation to Climate Change in Central America, Mexico and Cuba. 2008. Cathalac, UNDP, GEF
[13] Ibid note 10.
[14] World Bank Climate Change Knowledge Portal

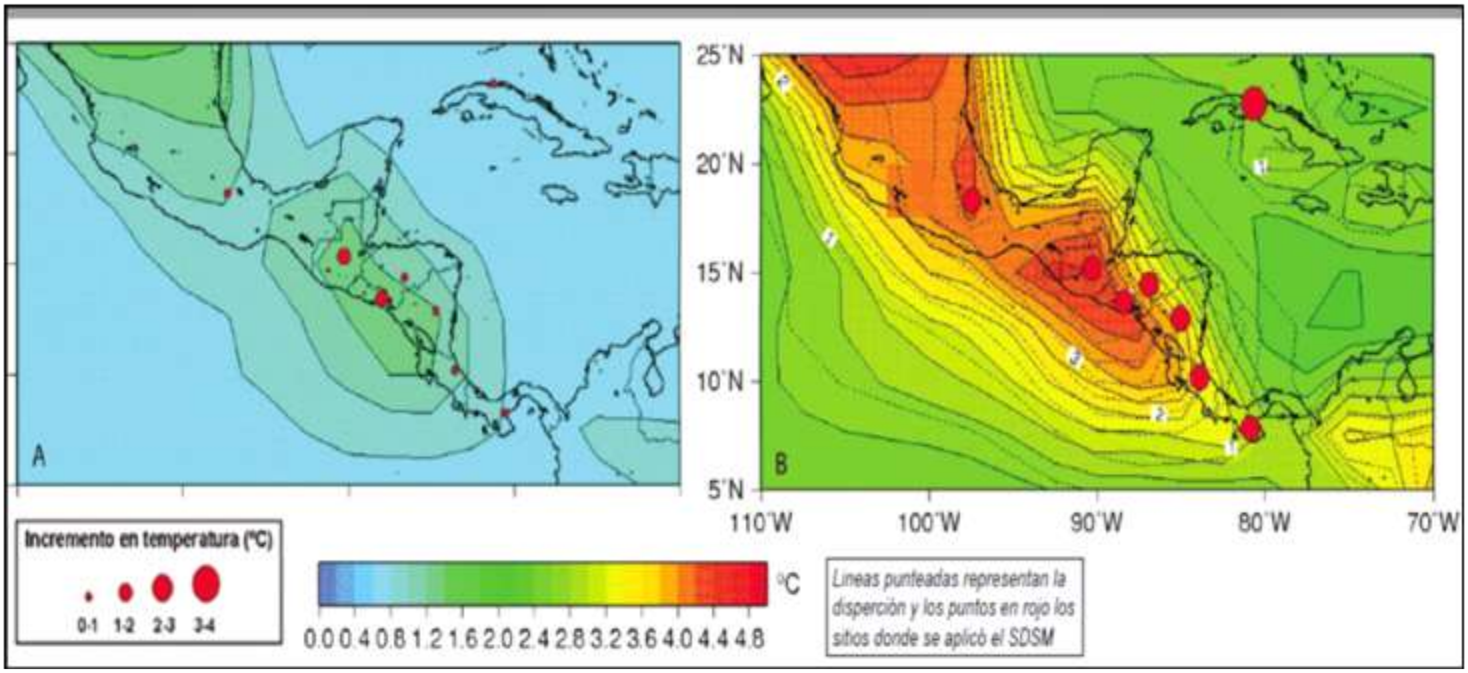


Figure 3: Projected mean temperatures across Central America using the PRECIS regional climate model[15]

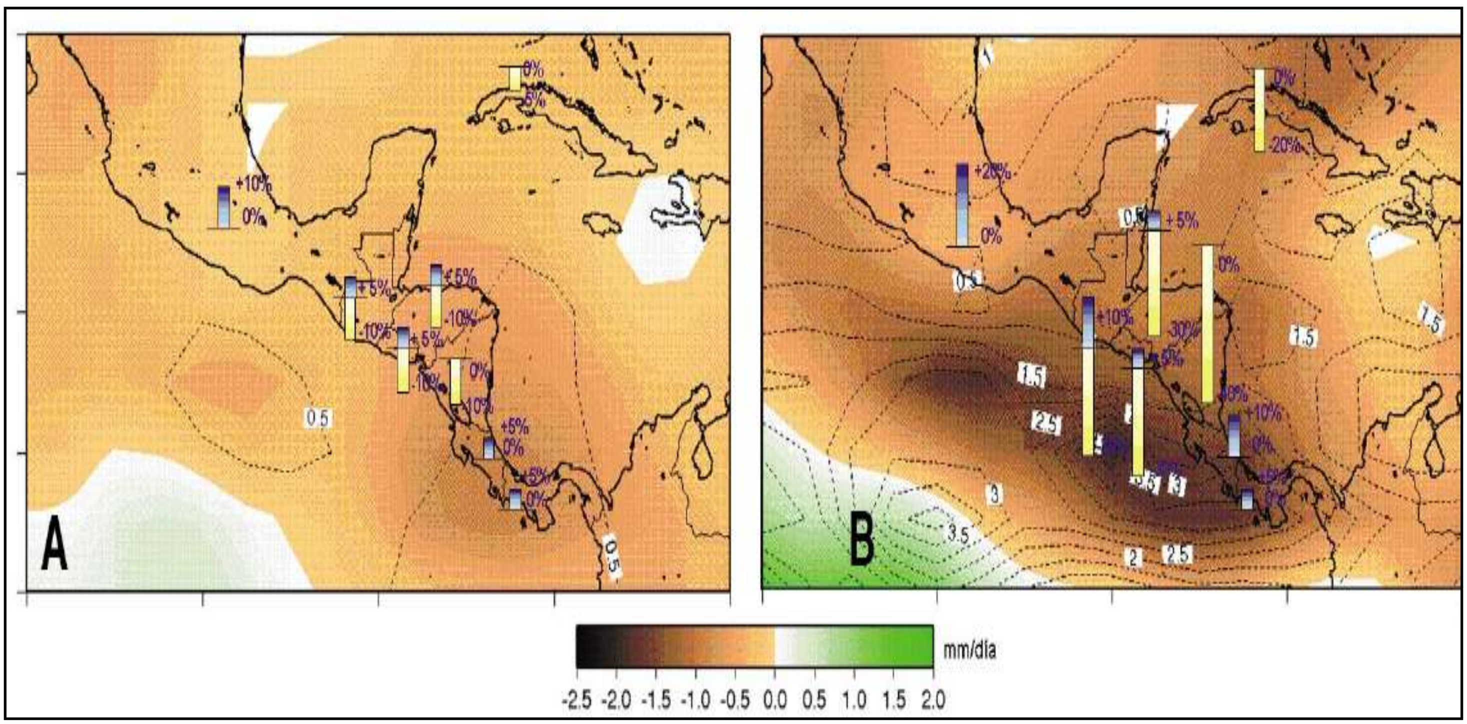


Figure 4: Projected change in daily precipitation from the PRECIS regional climate model: blue bar indicates positive change, yellow bar a negative change in A) 2020 and B) 2080

[15] Ibid.

Secondary impacts from the above changes in climate include, among others:

- Increased incidence and intensity of crop failure
- Increased intensity of heat stress on crop production and vulnerable population
- Loss of biodiversity and forests
- Reduced water quality and quantity
- Increased incidence of climate-related human health impacts

CLIMATE CHANGE IMPACTS ON NATURAL HAZARD VULNERABILITY

The occurrence of climate-related disasters in Latin America has already increased by a factor of 2.4 since 1970.[16] Panama experiences a series of extreme weather events including intense and protracted rainfalls, windstorms, floods, droughts, wildfires, earthquakes, landslides, tropical cyclones, tsunamis, and ENSO/El Niño-La Niña events. Between 1982 and 2008, Panama was struck by 32 natural disaster events, with total economic damages totaling an estimated US $86 million. In addition, loss of human life during these events totaled 249.[17]

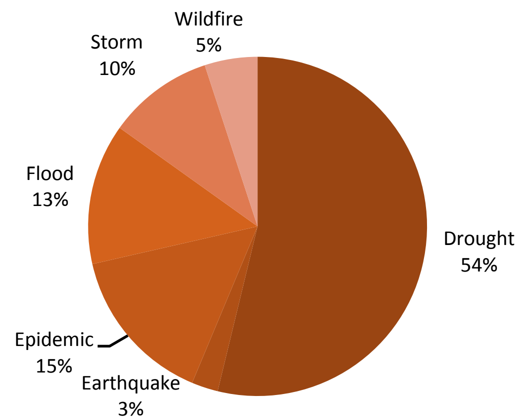


Figure 5: Average distribution of major natural hazards in Panama

Source: EM-DAT- Source of data: "EM-DAT: The OFDA/ CRED International Disaster Database, Université Catholique de Louvain,

- **Droughts**: Drought events are exacerbated by the El Niño/ La Niña phenomenon. There are several areas identified as critical and prone to soil degradation and recurrent droughts: el Arco Seco, la Sabana Veraguense, el Corregimiento de Cerro Punta, and la Comarca Ngöbe Buglé. In 1999, famines hit Panama due to El Niño-related water shortages.[18]
- **Floods**: Between 2000 and 2006, floods had the highest human and economic impact in Panama – 62,678 people were affected by floods (8 events) with the cost of damages reaching US $8.8 million.[19] The multitude of floods affecting the country in the last decade has led to significant problems for the agricultural sector in Panama. The floods of October 1995 destroyed 19,460 hectares of cropland which remained inundated in the provinces of Panama and Los Santos. The total losses equaled US $700,000.[20]

[16] Magrin et al., 2007. Latin America. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the IPCC
[17] DRM Program PANAMA
[18] Moreno, 2006. Climate change and human health in Latin America: drivers, effects, and policies, Regional Environmental Change 6(3), 157-164
[19] http://www.emdat.be/Database/CountryProfile/countryprofile.php?disgroup=natural&country=pan&period=1999$2008
[20] http://www.anam.gob.pa/cambio%20climatico/comunicaciones_nacionales.htm

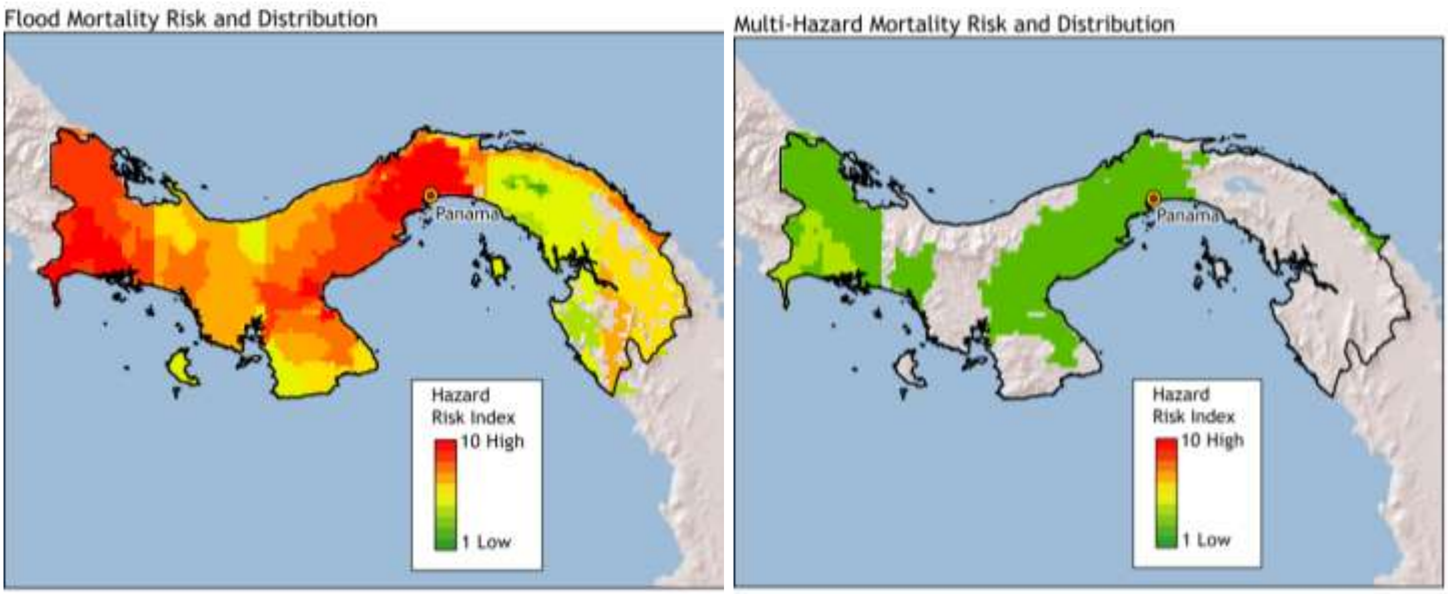


Figure 5: Exposure to climate-related hazards across Panama[21]

Implications for DRM

- Given the expected variability in precipitation, it is crucial to improve water storage capacity to utilize excess water from wet years.
- Increased periods of high temperatures might produce recurrent heat waves that could create severe health impacts, including the proliferation of diverse pathogens, increased dehydration, and other respiratory diseases.
- After 2015 the threat of climatic variability begins to be the principle driving force behind the increased tendency for extreme events. This would require integrated assessments and development planning that link disaster risk planning and climate change adaptation, in particular for food security, energy access, and sustainable development.
- The poorest populations, including vulnerable indigenous populations, will not, and indeed cannot, adapt if this will require looking beyond their immediate food security needs. The potential impacts of climate change on Panama's most vulnerable populations should be prioritized.

[21] UNEP Global Risk Identification Program (GRIP) www.gripweb.org

PROJECTED SECTOR IMPACTS AND FUTURE RISKS

AGRICULTURE

Around 30% of Panama's land is used for agriculture (23% for pasture and 7% for cultivation), with forestry occupying another 58% of the country.[22] The agriculture sector is an important contributor to the Panamanian economy; in 2005 this sector accounted for 4.4% of Panama's GDP and 18% of total employment.[23] Primary export crops include sugar cane, bananas, coffee, tobacco, and fruit. At the same time, rice, beans and maize are mostly grown for the domestic market.

The last La Niña events have been characterized by intense and continuous precipitation that has produced intense flooding in rural areas. La Niña's impacts on agriculture were quite severe as it produced losses of more than 15,000 hectares and economic losses greater than US $6 billion, in particular around the areas of Chiriquí and Darién. Depleted or deteriorated natural resources are a significant barrier to agricultural production. Deforestation and related incidence of timber harvesting, forest clearance for livestock production, and slash-and-burn agriculture adversely affect about 51,000 hectares of natural tropical and tropical humid forests. Moreover, a traditional agricultural productive structure, weak enabling environment, a precarious state of natural resources, and an inequitable land tenure system all exacerbate poverty and keep the adaptive capacity of poor and marginalized populations low.[24]

To spur economic development and build resilience of local populations, planned adaptation options for the agriculture sector will need to include: (i) long-term strategic planning that integrates climate variability and change at the regional and national levels, (ii) more research and development in pest and disease control in order to allow for shifting of plant dates that would facilitate higher yields, (iii) improved efficiency of irrigation systems, (iv) expanded coverage and capabilities of weather stations, and (v) adoption of improved seed varieties.[25] A greater emphasis on reducing soil degradation, reforestation and developing and applying adequate insurance mechanisms should be placed for better management of public resources in light of natural disasters in the agriculture sector.[26] If current soil and land management is improved, there is a potential for increases in rainfed rice and maize crop production in Panama, according to some future projections (See Table 1).

Table 1: Potential crop production using an Agroecological Model (IIASA and FAO) 2007

Crop	Baseline Yield (1961 - 1990)	Future Projected Yield	Change %	Options
Rice	4359	4516	3.6	High Input, Rainfed Carbon, 2020s
Rice	4359	4595	5.41	High Input, Rainfed Carbon, 2050s

[22] World Development Indicators.
[23] IFAD. 2007. Republic of Panama Country Strategic Opportunities Program
[24] IFAD. 2007. Republic of Panama Country Strategic Opportunities Program
[25] First National Communication of the Republic of Panama
[26] Proyecto Mejoramiento de la capacidad Técnica para Mitigar los efectos de la Futura Variabilidad Climática (El Niño), TC-9709-46-3. CRRH, CEPREDENAC-ETESA-MIDA. Noviembre 2001. ETESA/Gerencia de Hidrometeorología.

Crop	Baseline Yield (1961 - 1990)	Future Projected Yield	Change %	Options
Rice	4359	4505	3.35	High Input, Rainfed Carbon, 2080s
Rice	1208	2045	69.29	Low Input, Rainfed Carbon, 2080s
Maize	2588	2709	4.68	High Input, Rainfed Carbon, 2020s
Maize	2588	2732	5.56	High Input, Rainfed Carbon, 2050s
Maize	2588	2864	10.66	High Input, Rainfed Carbon, 2080s
Maize	487	801	64.48	Low Input, Rainfed Carbon, 2080s

Adaptation options in the agriculture sector include:

- Improving irrigation efficiency;
- Introducing new crop varieties that are more resistant to future climate change conditions in agriculture;
- Supporting research aimed at controlling plagues and crop diseases;
- Implementing agro-ecological zoning of crops by taking into account the weather variability produced by climate change.

Water Resources

Climate change will pose additional stress on water resources in Panama. Gradual sea level rise will contribute to coastal erosion and increased salinity in estuaries, which in turn can threaten freshwater aquifers. In addition, increased flooding due to storms will alter the tidal range in rivers and bays, as well as sedimentation patterns.

According to Panama's Initial National Communication to the UNFCCC, priority adaptation measures in this sector include: (i) increased education and training initiatives for promoting sustainable water management practices, (ii) strengthening the hydrometeorology network at the national level, (iii) promoting research around scientific hydrology and climatology, and (iii) promoting the protection, conservation, and rational management of natural resources in the basins.

Adaptation options in the water resources management sector include:

- Increasing water supply, e.g. by using groundwater, building reservoirs, improving or stabilizing watershed management, desalination;
- Decreasing water demands, e.g. by increasing efficiency, reducing water losses, water recycling, changing irrigation practices;
- Improving or developing water management;

- Developing and introducing flood and drought monitoring and control systems;
- Strengthening of water and weather station network to better predict future changes in the water regime, including floods and droughts;
- Developing new irrigation technologies;
- Promoting conservation and rational use of water resources.

Coastal Resources

According to the National Communication to the UNFCCC, inundation of low zones is the most likely impact within the coastal resources sector, followed by loss of productive land and the increased erosion of coastal areas and beach sands. Proposed adaptation actions include the establishment of strategies to revert, protect, and adjust the spread of degradation. The government of Panama has developed a substantial regulatory framework to guide urban development in the metropolitan areas of Panama City and Colón. The main objective has been to ensure the sustainability of the Panama Canal operations. Most of the Panamanian population lives in or around the Panama Canal watershed, and migration from rural areas continues.

Adaptation options in the coastal resources sector include:

- Implementing an Integrated Coastal Zone Management program, including guidelines for new investments;
- Allowing for increased flux and reflux of salty water to the mangroves while keeping water channels clean;
- Improving the urban plans (construction lines) and increasing the treatment of residual waters;
- Improving sanitation and pluvial systems to wider ranges of extreme event;
- Improving the use and management of vulnerable areas, mangroves, river coastlines, and beaches;
- Improving shrimp farms with relevant and updated technologies that incorporate ecological innovations and restrain intrusion of salty waters into agricultural land;
- Implementing beach regeneration projects using "soft" and ecological approaches.

Adaptation

Climate variability and change have brought additional challenges for Panama in its efforts to meet its development goals, particularly during the past decades. Adaptation options deal with the present "adaptation deficit" and are geared toward addressing the multiple stresses that affect each major sector. This implies a need for institutional strengthening and poverty alleviation. Inter-sectoral collaboration between institutions at different levels is required to develop mainstream adaptation into development initiatives. To this end, Panama has broadened and improved institutional capacity and financing mechanisms for addressing climate risks, and has demonstrated positive efforts in linking disaster risk reduction and climate change through the implementation of early warning systems.

Ongoing Efforts- At a Glance[27]

Vulnerability Reduction

- Integration of Climate Change Adaptation and Mitigation Measures for the Natural Resources Management in Two Priority Watersheds in Panama. Implementing partners include: FAO, PAHO/OMS, UNDP, UNEP.
- Regional Program of Environment in Central America (PREMACA). Implementing partner is DANIDA.
- Program for the Reduction of Vulnerability and Environmental Degradation Panama (PREVDA). Implementing partner is the European Commission.
- The Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC) is one of the places in Latin America where regional modeling is undertaken for climate predictions and climate change projections.[28]
- The Rehabilitation of the Irrigation System in Remigio Rojas Project[29] consists of government funds dedicated to the construction of a drip irrigation system to incorporate 3,200 hectares of cropland. This will benefit 188 producers and their families and is expected to increase agricultural production, both in terms of crops and livestock.
- The World Bank published a flagship document for the entire region of Latin America and the Caribbean titled "Low Carbon, High Growth: Latin American Responses to Climate Change,"[30] encompassing information on climate change impacts in the region.
- ProVention Consortium, Community Risk Assessment and Action Planning Project[31] is a toolkit for disaster preparedness and risk prevention that uses participatory research methods.
- The Mesoamerican System of Terrestrial Information (SMIT) is funded by IDB in partnership with CATHALAC and SERVIR.[32] SMIT incorporates several systems to monitor meteorological events and enhance early warning systems efficiency to support sustainable development in the region.
- The hydrometeorological network was implemented and expanded through the Electric Power Company to monitor climatic conditions and support disaster risk management initiatives across the country. Long-term, weekly, and daily weather forecasts were also prepared. Forecasts are provided to the Ministry of Agrarian Development to support decision making and are shared with the Ministry of Health, the Smithsonian Institution, the National Civil Protection System, the National Environment Authority, and other international organizations.

GFDRR Interventions

GFDRR does not have ongoing or completed projects in Panama at the moment; however, Panama is becoming a focus country of the GFDRR program.

[27] For additional efforts, please see the report on Disaster Risk Management in Latin America and the Caribbean Region: GFDRR Country Notes-Panama. 2010.
[28]http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/200609_background_latin_american_wkshp.pdf
[29] http://www.mida.gob.pa/
[30]http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/02/27/000334955_20090227082022/Rendered/PDF/476040PUB0Low0101Official0Use0Only1.pdf
[31] http://www.proventionconsortium.org/?pageid=43
[32] SERVIR—Spanish for "To Serve"—is a Regional Visualization and Monitoring System that integrates earth observations (e.g. satellite imagery) and forecast models together with in situ data and knowledge for timely decision- making to benefit society. www.servir.net

EXISTING ADAPTATION FRAMEWORK/STRATEGY/POLICY AND INSTITUTIONAL SET UP

Panama has made considerable gains in integrating environmental issues into development plans since the 1980s, including the establishment of the National Authority on the Environment (described below). Progress in integrating climate change into development frameworks, however, is a relatively recent priority and much work is required to address the potentially harmful impacts of climate change across the country. Adapting to climate risks in the disaster management sector of Panama will require both a coordinated national planning structure and local and community-level response measures. Several initiatives are already underway to address these issues by key institutions across Panama, including:

- The **National Authority on Environment** (**ANAM**), through its **Climate Change and Desertification Unit**, oversees Panama's commitment to the UNFCCC on climate change and other related issues, and represents the Designated National Authority (DNA) on climate change and on clean development mechanisms in Panama. A **National Climate Change Strategy** is currently under development. The Strategy will oversee the creation of a program responsible for periodically updating the National Communication documents to the UNFCCC, the development of national climate change mitigation and adaptation strategies, as well a program promoting national scientific research on climate change. The **National Climate Change Committee (CONACCP**) is composed of several ministries, including the Ministry of Agricultural Development, the private sector, NGOs, and academia. It is responsible for facilitating dialogue on climate change-related issues.
- At the regional level, the **Central American Commission on Environment and Development** is responsible for devising and implementing the environmental agenda.
- **DesInventar** is a network focusing on disaster risk management. DesInventar has created a conceptual and methodological tool for the implementation of National Disaster Observatories and the construction of databases of damage, losses, and general effects of disasters. It includes a Data Collection Methodology (definitions and how to's) and a Data Analysis Methodology (how to obtain results). The database has a flexible structure, with free, open-source software to manage the system, including multi-user, remote data entry and data querying, reporting, and analysis functionalities.
- The **National Program for Climate Change (PNCC)** was created by the Ministry of Environment to increase awareness and capacity building on the issue of global climate change. This organization has advanced and strengthened the dialogue and knowledge sharing amount many relevant institutions, government sectors, NGOs, and academia.
- **Centro del Agua del Trópico Húmedo para América Latina y el Caribe (CATHALAC)** is an international institute based in Panama dedicated to the task of promoting sustainable development in Latin America and the Caribbean through applied research, education, and technology transfer.[33]
- The **Hydrometeorological Management Office of the Electric Transmission Company (GHETESA)**[34] acts as the national climatologic, meteorological, and hydrological monitoring service in Panama. Hydrometeorological hazards are also assessed at this bureau with coordination links to SINAPROC and COE.

[33] http://www.cathalac.org/
[34] http://www.hidromet.com.pa/sp/InicioFrm.htm.

Institutional and Policy Gaps

- Overall, the mechanisms for research, information sharing, cooperation, and budgeting both horizontally and vertically in government institutions related to climate is weak and ad-hoc, and driven by the size and seriousness of hazards. Consequently, local government units do not take a proactive approach to climate change, and provinces are left with insufficient funding to adequately address additional stress on society posed by climate variability and change. Formal institutions will need to change ways of information sharing and improve cooperation in order to be better equipped to meet the challenge of tackling climate change.
- Land tenure policy may provide an obstacle to implementing effective adaptation interventions. In Panama, approximately 6% of agricultural producers farm almost 70% of the land, while about 80% of producers own less than 8% of agricultural land. Inequitable land tenure limits economic opportunities for poor and marginalized groups and also hinders implementation of effective adaptation interventions.

Research, Data, and Information Gaps

In order to increase adaptive capacity in Panama, there is a need to overcome existing barriers to improved implementation of identified adaptation actions within development plans. In general, there is insufficient understanding of the challenges presented by climate change, especially among decision makers. Moreover, private initiatives are only timidly integrated into the adaptation processes.

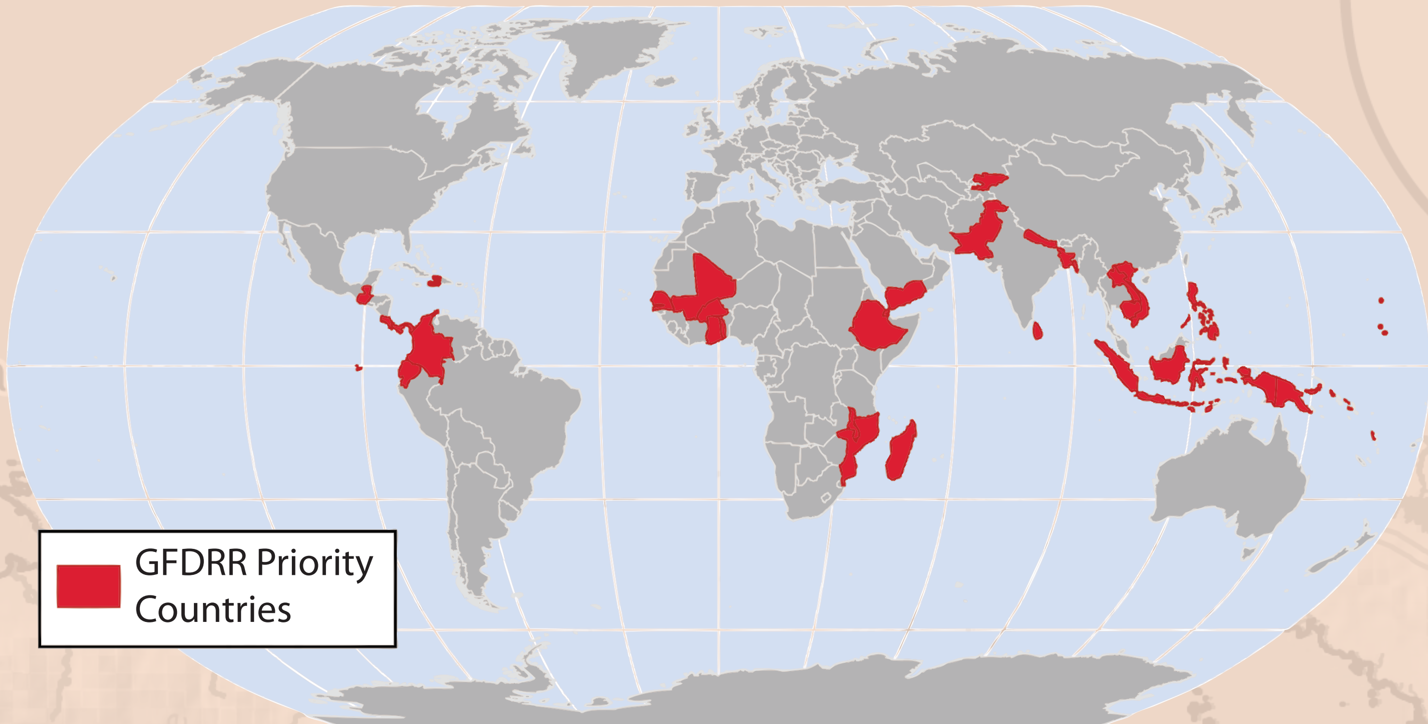
Research Gaps

- Access and validation of hydrometeorological data as well as translation of climate data into meaningful information at the sector level need to be improved.
- The quality and scope of scientific research that evaluates associated impacts of the El Niño and La Niña to vulnerable sectors need to be improved.

Data and Information gaps

- The amount and distribution of meteorological stations could be improved. Such stations currently provide uneven patches of density in the data, with an average coverage of 312 km^2 per station, in comparison with the recommend standards of the OMM of 20 km^2.
- At local levels, early warning systems, weather forecast technology, and more modern communication systems are needed, especially for long-term forecasting. In addition, skills in using software programs for modeling climate will need to be developed.
- Training and awareness raising on climate change threats and climate-resilient development will be necessary to better equip those whose livelihoods depend on climate-sensitive sectors.

*This Country Profile (**http://countryadaptationprofiles.gfdrr.org**) is part of a series of 31 priority country briefs developed by the Global Facility for Disaster Reduction and Recovery (GFDRR) as part of its Disaster Risk Management Plans. The profile synthesizes most relevant data and information for Disaster Risk Reduction and Adaptation to Climate Change and is designed as a quick reference source for development practitioners to better integrate climate resilience in development planning and operations. Sources on climate and climate-related information are linked through the country profile's online dashboard, which is periodically updated to reflect the most recent publicly available climate analysis.*



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