

## Costa Rica

### Prevalence of natural hazards

Located between the Caribbean Sea and the North Pacific Ocean, along the subduction zone of the Caribbean and Cocos tectonic plates, Costa Rica is exposed to several natural hazards, which are themselves influenced by several large-scale climate phenomena such as the El Niño-Southern Oscillation. As much as 36.8% of Costa Rica's landmass is exposed to three or more natural hazards; 77.9% of its population and 80.1% of its gross domestic product (GDP) are located in areas exposed to multiple hazards (World Bank, 2005). The most severe economic impact in the past four decades has been from earthquakes and hurricanes, followed by floods.

Costa Rica borders the Pacific Ring of Fire, one of the most earthquake-prone and volcanically active regions in the world. Since 1980, Costa Rica has suffered eight severe earthquakes. The most recent major earthquakes occurred in Cinchona in 2009 and in Nocoya in 2012; the former caused direct economic losses estimated at USD 200 million and 31 fatalities, and the latter caused economic losses of USD 45 million. The 1991 earthquake in Limon, which caused economic losses of USD 444 million and 47 fatalities, was one of the worst in Costa Rica's history.

#### Types of natural hazards to which Costa Rica is exposed

Natural hazard category	Types of natural hazards
Geophysical	Earthquakes, volcanic activity
Hydrological	Floods
Meteorological	Tropical storms and hurricanes
Climatological	Droughts

Source: GFDRR 2010.

#### Major natural disasters in Costa Rica since 1980

Disaster event	Year	Fatalities	People affected	Estimated damage
Hurricane Johan	1988	28	127 500	736 million
Limon earthquake	1991	47	10 569	444 million
Tropical Storm Tomas	2010	28	4 005	354 million
Limon, Cartago and Heredia floods	1996	6	20 000	250 million
Hurricanes Cesar and Douglas	1996	51	572 000	216 million
Cinchona earthquake	2009	31	~129 000	200 million
Hurricane Otto	2016	9	50 000	198 million

Sources: MIDEPLAN, 2014; EM-DAT, 2017.

Rugged terrain and tropical weather with rainy and dry seasons also expose Costa Rica to climatological hazards, such as hydro-meteorological events and, to a lesser extent, droughts. With 18 severe floods since 1980, Costa Rica has on average suffered one major flood every two years. Currently, the highest accumulated losses from natural hazards in Costa Rica are the result of floods. In 2005, for instance, heavy rains affected Limon, Heredia, Cartago and Alajuela Provinces. Losses caused by the ensuing floods and landslides were estimated at USD 133 million. In 2015, rain-induced floods and landslides in the province of Limon and in Sarapiquí and Turrialba cantons generated estimated losses of USD 173 million (MIDEPLAN, 2014b).

Its location along the Caribbean Sea also exposes Costa Rica to tropical storms and hurricanes. In 1996 Hurricane Cesar and Douglas made landfall, resulting in 51 fatalities and affecting over half a million people as well as causing economic losses of USD 216 million. More recently, Tropical Storm Tomas in 2010 and Hurricane Otto in 2016 caused economic losses of USD 354 million and USD 198 million, respectively.

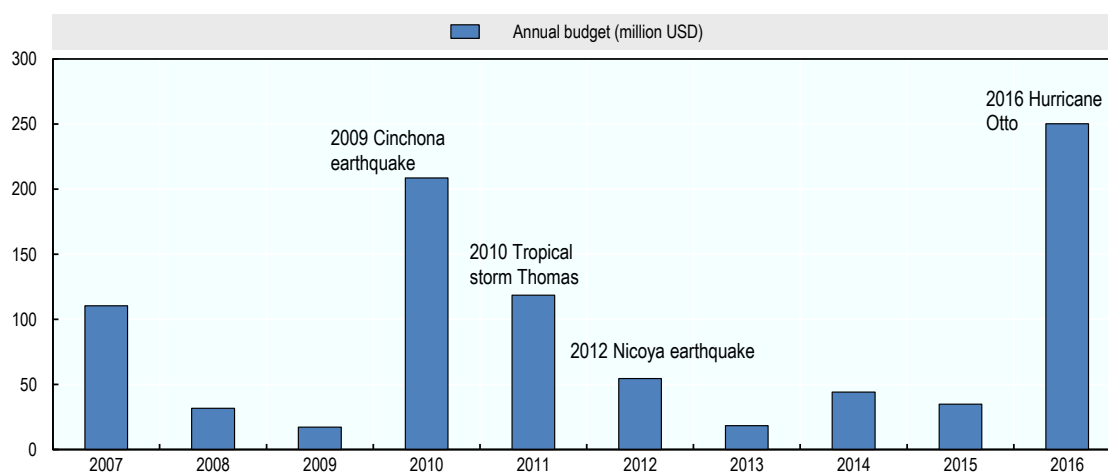
### Past fiscal impacts of disasters

Estimated annual average losses from disasters in Costa Rica range from USD 37 million (PreventionWeb, 2017) to USD 280 million (UNISDR, 2015). If a major earthquake occurred, annual average losses could greatly exceed these estimates. A 250-year return period earthquake, for example, is estimated to cause up to USD 10 billion in damages (World Bank, 2016). The Costa Rican government has covered the majority of costs caused by major disasters. For example, the government covered 81% of the Limon earthquake losses (USD 361 million), 95% of Hurricane Cesar losses (USD 207 million), and 90% of Hurricane Tomas losses (USD 317 million).

Public resources for disaster risk management are primarily channelled through the National Emergency Fund (Fondo Nacional de Emergencia, FNE), and are managed by the National Commission for Risk Prevention and Emergency Response (Comisión Nacional de Prevención de Riesgos y Atención de Emergencias, CNE). The primary objective of the FNE is to finance post-disaster recovery measures, but it may also allocate funding to ex ante measures (GFDRR, 2010). In the past, the FNE has mainly been used for the recovery of temporarily interrupted public infrastructure and for emergency assistance to the affected population, e.g. to recover housing and small-scale agricultural infrastructure. For ex ante measures, additional funding is provided via the CNE budget. In keeping with the National Development Plan 2015-18, projects funded from other state institutions also need to dedicate resources to implementing disaster risk reduction activities (MIDEPLAN, 2014a; Kellett, Caravani and Pichon, 2014).

The FNE is funded from mandatory transfers from all public institutions, fixed at 3% of budget surplus, and donations from various sources. When an emergency is declared, public institutions may also be required to provide the FNE with additional emergency management funds ex post. From 2007 to 2016, the fund held USD 889 million, averaging USD 89 million per year. The lowest contribution was USD 17 million in 2009, and the highest was USD 209 million in 2010; this range illustrates the volatility of available resources. Single large-scale events, such as Hurricane Otto late in 2016, caused losses that exceeded the FNE's funds by nearly USD 45 million. In comparison, funding for disaster risk reduction measures in 2007 included just over USD 17 million allocated through the FNE, topped up by USD 3.2 million from the CNE budget (Kellett, Caravani and Pichon, 2014).

### Annual budget of the National Emergency Fund from 2007 to 2016



*Note:* USD values are based on the exchange rate of the Central Bank of Costa Rica 20 April 2016. Data for 2016 are preliminary.

*Source:* National Emergency Commission (data submitted to authors); OECD survey response.

As introduced by the National Risk Management Policy (Política Nacional de Gestión del Riesgo) 2016-30 (CNE, 2015b), some social programmes feature emergency protocols to redirect and prioritise resources to the population affected by a disaster, adding to the post-disaster support funding available via the FNE. Examples include the emergency social assistance programme of the Joint Institute for Social Aid (Instituto Mixto de Ayuda Social); the unemployment subsidy programme of the Ministry of Labour and Social Security (Ministerio de Trabajo y Seguridad Social) and the productive entrepreneurship programme of the Rural Development Institute (Instituto de Desarrollo Rural). In addition, the policy requires public institutions in the financial sector to put risk retention and transfer mechanisms in place to protect investments in public infrastructure, ensure provision of resources for disaster recovery, and enable the continuity of services in case of disaster.

To guide the disaster response and recovery efforts, National Law No. 8488 on Emergencies and Risk Prevention (Ley Nacional de Emergencias y Prevención de Riesgos) requires the government to activate an Emergency General Plan once an emergency is declared. The plan should identify both the financing needs created by the disaster and the funding to be allocated via the FNE. If the disaster response requires an allocation from institutional extraordinary budgets, the respective Emergency General Plan must indicate how much.

In the case of major disasters, Costa Rica sometimes relies on international assistance for financial support for response and recovery. Following the 2009 Chinchona earthquake, for instance, the central government requested international financial assistance for recovery – especially for the reconstruction of infrastructure (roads and bridges) and houses, for the recovery of the agriculture and dairy products sector, and for immediate emergency response items (Reliefweb, 2009).

A study by the Inter-American Development Bank (IDB, 2015) determined that should Costa Rica experience events with return periods of 500, 100, or 50 years, the Costa Rican government would not have sufficient resources to handle the losses and the cost of rebuilding damaged infrastructure. The result would be substantial negative impacts on fiscal sustainability.

## Managing disaster-related contingent liabilities

### *Identification of disaster-related contingent liabilities*

#### *Explicit contingent liabilities*

Explicit contingent liabilities arise from payment obligations that are based on laws, or clear policy commitments that could fall due in the event of a disaster. The table below lists the disaster-related contingent liabilities of the Costa Rican government.

#### **Explicit central government obligations for post-disaster financial assistance in Costa Rica**

<b>Commitment to finance...</b>	<b>Yes</b>	<b>No</b>
... post-disaster response and recovery	✓	
... a share of the costs incurred by subnational governments for post-disaster response and recovery		x
... reconstruction and maintenance of central government-owned public assets	✓	
... rehabilitation and reconstruction of private assets	✓	
... other expenses incurred by subnational governments (e.g. payments to businesses or individuals)		x
... government guarantees for disaster losses incurred by public corporations and public-private partnerships		x
... post-disaster response and recovery		x

Source: OECD Survey.

National Law No. 8488 on Emergencies and Risk Prevention introduces the principle of solidarity underpinning disaster risk management in Costa Rica and outlines the responsibility of public institutions to ensure adequate levels of protection against disasters and post-disaster recovery (CNE, 2006). Although the law mentions the responsibility of the state, the definition is broad, highlighting the central government's responsibility to reconstruct public assets and provide emergency support to the most vulnerable populations after a disaster, without specifying thresholds for qualifying for post-disaster recovery.

Financial support mechanisms for the private sector and explicit guarantees for disaster losses incurred by public corporations and public-private partnerships (PPPs) are not included in the central government's explicit commitments to post-disaster assistance. Instead, the technical guidelines published by the PPP Monitoring Unit within the Public Credit Directorate at the Ministry of Finance require that PPPs purchase hazard insurance or otherwise transfer their risk.

Both the National Risk Management Plan (Plan Nacional de Gestión del Riesgo; CNE, 2015a), and, as mentioned earlier, the National Risk Management Policy (CNE, 2015b) specify that social programmes should include emergency protocols to allow redirection of resources for disaster recovery purposes, as well as post-disaster compensation for populations affected by the event. In line with this provision, the central government typically provides financial support to the affected population during the emergency and compensates the poorest population groups for the loss of private property. The Ministry of Housing provides assistance to families whose houses have been damaged or destroyed during disasters. Low-income families can receive substantial subsidies to reconstruct their

houses or relocate, whereas more affluent households are given access to housing banks that provide subsidised loans to rebuild houses. In the aftermath of large-scale disasters such as Hurricane Otto, families also receive subsidies to rent houses while repairs are made to their permanent homes. There are no specific cost-sharing arrangements between central and subnational governments in place.

### *Implicit contingent liabilities*

Implicit contingent liabilities are expenditures that may arise due to moral obligations without any prior commitments, or due to public expectations or political pressure on the government. Implicit liabilities are not determined by a law or a contractual rule.

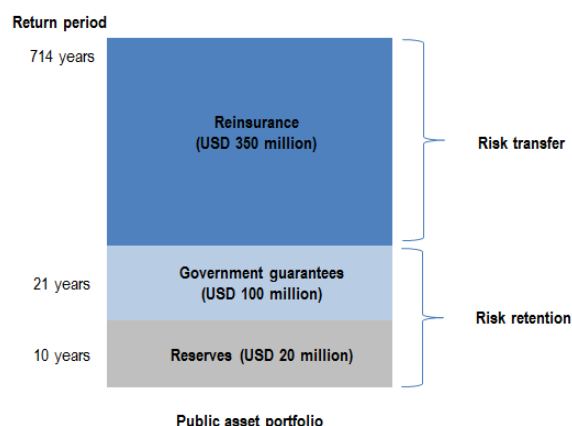
Given the Costa Rica's strict regulations about the use of public resources, closely overseen by the Comptroller General, no implicit liabilities can be identified for Costa Rica. This does not mean that implicit contingent liabilities could not arise in the future.

### *Estimation of insurance payouts*

Various insurance operators provide insurance schemes to protect private assets against disaster risks. Most insurance coverage is provided by the National Insurance Institute (Instituto Nacional de Seguros, INS), a public insurer similar to a private insurer in its operations; the INS provides various types of insurance coverage, although not for high-risk structures (e.g. assets located too close to coasts or rivers). Insurance policies for cars, industries, businesses, plantations and residential homes include coverage for risks such as earthquakes, floods, landslides, hail, hurricanes, tsunamis and volcanic eruption, among others. Optional coverage for properties in disaster-prone areas is not always available or is available only with high deductibles, at high cost, or upon the implementation of specific risk prevention measures (OECD, 2016a).

According to the General Internal Control Law (No. 8292) and the National Risk Management Policy, public assets must be insured. Public institutions - including public enterprises with high-value assets – such as the Costa Rican Electricity Institute (ICE), the Costa Rican Department of Social Security (CCSS), and the Costa Rica Petroleum Refinery (RECOPE) – are responsible for the protection and preservation of their assets, which includes risk transfer. The National Insurance Institute offers a dedicated catastrophe risk transfer vehicle (CRTV) that to insure public assets at a lower cost than private insurance. With the CRTV the central government retains most of the risk while transferring excess losses to international financial markets (Ghesquiere and Mahul, 2010).

### Insurance for public assets, as offered by the National Insurance Institute



Source: Ghesquiere and Mahul, 2010.

### Quantification of disaster-related contingent liabilities

The National Risk Management Policy 2016-30 highlights the need to create mechanisms to record and measure mechanisms for public spending on disaster risk management, including disaster recovery and reconstruction spending, in order to forecast the impact of future events and ensure continuity of services. The government currently does not regularly quantify the size of disaster-related contingent liabilities.

The table below shows the relevant information that is already available to quantify disaster-related contingent liabilities. This includes historical data on government expenditures for disaster relief, as tracked in the annual budgetary execution and emergency spending from the CNE reported in the medium-term budgetary framework. Expenditure for the reconstruction of public infrastructure as specified in the Emergency General Plans is also recorded, as is expenditure reported from the National Emergency Fund.

#### Types of information from previous events available to calculate disaster-related contingent liabilities in Costa Rica

Type of disaster-related contingent liability	What gets recorded
Relief spending	Expenditure by central government for emergency and relief purposes
Spending for the reconstruction of damaged public infrastructure and assets	Restoration expenditure for affected central government-owned assets
Spending on increased social transfers due to a post-disaster economic slowdown	Not included
Expenditures due to guarantees issued to public or private entities suffering disaster losses	Not included
Post-disaster payments to subnational governments	Not included
Reduced tax collections	Not included
Disrupted operations of public corporations	Not included
Disrupted operations of private corporations	Not included
Deterioration in the terms at which the government can in the short term refinance public debt or raise additional debt	Not included

Source: OECD Survey response.

In addition, the Ministry of Economic Policy and National Planning (Ministerio de Planificación Nacional y Política Económica, MIDEPLAN) maintains a disaster loss database in which it collects data on damage caused by post-1988 hydrometeorological and geophysical events that triggered emergency declarations. Emergency management plans are the primary source of information feeding this database. They include the results of damage assessments and information on disaster relief and recovery needs; the total amount of government spending allocated for emergency response and reconstruction; and information on the affected and displaced population. There is a plan to eventually add data for hazardous events that did not trigger an emergency declaration.

Although Costa Rica has an inventory of public infrastructure assets, it is currently outdated and underestimated. This renders calculation of potential contingent liabilities for public budgets rather difficult. In line with the new National Risk Management Policy and National Risk Management Plan, the inventory of public assets and assets under state responsibility (including concessions) is expected to be updated to include (among other things) information on the location, value and insurance coverage of those assets.

### ***Estimating the fiscal impacts of disaster-related contingent liabilities and integrating them into overall fiscal forecasting***

The Ministry of Finance's Public Credit Directorate (PCD), which is in charge of identifying contingent liabilities, works with the Secretariat of the Budgetary Authority and the Central Bank of Costa Rica to develop fiscal sustainability scenarios (deterministic and stochastic models) and conducts macroeconomic modelling (fiscal balance models). However, these macroeconomic and fiscal forecasts do not consider disaster impacts. Likewise, the debt management strategy does not include the potential impact of disasters. The scenarios generated with debt projections include variables that have quantified effects on the final public debt outcome, such as exchange rates and primary deficits. Contingent liabilities are not included in the debt projections because they are not measured (Ministry of Finance, 2016b).

For earthquakes and tropical cyclones, fiscal risk probability analyses are already being conducted. The Ministry of Finance currently does not publish fiscal risk reports, although the International Monetary Fund (IMF) has recommended that the ministry prepare an annual report on fiscal risks as part of the annual budget documents. This report should contain information on macroeconomic risks, public debt, public corporations, debt guarantees, contingent liabilities, concession contracts, disasters, financial institutions, subnational governments and social security and health (IMF, 2013). Following this recommendation, the PCD is currently developing a proposal to create a fiscal risks office.

### ***Implementation arrangements for providing post-disaster financial assistance***

Under Law No. 8488, the CNE is the authority charged with both ex ante disaster risk management and post-disaster response and recovery, including the management and coordination of post-disaster financial assistance via the FNE. The respective regional, municipal and community emergency committees support the CNE in its emergency response operations.

As stated above, in the Emergency General Plans the CNE determines which emergency and reconstruction works will be funded with FNE resources and which with transfers from regular public institutional budgets. The latter source of funding particularly applies to public institutions in the social sector that have programmes to cover the emergency needs of affected populations. Even though these extraordinary budget allocations are not

channelled through the FNE, they must be included in the Emergency General Plans. The CNE board then designates public institutions (i.e. ministries and municipalities) as executing units in line with their competencies in the territory where the emergency was declared. Once designated, executing units are required to present investment plans that specify the allocation and execution of resources for the approval of CNE.

The National Risk Management Forum (Foro Nacional de Gestión de Riesgo), which brings together all stakeholders and institutions given a role under Law 8488, ensures the successful implementation of risk management policies and funds by monitoring the work of the CNE, including in the emergency response and post-disaster recovery stages.

### *Mitigating disaster-related contingent liabilities and financing residual risks*

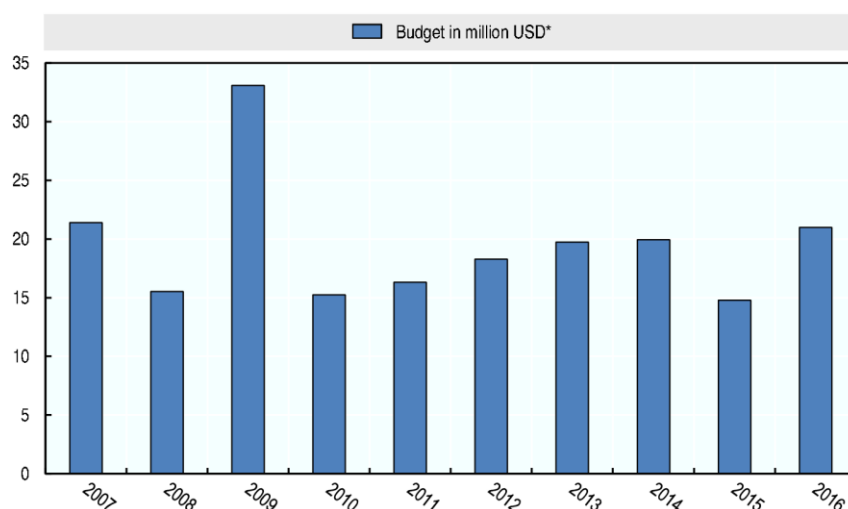
Law 8488 describes prevention and preparedness as tasks that are shared by the whole of government and society at large. According to the law, central and subnational governments share the responsibility of budgeting and planning for disaster risk management. The relevant budget lines must adhere to the guidelines set forth in the National Risk Management Policy and National Risk Management Plan (CNE, 2015a, 2015b).

Although the strategic objectives for risk prevention are firmly anchored in national development documents, no budget measure indicates the overall budget envelope dedicated to risk prevention efforts. Recognising this, the central government has made provisions to develop needed budget guidelines; these will allow identification of resources for disaster risk management, adjustment of the public accounts catalogue to record relevant expenses; and the creation of guidelines to mainstream disaster risk management. Going further, the government expects to have the ability to identify and measure disaster risk management items in national accounts as of 2018, as the necessary methodologies to estimate and to account for these expenditures have been recently developed.

The range of disaster risk reduction activities undertaken by the CNE through the FNE includes both disaster preparedness measures and structural and non-structural disaster risk reduction measures, such as the construction of protective infrastructure, community-based prevention projects, research activities, early warning projects, and the development and mainstreaming of hazard maps and building codes (e.g. a nationwide seismic building code). Currently, around 40 of the 81 municipalities in Costa Rica have hazard maps in place (Kellett, Caravani and Pichon, 2014). The CNE budget over the past decade has amounted to a total of USD 190 million – on average, USD 19 million per year.



### Annual budget of the National Emergency Management Commission (CNE) from 2007 to 2016



*Note:* USD values are based on the exchange rate of the Central Bank of Costa Rica 20 April 2016.

*Source:* Administrative-Financial Management Direction (data submitted to authors); OECD survey response.

Not all funding for disaster risk reduction passes through the CNE institutional structure and budget. MIDEPLAN has set disaster risk management as a transversal axis in the National Development Plan 2015-18, and has developed tools for identifying and mitigating disaster risks in public investment projects. Disaster risk management has been incorporated into the design, formulation and execution of public investment projects within the framework of the National Public Investment System; the goal is to ensure the sustainability of public investment and reduce the cost of restoring services and rebuilding infrastructure following a disaster. MIDEPLAN requires that disaster risks are analysed for public investment projects, and that the analysis includes both the costs of those actions and economic and social impacts (MIDEPLAN, 2014a).

Costa Rica complements risk mitigation activities with financial instruments for disaster response. These include the National Emergency Fund and contingent credit lines as available ex ante financing tools, and ad hoc budget reallocations and international assistance for ex post financing. A USD 65 million Catastrophe Deferred Drawdown Option (CAT DDO) loan signed with the World Bank in 2008 and a USD 100 million contingent loan with the Inter-American Development Bank further complements the funding available for disaster recovery. These credit lines provide liquidity to ensure the government has enough resources at hand to adequately respond to a disaster. In 2009 Costa Rica used the CAT DDO line twice to obtain a total of USD 24 million after the Cinchona earthquake and severe floods, while the Inter-American Development Bank credit line has not yet been used (World Bank, 2014; IDB, 2012).

Costa Rica is currently preparing a new financial protection strategy to reinforce the financial management of risks associated with disasters a set of new instruments as well as enhancing current instruments. The upcoming strategy is expected to include the possibility of new contingent credit lines for larger amounts, and subscription to disaster risk transfer platforms such as the Caribbean Catastrophe Risk Insurance Facility. The vision of this new strategy is to diversify the options available for facing the fiscal impact of disaster without compromising macroeconomic stability.

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