

Background Paper prepared for the Global Assessment Report on
Disaster Risk Reduction 2013

**Private Sector and Disaster Risk Reduction:
The Cases of Bogota, Miami, Kingston, San Jose, Santiago
and Vancouver**

**Juan Pablo Sarmiento (Lead)
Gabriela Hoberman (Lead)
Maria Ilcheva, Ali Asgari, Ana
Maria Majano, Sarah Poggione
and Luis R. Duran**

Latin American and Caribbean Center
Florida International University
Miami, FL



Latin American and Caribbean Center
FLORIDA INTERNATIONAL UNIVERSITY



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**Juan Pablo Sarmiento (Lead), Gabriela Hoberman (Lead),
Maria Ilcheva, Ali Asgari, Ana Maria Majano, Sarah Poggione and Luis R. Duran**

**Disaster Risk Reduction in the Americas Project*
Latin American and Caribbean Center
Florida International University
Miami, FL**

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Authors

Juan Pablo Sarmiento, Florida International University
Gabriela Hoberman, Florida International University
Maria Ilcheva, Metropolitan Center - Florida International University
Ali Asgari, York University
Ana Maria Majano, INCAE Business School
Sarah Poggione, Ohio University
Luis R. Duran, INCAE Business School

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Introduction

Risk management has traditionally been understood by many as a solely the responsibility of governments; a perception that has changed only gradually. Without undervaluing the central and non-delegable responsibility that governments have in this regard, we must also begin to recognize the critical co-responsibilities of the private sector, civil society, as well as the individuals who make up society to address risks.

In the current economic climate of financial crises and budget limitations, disaster risk reduction could turn out to be an effective prescription for investors struggling to generate returns commensurate with shareholders expectations. As conservative and defensive approaches to business development and economic growth become more common with opportunities for territorial and sectorial market expansion dwindling, a hallmark of sustainable investment and competitive business in the future may well include disaster risk reduction.

Understanding disaster risk management

The treatment of disaster risk on the part of practitioners and academics has significantly evolved over the past half century. Cuny (1994) described a pendulum-like movement, from an emphasis on preparedness in the 1950s, “much of which was an unsophisticated spin-off from Cold War civil defense activities,” to prevention in the 1960s, and mitigation in the 1970s. In the mid-90s, he perceived the pendulum “to be moving back toward preparedness, though on a much more sophisticated level.” The approach promoted in the early 1990s focused on disaster management as a cycle based on actions before, during and after disasters strike. In the first decade of the 21st century, the attention shifted again,

towards risk management instead of disaster management. A decade later, Lavell identified two components of this newly emergent disaster risk management (Lavell 2008): (1) Corrective risk management, considered a conservative method, is oriented to controlling or correcting existing risk, particularly through an emphasis on the built environment. (2) Prospective risk management is focused on avoiding future risk or controlling acceptable risk and its impact on future investments; it highlights future development processes and adequate planning as the main instruments for dealing with the causes of risk.

In more recent literature (Narváes, Lavell e Pérez 2009), a third component has been added, reactive risk management, which includes all the preparedness, response, and recovery actions that characterize “disaster and emergency management.” A comprehensive approach includes all 3 components, each addressing the different dimensions of disaster risk.

Cuny (1994) classified mitigation activities, i.e. activities aimed at lessening the impact of a disaster, into passive and active. He considered activities related to regulatory frameworks as passive: the “development or application of measures such as building codes, land use, zoning, and urban or regional planning techniques to reduce vulnerability,”¹ while active mitigation includes “those activities that require direct contact with the people;” where “the implementing body assumes the role of an activist in helping to guide balanced growth and reduce vulnerability,”² by shaping motivations through the provision of incentives to reduce risks.

¹ Cuny, *Disasters and Development* 1994: 207

² Cuny, *Disasters and Development* 1994: 208

Private sector role in development

According to Johnson, the private sector is “the part of an economy in which goods and services are produced and distributed by individuals and organizations that are not part of the government or state bureaucracy.”³ In this paper we will refer to the private as the profit sector, making sure to distinguish between it and non-profit organizations, which we considered as the voluntary sector within our study.

According to the World Bank,⁴ “We live in ‘a world out of balance’ where one billion of the earth’s six billion people own 80% of global GDP, more than a billion struggle to survive on less than a dollar a day and another three billion live on less than two dollars per day. By 2050 there will be 9 billion people living in this planet; 8 billion of these residing in the developing world with access to only 40% of global GDP.”⁵ The WB also states that “of the 100 largest economies in the world, 51 are corporations and only 49 are countries.”⁶ The combined sales of the top 200 corporations are 18 times the size of the combined income of 24% of the total world population, those living in ‘severe’ poverty. Many developing countries currently receive much more private sector foreign investment than they do foreign aid. This represents a challenge and an opportunity for the developing world.”⁷ As the world, society, and business

³ <http://www.auburn.edu/~johnspm/gloss/> A Glossary of Political Economy Terms copyright © 1994-2005 Paul M. Johnson, Department of Political Science, 7080 Haley Center, Auburn University, Auburn, AL 36849

⁴ Djordjija Petkoski D., Jarvis M., Garza G., The Private Sector as a True Partner in Development <http://siteresources.worldbank.org/CGCSRLP/Resources/Theprivatesectorasatruepartnerindevelopment.pdf>

⁵ World Bank Data and Statistics. [World Development Indicators 2005](#).

⁶ Based on a comparison of corporate sales and country GDPs, World Bank Institute.

⁷ Djordjija Petkoski D., Jarvis M., Garza G., The Private Sector as a True Partner in Development <http://siteresources.worldbank.org/CGCSRLP/Resources/Theprivatesectorasatruepartnerindevelopment.pdf>

change rapidly and with great intensity, certain consequences are to be expected: new risks and responsibilities.⁸

In this scenario, the IADB has analyzed the role of the private sector in the economic and social development of the Latin American and Caribbean Region,⁹ concluding that the private sector is an essential support for achieving the goal of sustained economic growth and poverty reduction in the region. According to the IADB, “90 percent of all economic activity is created by the private sector in the region, as are nine out of every 10 jobs... [The private sector is] an essential ally for providing basic services such as infrastructures, as well as investment and innovation.”¹⁰ However, the road ahead is not easy. Companies must face a number of challenges associated with regulatory frameworks, existing financial mechanisms, and special incentives to promote greater investment in these fields, thus facilitating the continued creation of wealth and employment, and finally, sustainable economic growth.

Private sector role in disaster risk reduction

The relationship between private investments and disaster risks has two sides. Private investments (1) can be affected by disaster, and (2) can generate or increase disaster risks.

Private investments may be affected by disasters

⁸ Thomas Friedman, *The World Is Flat*, 2005

⁹ <http://events.iadb.org/calendar/eventDetail.aspx?lang=en&id=1554> Inter-American Development Bank: The role of the private sector in the economic and social development of Latin America and the Caribbean, Cancún, Mexico, March 2010,

¹⁰ Pfefferman, Guy P., *Paths Out of Poverty: The Role of Private Enterprise in Developing Countries*. Washington, DC: IFC. 2000.

Direct damage: impacts on industrial facilities and services, infrastructure, equipment, farming areas, loss of stocks of raw materials and finished products.

Indirect losses: access problems, disruption of supply chains, labor, energy supplies, changes in markets due to changes in priorities and loss of purchasing capacity.

Private investments can contribute or create risks

Directly: construction of unsafe facilities and/or in areas at risk; degradation and environmental pollution; production, use, storage and distribution of hazardous materials.

Indirectly: increased exposure to risks in their own production processes, and the supply chain and distribution; generation of productive activities that result in relocation of its workers to risk prone areas.

In both processes, being affected by a disaster or generating/increasing risks, consequences are usually transferred from the private to the public sector or from one economic sector to another.

Though the private sector has clearly made important advances in terms of risk management, this has not meant that good and comprehensive disaster risk reduction (DRR) practices have spread throughout the entire sector. While numerous commercial and industrial companies have participated in philanthropic response actions during disaster emergencies, less numbers of private entities have incorporated business continuity plans into their daily operations as a way to protect assets, production of goods and services, direct supply chains

and growth plans from possible hazards. A survey by JPMorgan Chase and AFP¹¹ in 2005, carried out in the United States, found that only 37% of respondents felt their companies were prepared for a major disaster, and only 50% had business continuity plans in place. Numerous other surveys¹² give the same message – which most companies are not well prepared for emergencies. Few of them are committed to systematically reducing vulnerability in at-risk populations within their sphere of influence, a commitment that falls within the purview of the evolving concept of Corporate Social Responsibility (CSR).

CSR associated with DRR includes several actions, including protection of employees and operations in hazardous zones; social justice measures in the workplace; advocacy for long-term business relationships with suppliers; partnerships with other institutions to leverage their financial and human resources; and advocacy with governmental, non-governmental, and civil-society organizations to improve DRR awareness at all levels.

This research examines how disaster risks are factored into and accounted for in the private sector investment decisions of three sectors: food and agriculture, tourism, and construction. These sectors were chosen based on their given weight in the global economy and their sensitivity to disaster risks:

- Food and agriculture is dependent on adequate water resources and is highly sensitive to climate variability and extreme weather conditions. It is also indirectly affected by losses and damages to infrastructure, particularly irrigation and transport. When

¹¹ AFP Survey, by JPMorgan Chase, 2005

¹² Emergency Preparedness Institute White Paper: Preparedness Needs a New Message. June 2007.

http://notebook.lausd.net/pls/ptl/docs/PAGE/CA_LAUSD/LAUSDNET/OFFICES/SCHOOL_OPS/SCHOOL_OPERATION_S_DIVISION/EMERGENCY_SERVICES/CRITICAL_EMPLOYEE_EMERGENCY%20PLANNING/EMERGENCY_PREPARATION/GET%20PREPARED%20WHITEPAPERFINAL06-07.PDF

analyzing the sector within urban areas, it appears particularly vulnerable to disaster impacts in certain utilities, particularly energy.

- Tourism investments frequently take place in risk prone locations and countries, for example in coastal areas exposed to tropical cyclones, storm surges, and rising sea levels. Investments in tourism infrastructure also stimulate considerable ancillary investments (housing, retail, services) in hazard prone areas.
- Construction is influenced by land tenure and land use, and how land is developed. Most new risk is urban risk, exactly where most of the buildings are constructed. So, there is a direct relation between construction and urban risk. Already half of the global population is urban, and this proportion is expected to continue growing, particularly in hazard prone developing countries.

Under the premise that disaster risks are primarily local, and that they are best addressed locally, we selected urban areas representing the different sub-regions of the continent, where a number of relevant characteristics converged, particularly when compared to the region they represent: 1) high population density, 2) outstanding economic activity, and 3) exposure to natural hazards. Thus, the study focused on six major cities within each of the Americas' sub-regions: 1) in North America, Vancouver, (Canada) and Miami (US); 2) in Central America, San José (Costa Rica); 3) in the Andean Region, Bogotá (Colombia); 4) in the Southern Cone, Santiago (Chile); and 5) in the Caribbean, Kingston (Jamaica).

Table X. Cities Selected¹³

City	Population Estimate	Year	Density / Km2	Type of Risks
Bogotá	8,702,000	2012	4,300	Hydro-meteorological: flooding Geological: seismic and landslides
Kingston	875,000	2001	3800	Hydro-meteorological: tropical storms, storm surges, flooding Geological: seismic and landslides
Miami	5,582,000	2012	1700	Hydro-meteorological: tropical storms, storm surges, flooding
San José	1,515,000	2012	4,700	Geological: seismic and landslides
Santiago	6,015,000	2012	6,500	Geological: seismic and landslides
Vancouver	2,150,000	2012	1,900	Hydro-meteorological: flooding Geological: seismic, tsunamis and landslides

Methodology - Objective 1

This paper analyzes the existing conditions for the mainstreaming of disaster reduction and resilience into private sector decision-making processes. These conditions are considered under the concept of the *enabling environment*: “An enabling environment is a set of interrelated conditions – such as legal, organisational, fiscal, informational, political, and cultural – that impact on the capacity of development actors such as CSOs to engage in development processes in a sustained and effective manner (Thindwa, 2001).”

In order to understand the enabling environment that exists in each urban area, this study applies the risk management components described in the framework outlined earlier; categorizing policies, regulations and interventions as prospective, corrective or reactive, and as either passive or active measures.

¹³ <http://www.demographia.com/db-worldua.pdf> Demographia World Urban Areas: 8th Annual Edition: Version 2 (2012.07)

Traditionally, the private sector has been viewed by the disaster management community primarily as a subject of emergency response and, more importantly, as a source of funding for assistance once disasters have occurred.¹⁴ The modern vision of disaster risk management has led to a quest to integrate disaster risk management into private sector decision-making processes. There are several approaches to this effort arising from distinct, though not necessary conflicting, perspectives.

- One approach (1) promotes the preparation of emergency plans, similar to those crafted by public sector institutions and communities, and often present in legislation and awareness activities conducted by governments and international organizations. This approach is generally oriented towards preparedness and response. In some cases this is a legal mandate, but in most it is voluntary.
- A second (2) comes from national or local regulatory frameworks that establish mandatory security functioning conditions, building codes, restrictions and limitations on land use, as well as consumer protections. This approach is focused mainly on the protection of third parties and the environment, and is based on structural measures.
- A third (3) comes from the field of voluntary compliance on quality standards, such as ISO and others, for industrial safety, environmental management, and risk management. This approach highlights the internal motivations of the sector, and is oriented towards better planning (prospective risk management).

¹⁴ Colombian Law, the most recently adopted in LAC (2012) establishes a principle of “solidarity”, which states the obligation of every person to support humanitarian actions, and a principle of “self-conservation” stating that every person, natural or juridical, from the public or the private sector has the responsibility to adopt measures for self-protection.

- A fourth approach (4), related to the promotion of corporate social responsibility, mainly focuses on the company’s participation in disaster risk management initiatives together with government, as well as community and civil society organizations. If not in line with the company’s core strategy, this approach could be seen as coincident with the traditional view of the private sector just as a source of financing for preparedness and response activities.
- A fifth (5) focuses on business continuity, which refers to the measures companies take in their day-to-day operations to ensure that critical business functions and services will be available or rapidly restored when a disaster occurs. This is also an internal process that is focused on preserving the core of the business, shielding and protecting investments, and increasing competitiveness.

Using a combined classification as described in the framework, these perspectives can be characterized as follows:

	Passive	Active
Prospective	2	3 – 4 -5
Corrective	2	4 – 5
Reactive	1	4 -5

Since the purpose of the study is to inform future policy-making, the main focus of this analysis is on those elements of the enabling environment that are under the control of the government, i.e. policies and regulations. This analysis has been developed for six cities in the

Americas: Bogotá, Kingston, Miami, Santiago de Chile, San José and Vancouver, and considers three areas of policy-making and regulation:

1. Policies and regulations directly addressing disaster risk management. This area includes risk management laws, national DRR strategies and specific norms that determine responsibilities for the different processes of disaster risk management.
2. Regulations related to permits and licenses of operation for private initiatives, including building codes, environmental assessment and land use norms.
3. Policy instruments that establish economic incentives for the adoption of risk reduction measures.

We analyzed national policies and regulations for those cities located in Latin America and the Caribbean. In the cases of Miami and Vancouver, the analysis has been conducted at the level of state and local regulations, given the federal structure of their respective countries.

Methodology – Objective 2

The second research objective of this project was to conduct a study on the private sector's involvement in disaster risk reduction, and analyze existing governmental measures that deter, as well as encourage and support, private sector movements toward more sustainable business practices, and thus more disaster resilient societies. The study focuses on six major cities within each of the Americas sub-regions: 1) North America (Vancouver (Canada) and Miami (United States)); 2) Central America (San José (Costa Rica)); 3) Andean Region (Bogotá (Colombia)); 4) Southern Cone (Santiago (Chile)); and Caribbean (Kingston (Jamaica)).

The methodology for this objective has three main parts. First, a comprehensive literature review of the role of the private sector and business continuity plans and DRR strategies was undertaken. This review included not just the academic literature, but also reports published by international companies, governments and NGOs. Second, a series of surveys were conducted to address the research goals using *Qualtrics* platform. The research related to the first objective looks for local decision makers' perceptions about business continuity plans in their organizations, using a Business Continuity Benchmarking (BCB) tool. The BCB is complemented with an analysis of corporate social responsibility and governmental measures necessary to create an enabling environment for the private sector to participate in disaster risk reduction. The survey complied with the Institutional Review Board (IRB) regulations. The recruitment process involved advertisements through email notifications prior to the realization of the research, and the surveys were conducted using online questionnaires. In case the response rate was too low for certain countries, face-to-face and phone interviews were administered in order to assure a reliable number of responses. For cultural reasons and to facilitate the administration of the survey, a verbal consent form was provided (in English and Spanish). The survey was conducted from June 2012 to October 2012, with the exception of Santiago, which was extended until November 2012, due to logistical problems.

The subjects targeted for interviews were senior managers, personnel, or directors of private sector companies in three main sectors: 1) food and agriculture, 2) tourism, and 3) construction in the countries under study, who were willing to provide critical information about disaster risk reduction efforts, including business continuity plans and corporate social responsibility efforts of the companies in which they work.

Based on the sampling methodology and other studies conducted in urban settings –but not specifically in the field of DRR-, we established the target number of responses of 270 surveys (90 surveys per sector). The sample design was based on a recognized system for classifying business establishments, the North American Industry Classification System (NAICS.) NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the [Standard Industrial Classification \(SIC\) system](#). It is used in Canada, Mexico, and the United States. For more information visit the U.S. Department of Commerce, U.S. Census Bureau at <http://www.census.gov/eos/www/naics/>.

One senior respondent –business executive capacity- was selected and interviewed from each company. All interviewees were informed of the research purpose and general objectives prior to beginning the interview. Respondents’ answers remained completely anonymous throughout the research and information was coded to avoid subject identification.

The data collected in the area of corporate social responsibility and business continuity associated with disaster risk reduction focuses on private sector actions to protect employees and operations in hazardous zones; measures of social justice in the workplace, that contribute to reducing poverty and vulnerability; advocate for long-term business relationships with suppliers; partnering with other institutions to leverage financial and human resources, influence, creativity and expertise to address disaster risks at the community level; and pursuing advocacy with governmental, non-governmental, and civil society organizations in order to improve DRR awareness at all levels, compliance with regulatory frameworks (land use management, building codes), implementation of mitigation and risk transfer measures, as well as improving the resilience of communities in disaster-prone areas.

Data Analysis – Objective One

The analysis of the enabling environment for private sector participation in disaster risk and emergency management encompasses three areas: (1) Legal frameworks; (2) Operation and construction licenses and permits; and (3) Incentives and support for the private sector.

General Disaster Risk and Emergency Management legal frameworks

The review of the national disaster risk and emergency management (DREM) legal frameworks of the six countries under study sheds light on the different ways disaster risk is addressed.

Country	Legal framework	Risk Management approach	Comments
Canada	Emergency Management Act S.C. (2007), c15	Reactive	Canadian Law has a disaster and emergency management approach instead of the risk management approach that characterizes the modern trend. It establishes responsibilities and key elements in order to ensure an adequate response to eventual disaster situations.
Colombia	Ley 1523 (2012) “By which the national policy on risk management is adopted and the National System for Disaster Risk Management is created, and other regulations are dictated”.	Prospective, corrective and reactive, linked to sustainability, territorial safety, collective rights and interests, and improvement of the quality of life	Colombian law establishes a modern approach to risk management, including clear responsibilities at all levels of government in terms of prospective, corrective and reactive risk management.
Costa Rica	Law 8488 (2005): National Emergency and Risk Prevention Law	Prospective, Corrective and Reactive	Costa Rican Law includes an integral view of risk reduction and disaster response, with a clear distribution of public responsibilities. The role of land use planning and territorial regulations is included as a responsibility of local governments.
Chile	Decreto Ley 369 (1974): Creates the National Emergency Office (ONEMI)	Reactive	Chilean Law dates from 1974 and, following the trend of that period, is oriented to disaster management.

Country	Legal framework	Risk Management approach	Comments
Jamaica	Act 15 (1993): The Disaster Preparedness and Emergency Management Act	Reactive	Jamaican Law is another norm established under the approach focused on disaster management and preparedness.
United States of America	PUBLIC LAW 107–296— (2002): An Act To establish the Department of Homeland Security, and for other purposes. Robert T. Stafford Disaster Relief and Emergency Assistance Act: Requirements for Federal and State Roles in Declaration of an Emergency or a Major Disaster	Reactive	The Law that established the Homeland Security Department established the transfer of the Federal Emergency Management Agency to this Department. The act is oriented towards the development of protection, preparedness and response actions in order to reduce the loss of life and property. The role established for FEMA also includes mitigation and risk-reduction as part of a comprehensive, risk-based emergency management program. Prospective and corrective risk management responsibilities are not considered in the norm.

The following table summarizes the integration of the private sector within the countries’ legal DREM legislation described in previous table.

Country	Integration of the private sector	Comments
Canada	No role or responsibilities for the private sector are established in the Act.	
Colombia	Art. 2. <i>Risk management as a responsibility of all the authorities and inhabitants.</i> Paragraph 1: Public, private and community entities will develop and implement all the risk management processes within in the frame of their competencies and jurisdiction. Principle 3. Social solidarity: All public and private persons or entities will support with humanitarian actions. Principle 4. Self-conservation: All public and private persons or entities shall adopt measures for risk management in their personal and functional domains. Principle 12. Coordination: Regards the need of coordination of all public, private and community actors. Principle 13. Concurrence: Efficacy due to non-hierarchical collaboration between public, private and community actors.	The participation of the private sector is provided, in a passive way, as an actor having responsibility to reduce risk in its framework of action, in the mandatory compliance of impact and post-impact processes, and in terms of solidarity support to humanitarian actions.

Country	Integration of the private sector	Comments
	<p>Chapter 2: Structure: organization, direction and Coordination of the National System.</p> <p>Membership includes private entities, for their involvement in development through their economic, social and environmental activities.</p> <p>Article 42. Specific risk analysis and contingency plans: Public and private entities providing public services and implementing major civil works or industrial activities shall elaborate specific risk analysis and implement risk management measures and contingency plans.</p> <p>Chapter VI: Declaration of the State of Disaster, Public Calamities and normality: establish the mandatory participation of public and private entities in the different processes.</p>	<p>Its participation in the different instances of the System is foreseen as a contributor in a very general way.</p> <p>Incentives or active measures for promoting prospective risk reduction in business decision-making processes are not included, and the same situation is observed in terms of business continuity, private risk transference or tax incentives.</p>
Costa Rica	<p>Article 2: Purpose. To define and integrate efforts of central government, decentralized institutions, public companies, local governments, the private sector and civil society organizations.</p> <p>Principle: Integrity of the management process: Integrated approach seeking the participation of the private sector.</p> <p>Article 6: Risk Management National System: promotes the participation of the private sector.</p> <p>Article 9: Coordination for risk management and emergency response: Private sector will integrate the technical and operational structures organized by CNE.</p> <p>Article 10: Coordination Instances: Public and private actors will create Institutional Risk Management Committees.</p> <p>Private sector participation in the national and local instances is provided, and will be defined according to the internal sector rules or agreements.</p> <p>Article 14: Ordinary prevention competences of CNE: The Commission has the responsibility to dictate mandatory resolutions for the public and private sector.</p> <p>Article 15: Extra-ordinary competences of CNE: private sector is included in the actors that implement response actions.</p> <p>Article 33: Mandatory inter-institutional coordination and collaboration of particulars and private entities. Voluntary participation of the private sector will be coordinated with CNE.</p> <p>Article 47: Contributions. Private sector is authorized to contribute with the National Emergency Fund.</p>	<p>The law does not provide incentives or promotion for the reduction of risk within the business actors, and the same situation is observed in terms of fiscal incentives or business continuity.</p>
Chile	<p>Article 1: The necessity to create an organism for the coordination of public and private entities and services.</p>	

Country	Integration of the private sector	Comments
	Article 3: ONEMI assumes the coordination of all public and private actors implementing actions related to the emergency.	
Jamaica	No role or responsibilities of the private sector are established in the Act.	
United States of America	<p>SEC. 508. Use Of National Private Sector Networks In Emergency Response. To the maximum extent practicable, the Secretary shall use national private sector networks and infrastructure for emergency response to chemical, biological, radiological, nuclear, or explosive disasters, and other major disasters.</p> <p>SEC. 509. Use Of Commercially Available Technology, Goods, and Services. In order to further the policy of the United States to avoid competing commercially with the private sector, the Secretary should rely on commercial sources to supply the goods and services needed by the Department.</p> <p>Robert T. Stafford Disaster Relief and Emergency Assistance Act provides for the participation of private actors in the implementation of disaster response actions.</p>	<p>The role of the private sector is integrated in a passive mode. No incentives or concrete regulations related to business and its role in DRM are included.</p> <p>Nevertheless, beyond regulations, there are strategies and projects to foster and actively support private sector involvement.</p>

Operation and construction licenses and permits

It is in the area of permitting – construction codes, environmental licenses, land use regulations - where specific DRR guidelines for private sector DRR can be identified. The following sections summarize the main findings of the analysis in this area. A more detailed description of the policy and regulation instruments analyzed is provided in Exhibit A. The summaries below are presented in alphabetical order.

Country	Construction licenses and permits
Canada (Vancouver, British Columbia)	<p>The federal government publishes national building codes and revises it every five years. The provincial and territorial governments have the legislative responsibility to regulate construction, and over the last years the provincial and territorial governments adopted the national code with few modifications.</p> <p>Strategic land use planning is the government-led process of defining the collective vision, goals, objectives and strategies. The Integrated Land Management Bureau (ILMB) is responsible for land use planning at the regional level. The Official Community Plan should contain maps of land use restrictions related to "hazardous conditions".</p> <p>Environmental Risk Assessment (ERA) for private and public projects, complement land use risk reduction measures. They evaluate the likelihood or probability that adverse</p>

Country	Construction licenses and permits
	<p>effects may occur to environmental values, as a result of human activities. In essence, the elements of each assessment are negotiated between the proponent agencies and the Environmental Assessment Office (EAO). The EAO Guide to Preparing Terms of Reference includes potential for accidents and malfunctions as well as the impact of physical hazards.</p>
Chile	<p>The country’s seismic history has led the national authorities to adopt concrete measures in order to ensure earthquake resistance. The General Ordinance on Urbanism and Construction establishes the rules for the assessment and approval of permits presented to Municipal Works. This norm includes concrete criteria for the observation of several aspects related to risk, contingencies and disaster. It includes among others: (1) “Occupation load” assessment as the maximum number of persons per square meter... for the calculation of evacuation systems according to the expected use of the building. (2) “Fuel load assessment” related to the application of fire prevention norms NCh 1916 y NCh 1993. (3) Evacuation Assessment evaluation of evacuation systems in case of emergency. (4) Risk Assessment: technical document oriented to the definition of actual or potential hazard for human settlements. (5) Security Assessment: Evaluation of security conditions provided by the construction project.</p> <p>The ordinance also establishes clear responsibilities and sanctions for damage and losses caused by faults or defects in the design and construction process.</p> <p>On the other hand, Article 2.1.7 of Title 2 (Planning) establishes the requirements for the Inter-communal Urban Planning that regulates the physical development of urban and rural areas integrated in urban units. The requirements include “The definition of risk areas or non-building zones at inter-communal level”.</p> <p>The Environmental Assessment process considers the inclusion of environmental risks, an environmental contingency that may affect people, resources and assets. It includes adding preventive and corrective measures in the event of contingencies. However, the approach refers to risks of situations that the company or project could cause (accidents, environmental damage, etc.) rather than those that could affect it.</p> <p>Several studies conducted after the Cauquenes earthquake of 2010 concluded that houses response to the strong movement had been adequate for life protection, and the strong impact experienced by some buildings was directly related with (Moroni, 2011) non-compliance of the norms.</p>
Colombia	<p>Colombia is known as one of the Latin American and Caribbean Countries that has successfully developed its policy and institutional framework for disaster risk reduction. The Inter-American Development Bank’s (IADB) Risk Management Index ranks Colombia (together with Barbados) as number one in Latin America and the Caribbean in terms of risk management (IADB, 2010).</p> <p>Architecture and construction are regulated by the “Urbanism and Construction General Law” (DFL N° 458 of 12.18.75) and its modifications. Law 400 of 1997, as well as subsequent decrees, regulates the subject of earthquake resistance. Construction or alteration of buildings requires prior approval issued by the authorized body for this purpose, in this case, the Urban Curator.</p> <p>Municipal planning and land use regulations are key elements in the field of disaster risk reduction for the country in general, and for the private sector in particular. Law 388 of</p>

Country	Construction licenses and permits
	<p>199715 established the methodology for land use planning in the municipalities and it states that land use plans must incorporate policies, guidelines and regulations on the prevention of natural hazards and risks, the identification and localization of risk areas for human settlements, as well as management strategies for hazard-prone areas. Recently, a guide has been published to assist municipalities in the integration of disaster risk considerations into land-use plans.</p>
Costa Rica	<p>Costa Rica is also a country with a high level of exposure in a multi-hazard environment that counts on specific norms for disaster risk reduction. One of the most important instruments is the Seismic Code, adopted for the first time in the early seventies, motivated, among other aspects, by the Managua (1972) and Tilaran (1973) earthquakes. Three subsequent versions of the code have been produced and the application of the norm is considered one of the main sources of disaster risk reduction in the Country. One recent example is the low impact of the August 2012 Nicoya earthquake with a magnitude of 7.6 Mw.</p> <p>In general, these instruments have passive incidence in the private sector in terms of regulations, restrictions and technical and structural specifications for construction or functioning. In terms of land use regulations, the Urban Planning Law, establishes that every local government shall adopt “regulatory plans”, conceived as “the planning instrument that defines, in a series of maps, regulations, and any other document, graphic or annex, the development policy and the plans for distribution of the population, land use, roads, public services, community facilities as well as urban areas construction, conservation and rehabilitation” (Urban Planning Law and its reforms, 1968). The norm provides a series of requirements that should be observed in the formulation of the plans.</p> <p>In addition, Article 1 of the Decree 32967-MINAE (2006) establishes the “Introduction of the environmental variable in Regulatory Plans and other Land Use Planning Instruments”. The regulation includes the procedures that local governments should follow in order to include this variable in the land use planning and regulation in the territory of its jurisdiction. These procedures include concrete aspects linked to risk as a form of passive prospective risk management, for example, Article 5.2 Geo-aptitude of terrains: criteria, for determining the geo-aptitude includes the susceptibility to be affected by natural hazards.</p> <p>In the elaboration of the Environmental Fragility Index, natural hazards become a key factor for determining the potential use, or the restriction of specific parts of the territory.</p>
Jamaica	<p>In the case of Jamaica, the legislation empowers local authorities and the minister or national authority to decide on permits for development activities. For example, in terms of building codes, the Factory Construction Act (Law n.9 and n.30 / 1961) and the Factory Construction Regulations (Law n.7 / 1962) give ministers or committees the power to grant or remove licenses.</p> <p>The Jamaica National Building code was updated in 2009, adopting the International Building Code of 2003 (Adams & Adams, 2010). Nevertheless, the code has not been legally adopted, which is considered a problem for its enforcing (Gordon)</p>

¹⁵ See <http://www.encolombia.com/derecho/Derecho-Leyes.htm> for details. Retrieved in July 2012.

Country	Construction licenses and permits
United States of America (Miami, Florida)	<p>In the United States, in general, the adoption of norms that regulate construction is one of the main sources of passive prospective risk reduction. Several states and local governments adopt the model of the International Code Council (FEMA, 2012) that includes the following family of codes: (1) International Building Code (IBC): Applies to almost all types of new buildings; (2) International Residential Code (IRC): Applies to new one- and two-family dwellings and townhouses of not more than three stories in height; and (3) International Existing Building Code (IEBC): Applies to the alteration, repair, addition, or change in occupancy of existing structures.</p> <p>Other states establish their own codes. In the case of Florida, since March 2002, the state’s Building Code supersedes all local building codes. It defines the establishment of maps of different human hazards (fire, Explosions, etc.), and natural hazards (floods, high-velocity hurricane zone, etc.). It also defines Risk Categories for buildings and other structures as well as the definition of hazardous areas according to the Federal Emergency Management Agency (FEMA). The application of the code in the design and construction process constitutes a guarantee of safety and investment protection for the business initiatives in the country. Nevertheless, retrofitting of already built facilities remains a key aspect of corrective risk reduction measures.</p>

Incentives and support to the private sector

Regarding the third category of government instruments to promote risk reduction in the private sector – which includes active, non-regulatory measures - Canada and the United States represent the highest level of development, especially in the provision of information, tools, and technical support for businesses.

In Canada, the Department of Public Safety – the Federal Ministry in charge of Emergency Management – promotes the adoption of Business Continuity Plans, and an active and prospective orientation towards disaster, making the distinction between “resumption”, a reactive concept of recovery after a disruption, and “continuity” which implies that critical business services should continue to be available without interruption (Public Safety, 2012). The Public Safety website includes specific tools for the adoption of these plans.

In the Province of British Columbia, the Emergency Program Act (1996), and Emergency Program Management Regulation (Emergency Program Management Regulation, 1998) provide “advice and assistance to business and industry in relation to emergency preparedness, response and recovery.” Following this policy, the BC Ministry of Environment elaborated the “B.C. Guidelines for Industry Emergency Response Plans.” The guidelines are mainly directed towards environmental hazards, such as the release of hazardous chemicals or dangerous goods.

Besides government led programs, in British Columbia a group of business leaders created the Emergency Preparedness for Industry and Commerce Council (EPICC) after recognizing that the province was not adequately prepared to cope with disaster (EPICC): “EPICC is a nonprofit government endorsed society supported by and for the benefit of business and institutions throughout British Columbia, Canada, to influence and help businesses prepare for emergencies and disasters. EPICC provides a supportive forum in which businesses are encouraged to effectively practice emergency management procedures with a goal of surviving potential disasters. Membership is open to all sizes of business, levels of government and other organizations.”¹⁶ EPICC promotes the concept of “business resilience” and business continuity as a key tool for reinforcing that capacity among private initiatives.

In the city of North Vancouver, the North Shore Emergency Management Office has included a guide to better prepare businesses in case of emergency. It incorporates

¹⁶ Emergency Preparedness for Industry and Commerce Council (EPICC) Website
<http://www.epicc.org/showcontent.aspx?MenuID=494>

recommended steps for businesses preparedness, as well as the Federal guide for business continuity.

In the United States, the Federal Emergency Management Agency (FEMA) has developed the “Ready Business” program. “The program assists businesses in developing a preparedness program by providing tools to create a plan that addresses the impact of many hazards (FEMA).” Available tools utilize an “all hazards approach” and follow the program elements within the National Fire Protection Association 1600, the Standard on Disaster/Emergency Management and Business Continuity Programs.

There are also programs for specific hazards, such as the QuakeSmart Initiative (FEMA, 2012), which supports business initiatives to adopt mitigation measures. QuakeSmart provides a Toolkit (FEMA P-811) for the use of the private sector. The toolkit explains earthquake risk to private initiatives, and serves as a guide, outlining simple steps for adopting mitigation measures.

Not many programs of this type were found in the other four countries and cities under assessment. Costa Rica and Colombia have experience with the application of fiscal incentives and subsidies for land recovery and land improvement, but the research conducted for this study did not show any awareness or capacity building programs directed towards businesses. There is increased activity in the area of business continuity in Chile, Colombia and Costa Rica, but this seems to be coming from within the private sector, without much government incentive or support.

Another area considered part of the enabling environment in this study is insurance. Although in most countries insurance is a private sector activity – except until recently in Costa

Rica – it is an important area for government policy, since regulation is a fundamental element of its development.

Insurance policies are widely used in Canada and the United States. The majority of commercial and industrial firms in Canada (80 to 90 percent) choose to purchase all-hazard insurance coverage that includes earthquake damage. The Insurance Bureau of Canada estimates that 60 to 65 percent of homeowners in Southwestern British Columbia buy earthquake insurance (Kovacs, 2010).

Insurance is also a very common risk transfer instrument in the United States, often with government encouragement or even support. For example, the Federal Government created the “National Flood Insurance Program,” which is administered by FEMA. Since standard insurance does not cover floods, in 1968 the Congress created the NFIP with coverage for communities, businesses or individual owners. “In order to qualify for flood insurance, a community must join the NFIP and agree to enforce sound floodplain management standards.” (NFIP, 2012)

According to a recent publication by Zurich Insurance Group (2012), in Latin America, insurance penetration – the ratio between insurance premiums written and GDP – “remains low even compared with other emerging economies..., ranging from 2 percent in Argentina and Mexico to 4 percent in Chile.” The regional average of 2.6 percent is low compared to 8.7 for industrial markets, and even to 3.8 for Africa.

The same study mentions several factors that can explain the low level of penetration, both on the demand and supply sides, but emphasizes the existence of important regulatory

barriers that must be addressed in order to build trust, “which is a necessary precondition for a functioning insurance marketplace.” (Zurich Insurance Group, 2012)

A promising trend towards changing the situation in Latin America and the Caribbean is the development of several regional initiatives supported by multinational and bilateral cooperation agencies. One of the most interesting is the Partnership for Disaster Management, an action network launched by the Pan American Development Foundation with the support of OFDA/USAID and other partners. Its objective is to promote the integration of the private sector into disaster preparedness, management and risk reduction. Since 2008, the Partnership has supported activities such as the establishment of risk management and business continuity committees and the design of protocols to structure the integration of the private sector into local disaster response.

More recently, the Latin American and Caribbean Economic System (SELA) partnered with the United Nations Disaster Risk Reduction office (UNISDR), USAID/OFDA and other organizations to convene a regional seminar on public-private partnerships for disaster management. One held in Panama in 2011 discussed approaches, advances and challenges for cooperation on disaster risk reduction between the public and private sector; and another in Peru in 2012 focused on government and business continuity in disaster situations. In a paper presented during the first seminar, (Linayo, 2011) identified the following action items for public-private cooperation:

- Characterization of risk, particularly risks in the spaces where the private sector conducts its activities.

- Prevention of adverse events, by focusing on providing private actors with the tools to incorporate hazard criteria in the process of choosing the spaces where their facilities will function, and
- Risk mitigation, focused on the promotion of actions by private actors aimed at decreasing existing risks to infrastructure of significant interest.

The challenge is to move from cooperation programs and regional discussions to active institutional programs to promote private sector risk reduction on the part of the national disaster risk reduction agencies and systems.

Data Analysis – Objective Two

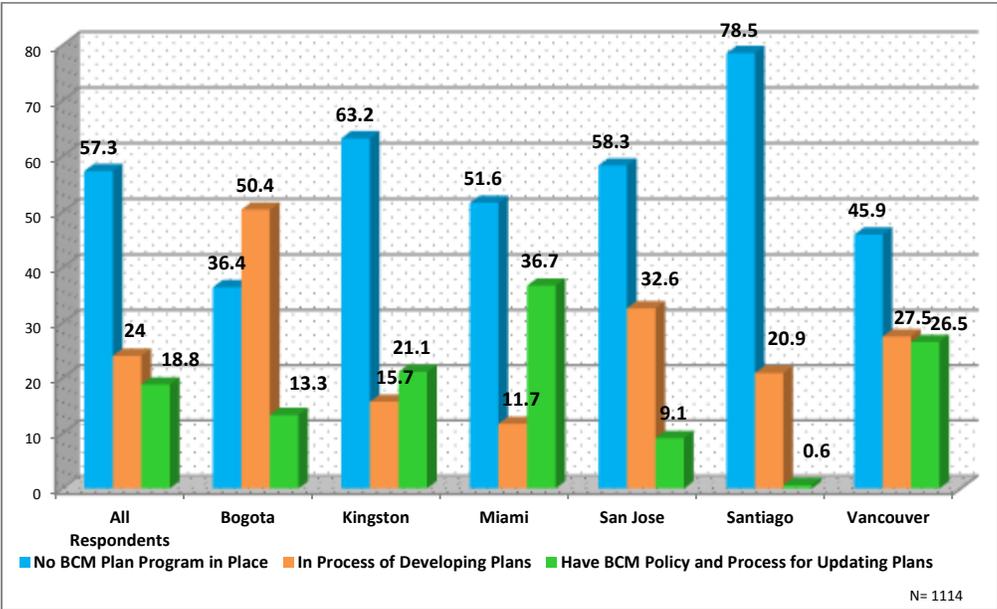
▪ Status of Business Continuity Plans

The data show in question 21, that when companies are asked about the existence of a business continuity plan by city, over half of respondents, about 57%, across all economic sectors and cities indicated that their businesses had no business continuity management plans in place. Less than one quarter (18.8%) noted that their businesses had a plan or program in place, including processes to regularly update plans. The remaining respondents specified that their businesses were in some phase of developing or implementing BCM programs.

Considerable variation exists among respondents in various cities. A greater proportion of respondents in Santiago (78.5%) Kingston (about 63%) and San Jose (58%) indicated that their businesses had no BCM plans or programs in place or in development. In contrast, fewer respondents in Bogota (36%) indicated that their businesses had no such plans in place or in development. The cities with the largest proportion of respondents noting that their businesses have BCM plans as well as processes for updating these plans were Miami (about 37%) and

Vancouver (about 27%). The cities with the smallest proportion of respondents identifying an existing program in their businesses are Bogota with about 13%, San Jose with about 9% and Santiago with less than 1%. While Bogota has the lowest percentage indicating no plan, it also has a relatively small percentage indicating the presence of a fully completed and functioning plan. Half of the Bogota respondents (50.4%) described their companies as being in some phase of developing BCM programs and plans; this is the highest percentage observed in the sample for any city. In contrast, far fewer respondents in Miami (11.7%) and Kingston (15.7%) indicate that their businesses are in the process of developing such policies.

Figure 1. Status of Business Continuity Plan/Crisis Management Program¹ Overall and by City (%)

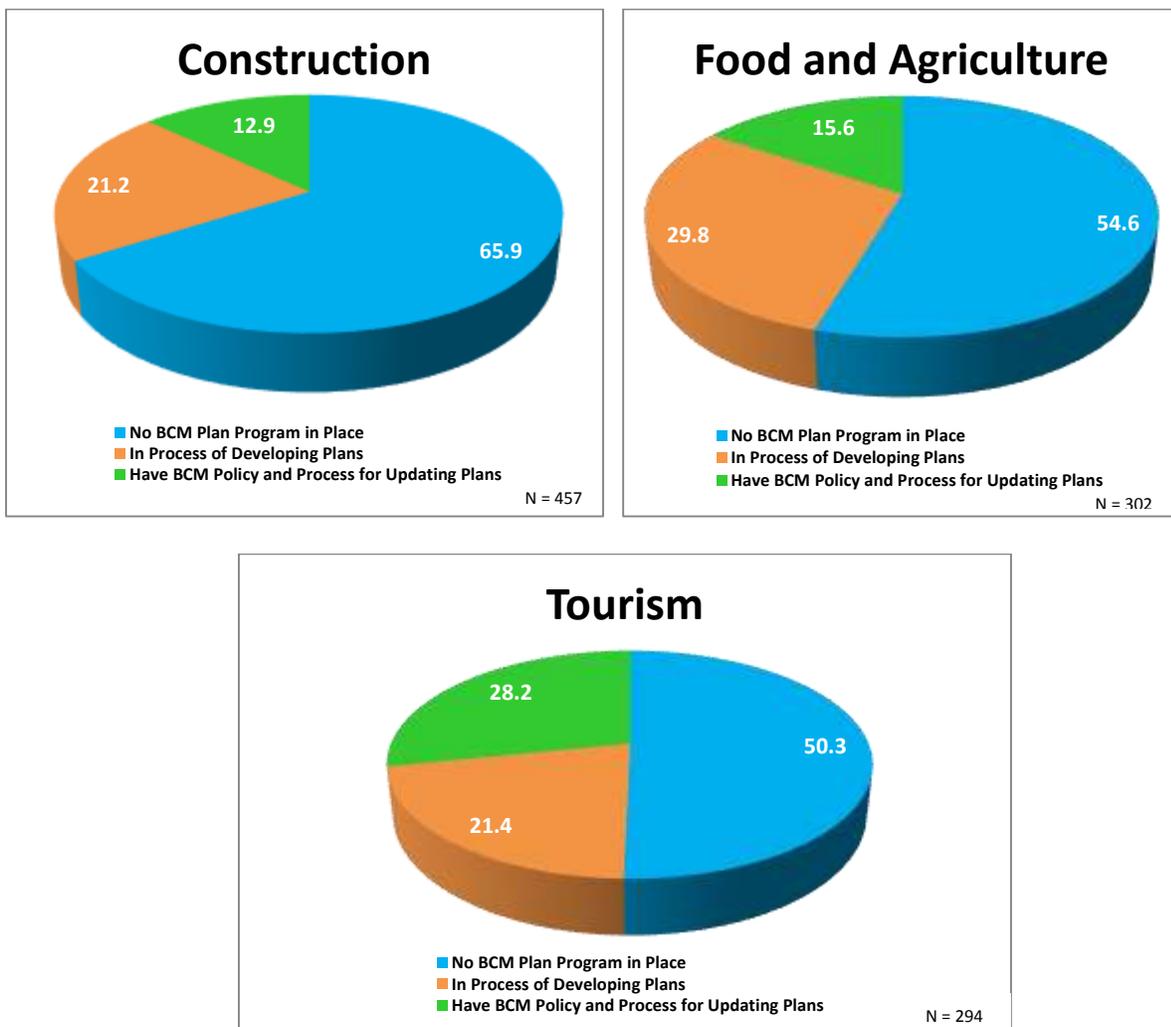


¹ Question text, in English version, reads "Which of the following best describes your company's current business continuity/crisis management program status (please check one):" This question has originally 5 answer choices, however this figure consolidates the middle answer choices into one option indicating that plans are in some phase of development.

Considerable variation also exists across economic sectors. About 55% the respondents from businesses in the agriculture and food sector, and about 50% of the respondents from the tourism sector indicated no BCM plans or programs in their businesses. In comparison, about

66% of those from the construction sector mentioned that their businesses had no plans or programs in place or in development. The proportion of respondents in each sector noting the presence of a plan or program reinforces this pattern. While 28.2% of tourism respondents indicate that their business have a BCM program in place as well as a process for regularly updating their plans, only 15.6% and 12.9% of food and agriculture and construction employees could point to an existing program in their businesses.

Figure 2. Status of Business Continuity Plan/Crisis Management Program by Agriculture, Construction, and Tourism Sectors (%)



¹ Question text, in English version, reads "Which of the following best describes your company's current business continuity/crisis management program status (please check one):" This question has originally 5 answer choices, however this figure consolidates the middle answer choices into one option indicating that plans are in some phase of development.

▪ **Primary Reason for Not Having a Business Continuity Plan**

Question 22 addresses the reasons for not having a business continuity plan. Of the respondents who indicated that there was no current plan in place in their businesses, the reason most often cited for not having a BCM plan was that it was desirable but that other priorities took precedence. While a little over one third (36.5%) of respondents selected this as the primary reason, a number of respondents also cited that their companies were unaware of the need for such a plan (15.1%), that they were not legally required to develop a plan (14.3%), that the top management or owners were not interested in developing a plan (14%), and that the budget was insufficient (11.2%) as primary reasons.

The most frequently selected response varies somewhat across cities. Respondents selected “desirable but other priorities” in Santiago, Kingston, San Jose, and Vancouver (about 39, 42, 50, and 56% respectively). However, in Bogota the most frequently selected response was “not aware of the need,” and in Miami it was “a lack of interest by management or owners.”

Table 1. Primary Reason For Not Having Business Continuity/Crisis Management Plan ¹ Overall and by City (%)						
	Not Aware of the Need	Not Enough Resources to Develop	No Legal Mandate to Prepare	Desirable but other Priorities	Budget Insufficient	No Interest by Top Management/Owners
All Respondents ²	15.1	9	14.3	36.5	11.2	14
Bogota	35.7	8.6	5.7	32.9	10	7.1
Kingston	0.5	10.8	38.1	41.8	6.2	2.6
Miami	33.3	8.1	6.7	14.8	1.5	35.6
San Jose	21.3	9.4	4.7	50.4	7.9	6.3
Santiago	3.3	7.2	2.6	38.6	29.4	19
Vancouver ³	23.3	46.5	27.9	55.8		34.9

n= 680

¹ Question text, in English version, reads “If your company does not have a documented business continuity/crisis management in place, please check one of the following that best explains the reasons:”

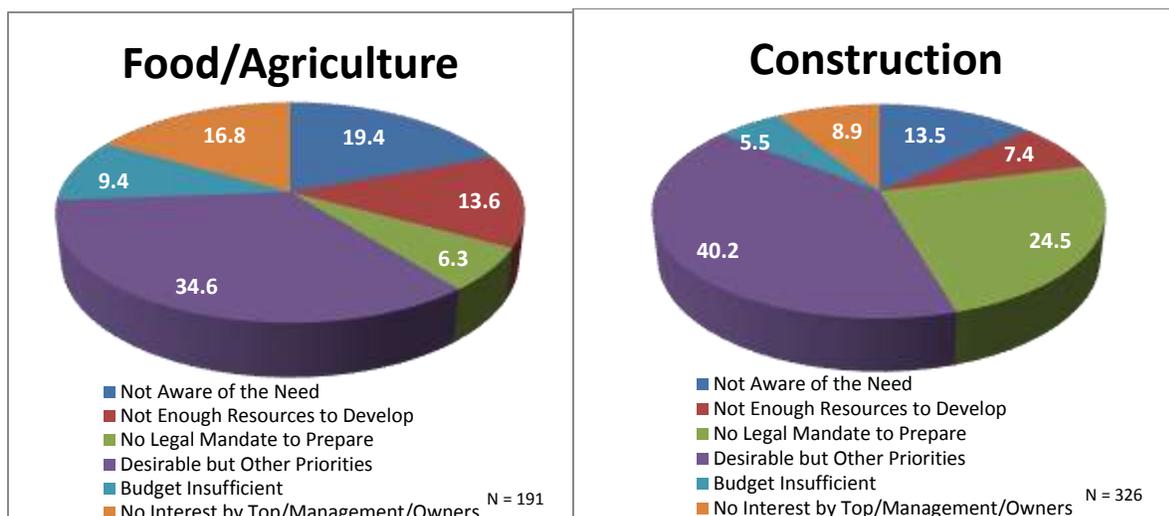
² The question format differed in Vancouver, as result the figures for all respondents present the percentages across the other four cities (Bogota, Kingston, Miami, and San Jose).

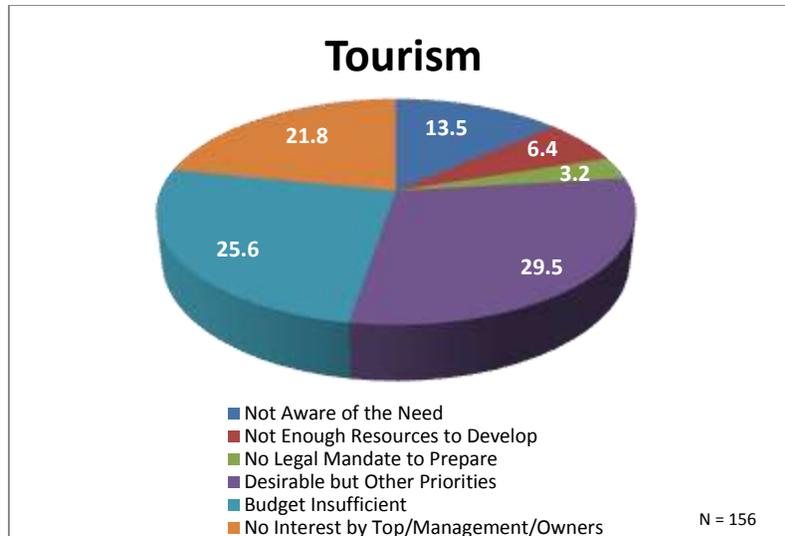
³ In Vancouver, respondents were instructed to check as many reasons as apply. Respondents were not presented with the budget insufficient option.

For the respondents who indicated in question 22 that there was no current plan in place in their businesses, the primary reason cited for not having a BCM plan across all three sectors was that developing such a plan was desirable but that other priorities took precedence. About a third of respondents in each sector selected this as the primary reason. However, the second most common response varied across the sectors. In the food and agriculture sector, about one quarter of respondents (19.4%) cited that their business had no plan because they were unaware of the need to do so. In the construction sector, the second most commonly selected response, with 24.5%, was that no legal mandate required the preparation of such plans.

The responses in the tourism sector were more varied, with insufficient budget and lack of interest by top management or owners being selected by 25.6% and 21.8% of respondents respectively.

Figure 3. Primary Reason for Not Having Business Continuity/Crisis Management Plan¹ by Sector (%)





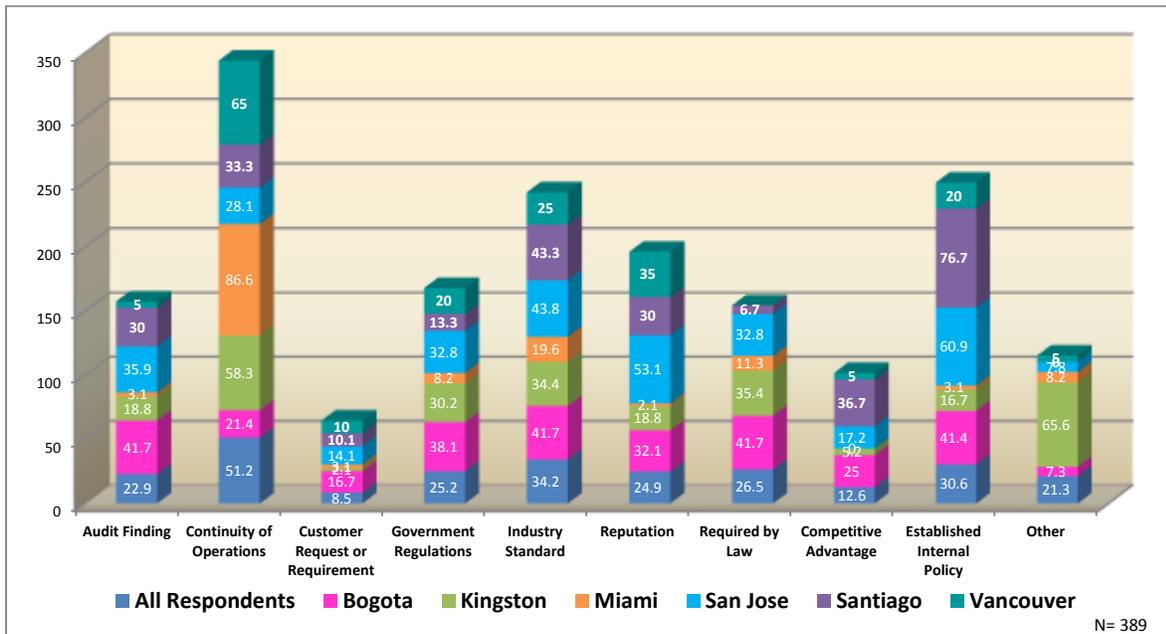
¹ Question text, in English version, reads "if your company does not have a documented business/continuity/crisis management plan in place, please check one of the following that best explains the reasons:" The question format differed in Vancouver; respondents were instructed to check as many reasons as apply and they were not presented with the budget insufficient option. As a result, the figures in this table represent the data for the other four cities (Bogota, Kingston, Miami, and San Jose).

▪ **Percentage Citing Each Reason for Having a Business Continuity**

Of the respondents who indicated that there was a plan or program currently in place in their business, a majority (about 51%) cited maintaining the continuity of operations as an important factor for having a BCM plan or program. This reason for having a BCM program elicited a majority of affirmative responses in Kingston, Miami, and Vancouver (about 58, 87, and 65% respectively). While no other reasons were cited nearly as often in Miami or Vancouver, in Kingston almost 66% respondents indicated that their company policies were initiated based on reasons other than those specified in the survey. In Santiago, the two reasons most cited were established internal policy (almost 77%) and industry standard (43.3%). In Bogota, four reasons were cited by more than 40% of respondents including required by law (41.7%), , audit finding (41.7%), industry standards (41.7%), and established internal policy (41.4%) as rationales for their existing programs. In addition, government regulations were also cited frequently by Bogota respondents (38.1%). In San Jose, while many

respondents cited multiple important reasons for why their businesses established BCM plans, including industry standards and audit findings, a majority of respondents in this city explained that their companies had programs in place as established internal policies (60.9%) and to further their business reputations (53.1%).

Figure 4. Percentage Citing Each Reason for Having a Business Continuity/Crisis Management Plan in Place¹ by City (%)

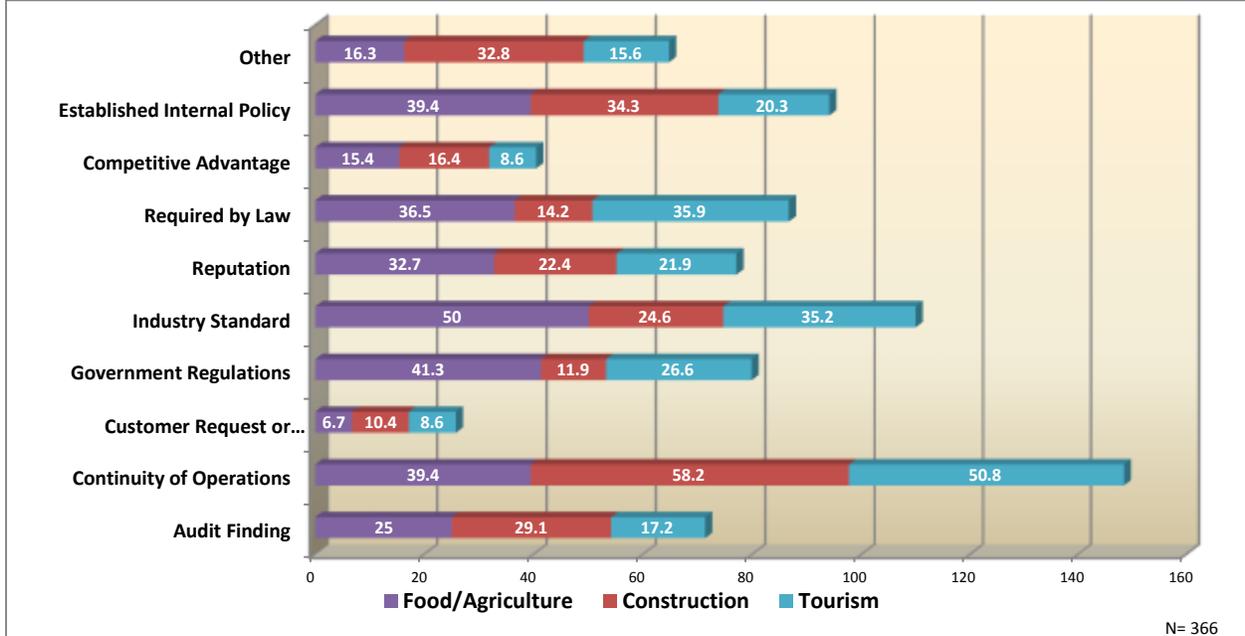


¹ Question text, in English version, reads “if your business/crisis management plan is in place, please check the reasons that best explain the reasons that your company has established Business Continuity/Crisis Management?” Respondents could check all that applied.

² These figures represent the total number of respondents overall and in each city that were asked and answered this set of questions.

By sector, maintaining continuity of operations dominates as an important reason in the construction and tourism sector with 58.2% and 50.8%, respectively. The reasons cited by respondents in the agriculture and food sector are more varied, with at least 40 percent of respondents highlighting the importance of industry standards and government regulations, followed by 39% citing continuity of operations and established internal policy.”

Figure 5. Percentage Citing Each Reason for Having a Business Continuity/Crisis Management Plan in Place¹ by Sector²

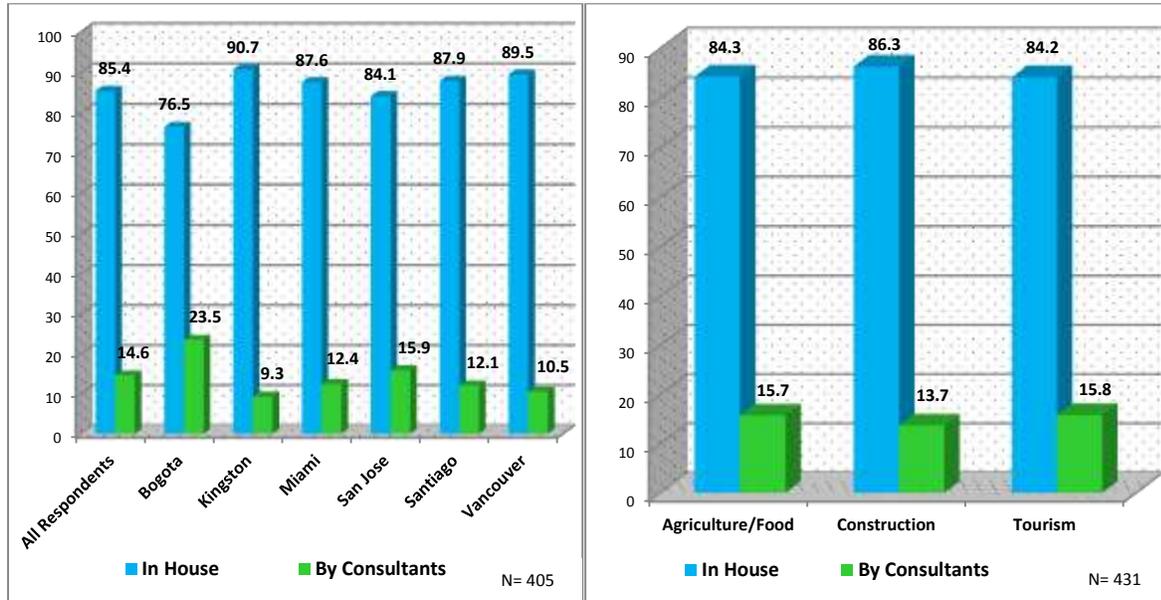


¹ Question text, in English version, reads "If your business continuity/crisis management plan is in place, please check the reasons that best explain the reasons that your company has established Business Continuity/Crisis Management?" Respondents could check all that applied.
² These figures represent the total number of respondents in each economic sector that were asked and answered this set of questions.

▪ **Preparation and Maintenance of Business Continuity Plans**

Question 25 examines whether business continuity plans are often prepared and maintained by in-house personnel or consultants. An overwhelming majority of respondents who indicated that their businesses had a BCM plan or program reported that these plans were prepared and maintained in house, by their own personnel. This pattern holds across cities and economic sectors. Only in Bogota does the percentage of respondents who indicate in house preparation and maintenance dip below 80%. In this case, about 77% of Bogota respondents note in-house preparation, with the remaining 24% reporting that their business relies on consultants.

Figure 6. Responsibility of Preparation and Maintenance of Business Continuity Plan¹ by City and Economic Sector (%)



One key question of this survey refers to the identification of hazards in the area of business operations. Question 11 finds that the relevant hazards in their areas of operation identified by the greatest number of respondents in the full sample are earthquakes (51.6%), windstorms (49.3%), and floods (27.8%).

As one would expect, the applicable hazards perceived by members of the business community vary across cities. In Bogota, the most frequently identified hazard was earthquakes with 77.4% of the sample. About 50% and 42% of Bogota respondents identified terrorism and industrial accidents, as the next highest percentages of hazards occurring in their area. In addition, the average percentage for Bogota respondents across all hazards was almost 26%. A larger proportion of Bogota respondents identified more hazards in the area of operations compared to the respondents for all cities collectively and the respondents in each of the other 4 cities.

In comparison, the average percentage across all hazards in Kingston, just fewer than 13%, was the lowest observed in any city. In addition, Kingston respondents were also fairly cohesive in identifying the top hazard in their area as windstorms, with 88.2%. Other hazards and earthquakes were the threats with the next highest percentages in the Kingston sample (43.1% and 33.2% respectively).

Similarly to Kingston, Miami respondents identified windstorms as the main hazard in their area, with 92.6% of the sample. About 48% and 27% of Miami respondents reported floods and extreme weather, the next highest percentages, as existing in their areas of operation. The mean percentage across all hazards for San Jose respondents is 21.5%, very close to the mean for the overall sample. Among San Jose respondents, the hazards most frequently cited as impacting the area of business operations were earthquakes (85.4%), industrial accidents (37.5%), and windstorms (27.1%).

In Santiago, the top hazard identified in the area of business operation is earthquakes (86.4%) followed by riots (24.5%) and the other category (22.3%).

In Vancouver the top three identified hazards were the same as the top three identified in the full sample; however, the order of the top three hazards differs. Over two-thirds of Vancouver respondents (67.7%) indicated that earthquakes were a hazard in their area of operations, followed by floods (48.5%) and then windstorms (32.4%). The average indicating the presence of a typical hazard among Vancouver respondents is 25%. Vancouver respondents, similar to those in Bogota, were more likely to identify a greater number of hazards present in their area.

Table 2. Percentage of Respondents Identifying Hazards in Area of Business Operation by City

Table 2. Percentage of Respondents Identifying Hazards in Area of Business Operation ¹ by City							
	All Cities	Bogota	Kingston	Miami	San Jose	Santiago	Vancouver
Windstorms	49.3	6.8	88.2	92.6	27.1	2.2	32.4
Earthquakes	51.6	77.4	33.2	1.1	85.4	86.4	67.7
Floods	27.8	22.6	17.2	47.6	22.4	9.8	48.5
Industrial Accidents	18.1	41.8	3.1	3.7	37.5	16.3	26.5
Strikes	14.3	38.4	3.4	2.2	22.4	10.3	27.9
Climate Change	14	20.5	0	17.8	15.1	11.4	29.4
Extreme Weather	14.5	14.4	1.1	26.8	10.4	14.7	22.8
Cybercrime	12.1	21.9	14.9	1.9	17.7	2.7	22.1
Riots	15	39	0.4	2.6	18.2	24.5	25
Other	16	10.3	43.1	2.2	4.7	22.3	5.1
Landslides	10	17.8	2.7	1.1	17.7	6	28.7
Wildfire	9.5	14.4	0.4	10	10.4	7.6	22.8
Terrorism	9.2	50	0.4	2.6	6.8	1.1	10.3
Pandemics/Epidemics	7.3	18.5	0	0.7	13.5	3.8	18.4
Drought	8.5	11.6	3.8	10.8	8.9	13.6	2.9
Volcanoes	6.8	2.7	0	0.7	25.5	7.1	9.6

¹ Question text, in English version, reads "Which of the following hazards exist in the area that your company/business operates?" N= 1197

While the identified hazards exhibit a great deal of variation by city, they are far less varied by economic sector. The top two hazards identified by the highest proportion of respondents in each economic sector include earthquakes and windstorms. The order of the top two hazards does differ between the food and agriculture sector and, the construction and tourism sectors. In the food and agriculture sector, earthquakes were cited by the greatest percentage of respondents (58.7%) as a hazard in their area of operations, followed by windstorms (43.3%), industrial accidents (24.4%) and floods (23.7%). In comparison, windstorms were cited as an existing hazard by the highest proportion of respondents in both the construction and tourism sections (54.5% and 52.5%), followed by earthquakes and floods.

It is worth mentioning the importance that climate change has on the food and agriculture sector (19.6%) and the leverage of riots for the tourism sector (21.1%).

Table 3. Percentage of Respondents Identifying Hazards in Area of Business Operation¹ by Sector

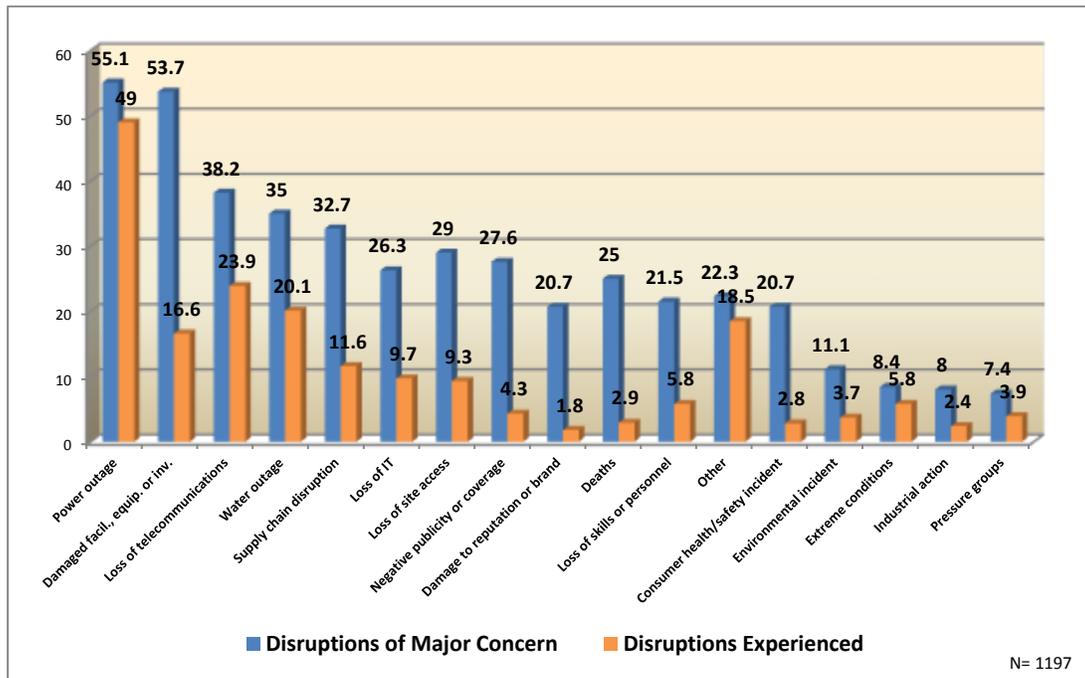
Hazards	Food/Agriculture	Construction	Tourism
Earthquakes	58.7	48	48.7
Windstorms	43.3	54.5	52.5
Floods	23.7	27.5	28
Industrial Accidents	24.4	19.9	8.2
Climate Change	19.6	9.5	10.7
Extreme Weather	18.3	9.1	16.4
Strikes	16	15	9.4
Drought	18.3	3.2	6.9
Terrorism	12.2	8.7	7.2
Riots	14.4	11	21.1
Cybercrime	9.6	12.1	11
Other	13.5	21.8	12.3
Pandemics/Epidemics	9	4	7.5
Wildfire	9.9	9.1	6.9
Volcanoes	7.4	5.1	7.2
Landslides	6.4	13.1	5

¹ Question text, in English version, reads, “Which of the following hazards exist in the area that your company/business operates?” n= 1103

▪ **Hazards Related Business Disruptions**

When analyzing hazard related business disruptions of major concern, the largest number of respondents indicated power outages (55.1%), followed by damage to facilities, equipment, and inventory (53.7%), and loss of telecommunications (38.2%). In addition, water outages; supply chain disruptions were listed as disruptions of major concern by at least 32% of all sample respondents. The orange bars on the graph below indicate the percentage of respondents reporting that their business experienced a particular disruption in the last 5 years. About 49% of respondents reported that their business had experienced a power outage in the past 5 years. This most frequently experienced disruption matches what respondents indicated to be their top disruption of major concern.

Figure 7. Hazards Related Business Disruptions of Major Concern¹ and Experienced in Past 5 Years²



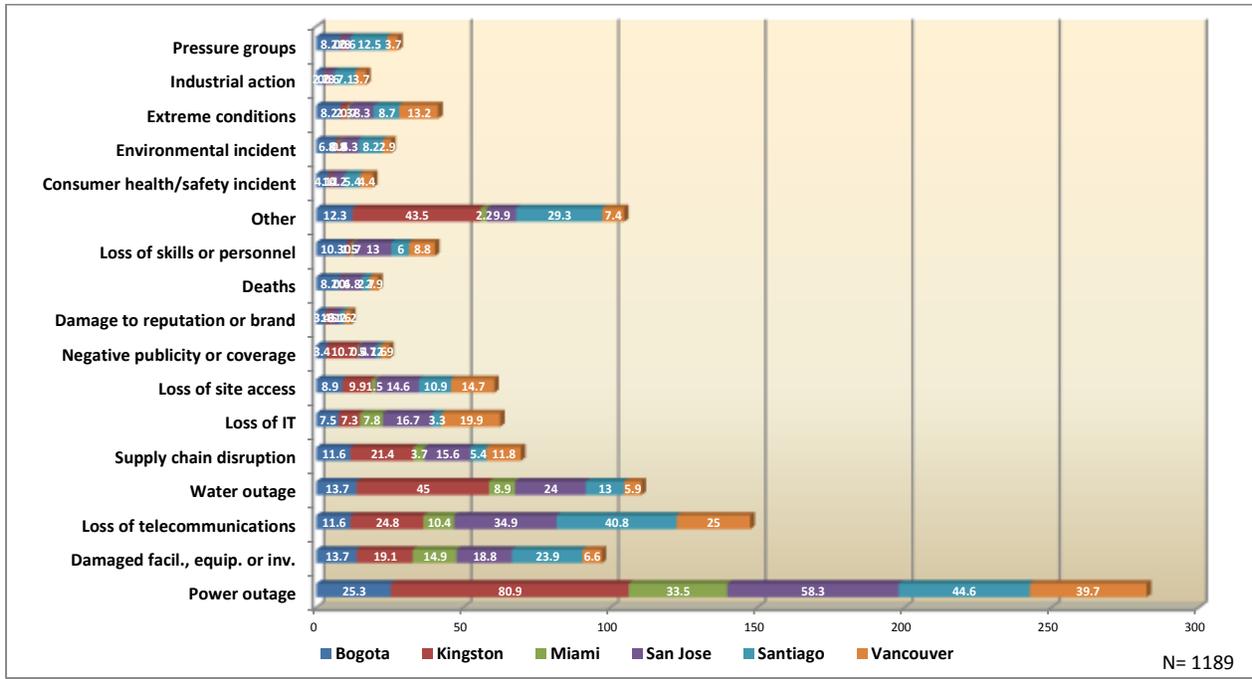
¹ Question text in English reads "Which of the following disruptions are your company's major concerns?"

² Question text in English reads "Which of the following disruptions has your business experienced during the past 5 years due to any of the above hazards?" In the figure, note that the possible disruptions are organized in order of what most respondents indicated as major concern (blue bars). The orange bar is then the percentage of respondents who indicate that their business experienced that type of disruption.

The data in Figure 8 show the percentage of respondents in each city who reported that their business experienced a particular disruption in the last 5 years. The pattern observed for the overall sample, that power outages were the most frequently cited major experienced disruption in the six cities, from 25.3% in Bogotá to 80.9% in Kingston.

It is worth noting that the second disruption experienced in the past 5 years in Kingston was due to water outage (45%), and in Santiago has been due to loss of telecommunications (40.8%).

Figure 8. Percentage of Respondents Identifying Hazard Related Business Disruptions Experienced¹ by City (%)

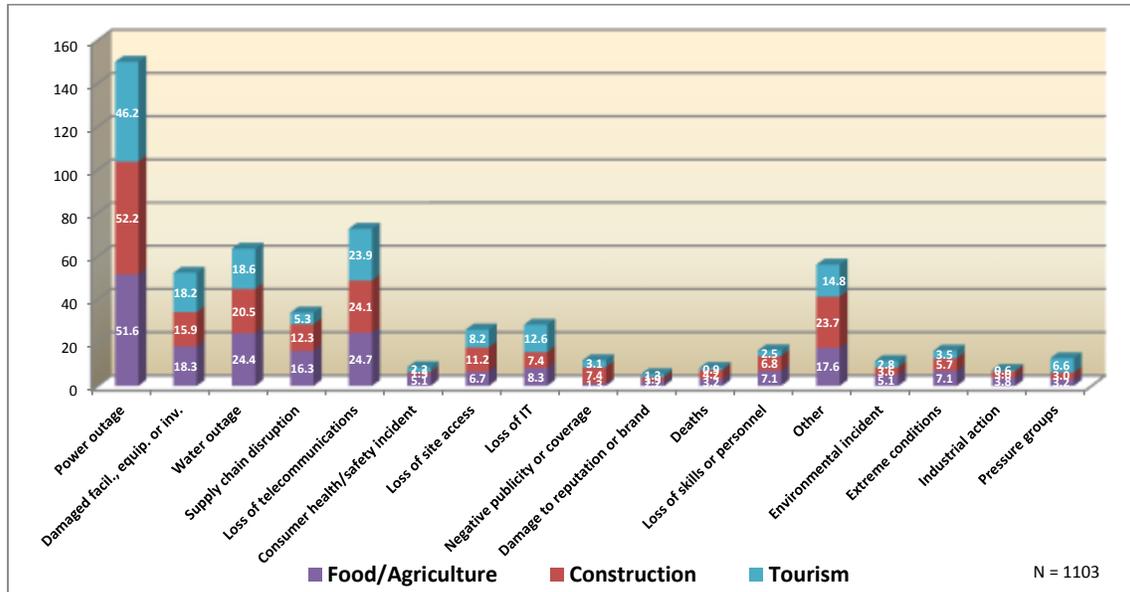


¹ Question text in English reads “Which of the following disruptions has your business experienced during the past 5 years due to any of the above hazards?”

Across all three sectors, less variation is noted. In the three sectors, power outages are the most frequently experienced disruption. Food and agriculture, construction and tourism respondents, cited about 51.6%, 52.2%, and 46.2% respectively. This selection was followed by loss of telecommunications, with 24.7%, 24.1% and 23.9%, respectively.

The next most frequently cited experienced disruption varies by sector. Food and agriculture and tourism sector respondents indicated that their businesses had experienced a disruption due to water outages with 24.4% and 18.6% respectively. In the construction sector, the third most cited business disruption, other, was selected by 23.7% of respondents.

Figure 9. Percentage of Respondents Identifying Hazard Related Business Disruptions Experienced¹ by Sector (%)



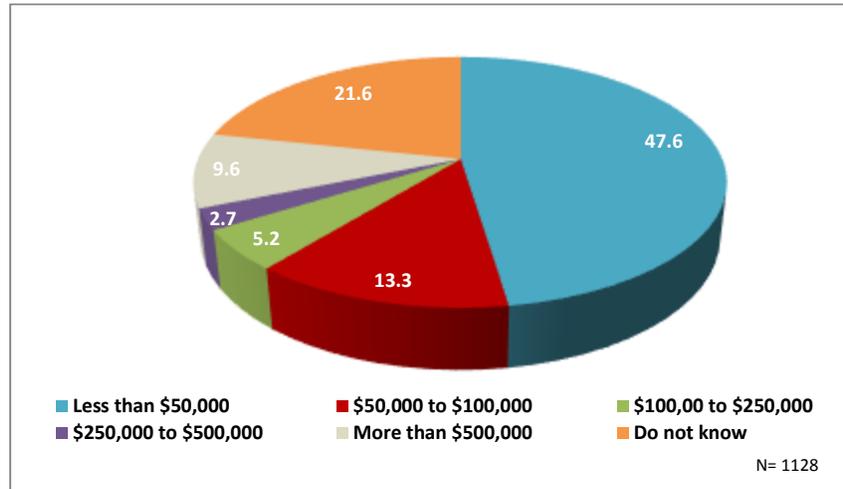
¹Question text in English reads “Which of the following disruptions has your business experienced during the past 5 years due to any of the above hazards?”

▪ **Cost of Major Disruption**

Question 14 examines the estimated per day costs of major disruptions to businesses.

Overall, about 48% estimate that a major disruption would cost their businesses less than \$50,000 per day. The next most selected dollar estimate, chosen by 13.3% of the sample, is between \$50,000 and \$100,000 per day. However, it also important to note that 21.6%, almost a quarter of respondents, cannot estimate a cost per day of a major disruption.

Figure 10. Estimated Per Day Costs of Major Disruption to Business or Company (%)



In all cities and sectors but Santiago, the most frequently selected cost estimate of a major disruption is under \$50,000 per day. Santiago respondents noted that the estimated costs of a major disruption to their city would represent more than \$500,000 (41.7%). Bogota is also a notable exception. In Bogota, almost half of the respondents (48.3%) were unable to estimate the costs of a major disruption for their businesses. Between 10 and 32 percent of the respondents in the other four cities, and about 12 and 29 percent of the respondents in the three sectors, were unable to estimate the costs of major business disruptions.

Table 4. Estimated Per Day Costs of Major Disruption to Business or Company¹ by City and Sector

Table 4. Estimated Per Day Costs of Major Disruption to Business or Company ¹ by City and Sector						
	Less than \$50,000	\$50,000 to \$100,000	\$100,000 to \$250,000	\$250,000 to \$500,000	More than \$500,000	Do Not Know
All Respondents	47.6	13.3	5.2	2.7	9.6	21.6
Bogota	19.3	13.1	4.1	2.8	12.4	48.3
Kingston	55	11.2	1.5	0.8	0	31.5
Miami	68.8	14.8	2	1.6	0.4	12.5
San Jose	47.3	18.6	15.4	4.8	3.7	10.1
Santiago	29.7	6.6	4.9	4.4	41.7	12.6

Vancouver	48.5	17.5	6.2	4.1	5.2	18.6
Agriculture/Food	40.1	15.1	6.6	4.6	13.8	19.7
Construction	46.4	12.1	4.6	1.5	6.4	28.9
Tourism	57.9	12.6	4.5	2.9	9.7	12.3

¹ Question text in English version reads, “What would your estimate a major disruption would cost your company/business per day? (Fill in only one)”

▪ **Characteristics of Business Continuity Plans**

Of the total sample, the activities referred to in question 17 that most respondents indicated their businesses engaged in were business continuity and crisis management plans (20.6%) and hazard specific plans (14.5%). A lower percentage indicated that their businesses had teams (9.2%), staff (5.3%), or special departments or offices (4.3%) working on these issues. Responses do vary by city and sector. In Bogota, a higher percentage of respondents indicated that their companies engaged in each activity compared to the full sample. In Kingston, respondents indicated far less activity, with the exception of hazard specific plans; over 26% of Kingston respondents indicated that their businesses engaged in hazard specific planning.

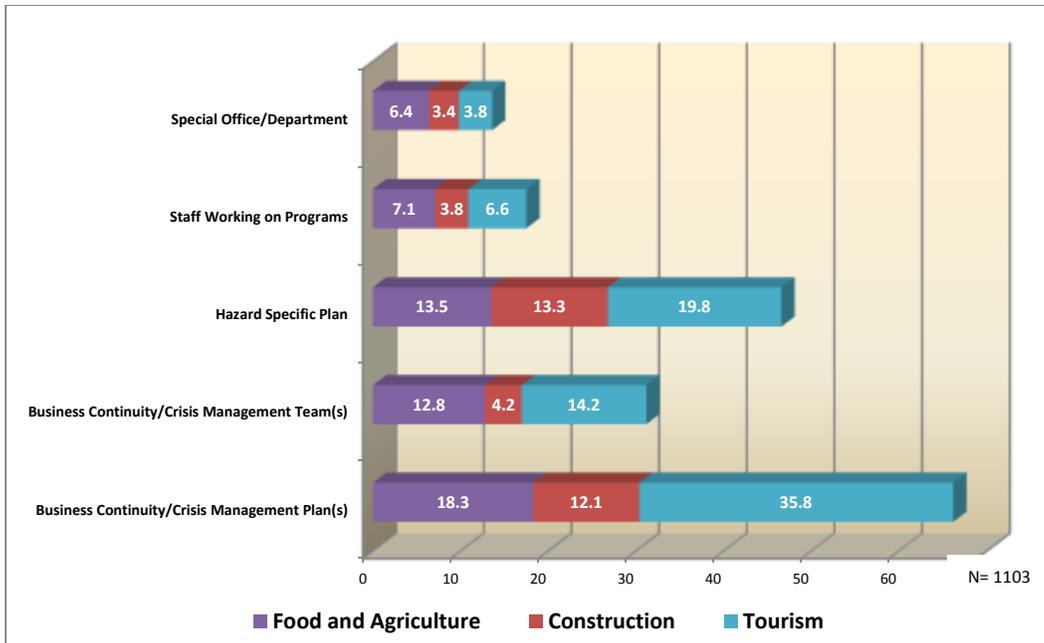
In Miami, about 44% of respondents noted that their businesses were active in business continuity and crisis management planning; this is the highest percentage observed in any city and the activity most frequently selected by Miami respondents. In comparison to Kingston and Miami, no one activity seems to dominate the San Jose responses, with respondents indicating business participation in each activity between about 9 and 18%. In Santiago, about 10% of respondents indicate that their businesses engage in business continuity and crisis management plans, followed by 8.2% that cited hazard specific plans. Vancouver respondents indicate lower participation in each activity by their businesses compared to the full sample with a little over 10%, the highest percentage observed, reporting that their business engages in business continuity and crisis management planning.

Among the three economic sectors, respondents in the food and agriculture sector indicated participation by their companies in a range of activities, with between about 6 and 18% reporting participation in any particular activity. In construction, respondents indicate the most participation in hazard specific plans (13.3%) and business continuity and crisis management plans (12.1%). In tourism these are also the activities with the highest percentages, but they are quite higher than the comparable values for the general sample. Almost 36% of the tourism sample reports that their businesses are active in business continuity and crisis management plans, and 19.8% report activity in hazard specific plans.

Table 5 and Figure 11. Characteristics of Business Continuity Plan/Crisis Activities¹ by City and Sector

	Business Continuity/Crisis Management Plan(s)	Business Continuity/Crisis Management Team(s)	Hazard Specific Plan	Staff Working on Programs	Special Office/Department
All Respondents	20.6	9.2	14.5	5.3	4.3
Bogota	33.6	26.7	17.8	19.2	16.4
Kingston	5	0.8	26.3	1.5	0
Miami	43.5	9.7	11.2	3.3	1.5
San Jose	18.2	17.2	15.1	9.4	9.9
Santiago	9.8	2.7	8.2	1.6	1.1
Vancouver	10.3	3.7	3.7	0.7	1.5

N= 1197



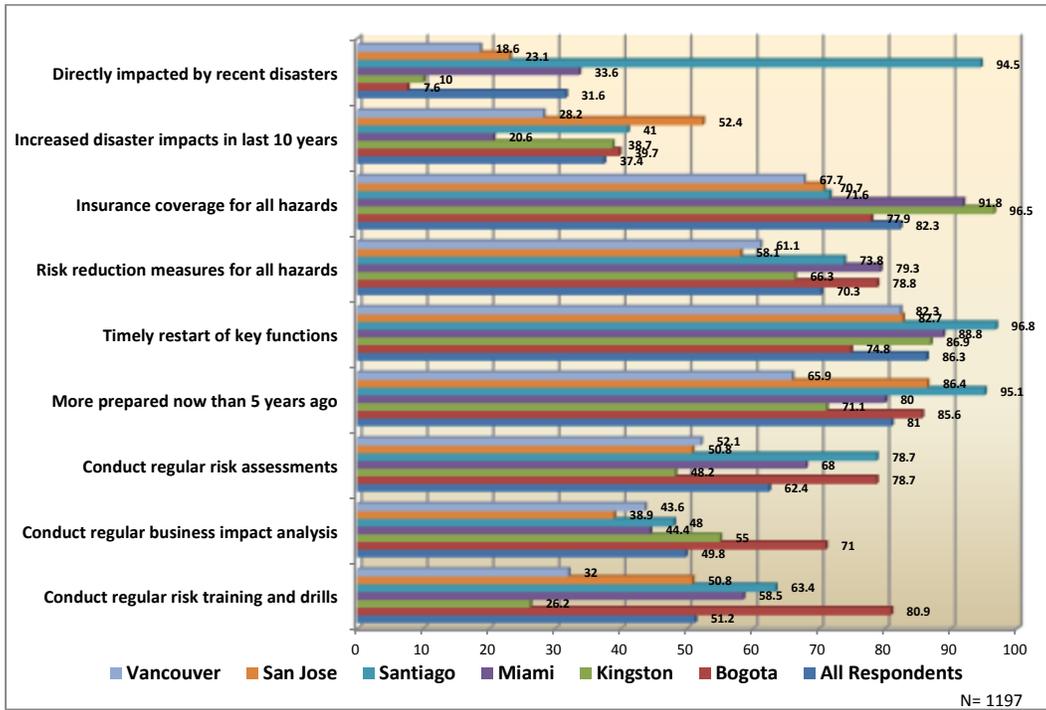
¹ Question text, In English version, reads “Which of the following business continuity/crisis management activities exist in your company?” Respondents selected all that apply.

While most respondents overall and within each city indicate that their businesses can restart key functions in a timely fashion (86.3%), are covered by insurance for all listed hazards (82.3%), are more prepared than five years ago (81%) and have taken risk reduction measures (70.3%). The categories that follow indicate that their businesses conduct regular risk assessments (62.4%), conduct regular risk training and drills (51.2%) and conduct regular impact business analysis (49.8%). While this general pattern is apparent in most cities, Bogota and Santiago are notable exceptions, with a higher proportion of respondents indicating that their businesses conduct regular risk assessments (both with 78.7%).

In Santiago, it is worth noting that 94.5% of the respondents cited that their businesses were directly impacted by recent disasters and that about 95% noted that they are more prepared now than 5 years ago.

- Approach to Disaster and Risk

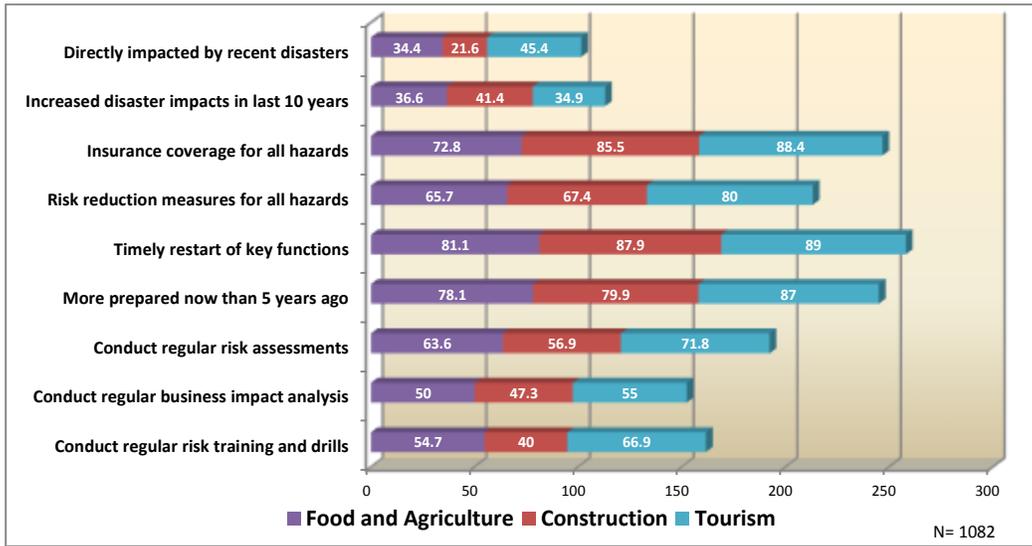
Figure 12 – Approach to Disaster and Risk¹ by City



¹In English, the question asks, “Please indicate your agreement levels with each of the following statements” and the bars indicate the percent of respondents answering strongly agree or agree for each statement.

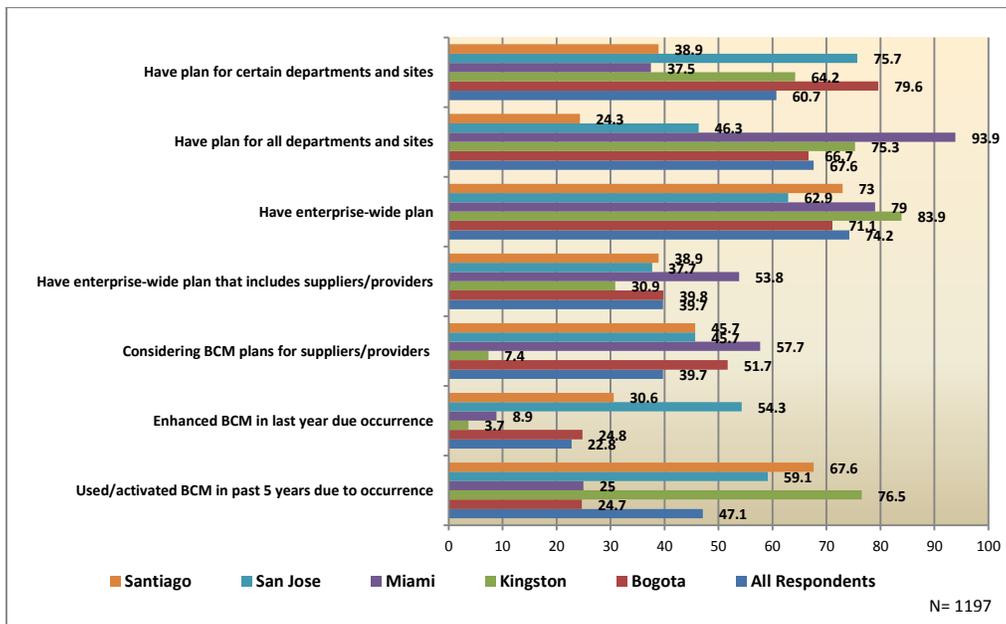
Figure 13 shows a similar pattern across economic sectors. However in the areas of regular risk assessment, impact analysis, and training, a smaller percentage of construction respondents and a larger percentage of tourism respondents indicated that their businesses conducted regular risk assessments, impact analyses, and training.

Figure 13. Company or Business Approach to Hazards and Risk



The scope of respondents' business continuity and crisis management plans varies across cities. While a majority of the full sample indicates the presence of a plan for some or all departments and sites, as well as an enterprise wide plan, only about 40% of respondents indicate that their businesses have a plan that includes suppliers and providers.

Figure 14. Scope and Expansion of Business Continuity and Crisis Management Plans¹ by City

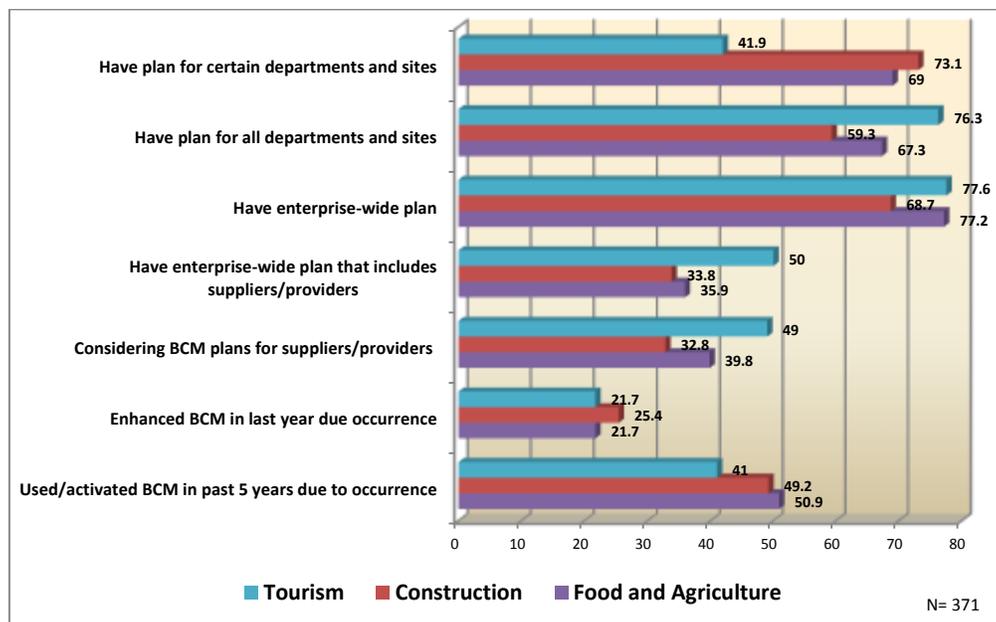


Note: There is no data from Vancouver in this figure.

This figure presents data pertaining to the scope of current plans and expansion of plans across the three sectors. What seems notable is that more respondents report that their business has an extensive plan (about 59-76% for all departments and sites and about 69-78% for enterprise-wide) but even with this, very few (about 34-50%) have a plan that includes suppliers or providers.

- **Scope and Expansion of Business Continuity**

Figure 15. Scope and Expansion of Business Continuity and Crisis Management Plans by Sector



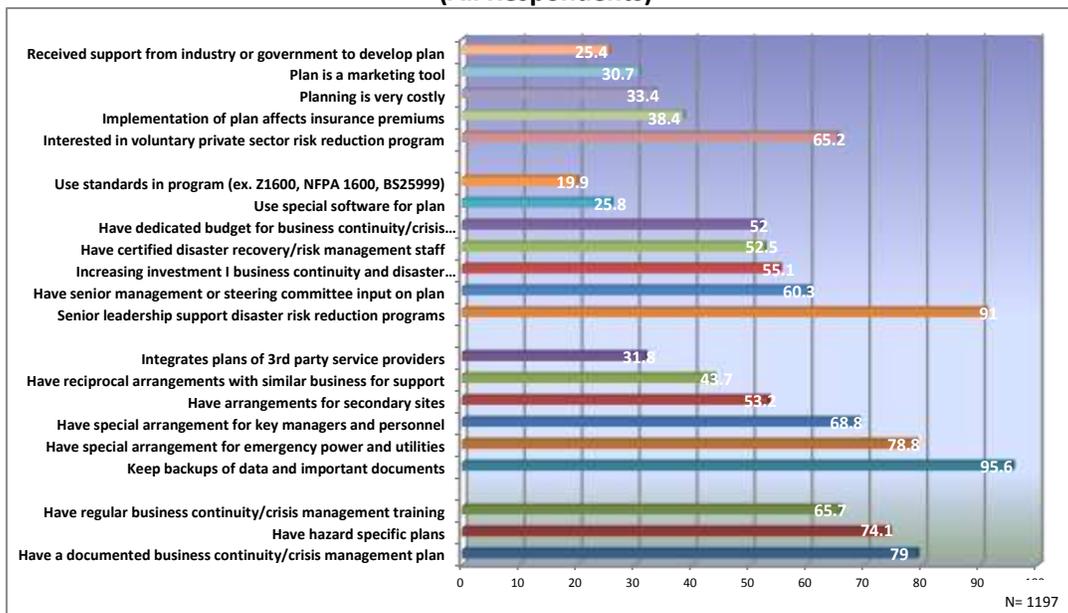
Question 18 assesses the scope and expansion of business continuity plans. About 79% of all respondents indicate that their businesses have a documented plan, and about 74% note that their businesses have hazard specific plans. However, only 65.7% of respondents indicate regular training. With regard to plan specifics, the most frequently identified associated activities include backing up data and documents (95.6%), having special arrangement for utilities (78.8%), as well as key managers and personnel (68.8%), and having secondary site

arrangements (53.2%). Fewer respondents indicated that their plans included reciprocal arrangements with similar businesses (43.7%) or that their plans integrated plans of 3rd party providers (31.8%).

In terms of resources allocated for BCM plans, 91% of respondents noted that senior managers supported disaster risk reduction programs. Between 52 and 60.3% of respondents indicated a dedicated budget, certified staff, increasing investment, and senior management input on BCM plans. Less than 26% indicated that special software or standards were used in their company plans.

In terms of general attitudes towards plans, about 65% note that their businesses would be interested in a voluntary private sector program. Between a quarter and a third of respondents note that plans influence insurance premiums, are costly, can be used as marketing tools, and that they received support for government or industry to develop plans.

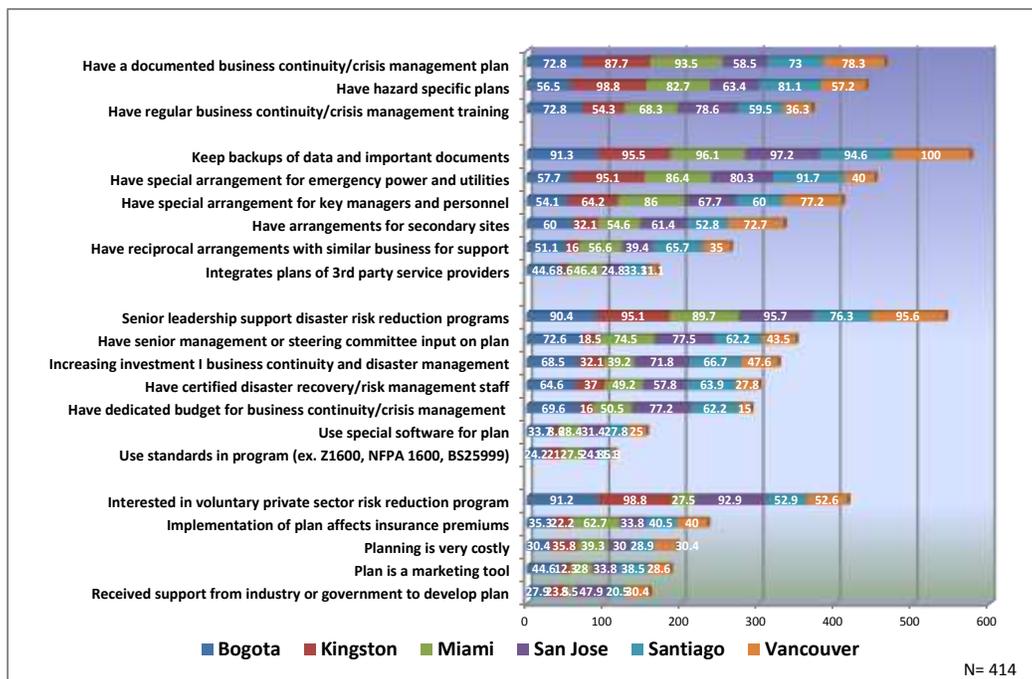
**Figure 16 – Characteristics and Context for Business Continuity and Crisis Management¹
(All Respondents)**



¹ Question text in English reads, "Please indicate your opinion (agreement/disagreement) about the following statements:" The percentages above reflect the proportion of all respondents indicating agree or strongly.

Figure 17 presents plan characteristics by city. The most common activity associated with BCM plans across all cities is backing up important data and documents (91.3 to 100%), and the least frequently selected activity across all cities is integrating standards in program (about 5 to 27%). Similarly one of the most indicated source of support for BCM activities noted by respondents in all cities is senior leadership support. As observed in the full sample, an overwhelming majority of respondents in Bogota, Kingston, and San Jose indicated that their companies would be interested in a voluntary, private sector risk reduction program. This option was only selected by 27.5% of Miami respondents, 52.9% in Santiago, and 52.6% in Vancouver. Miami respondents were far more likely to note that implementation of such plans affects insurance premiums (62.7%) compared to those in any other city.

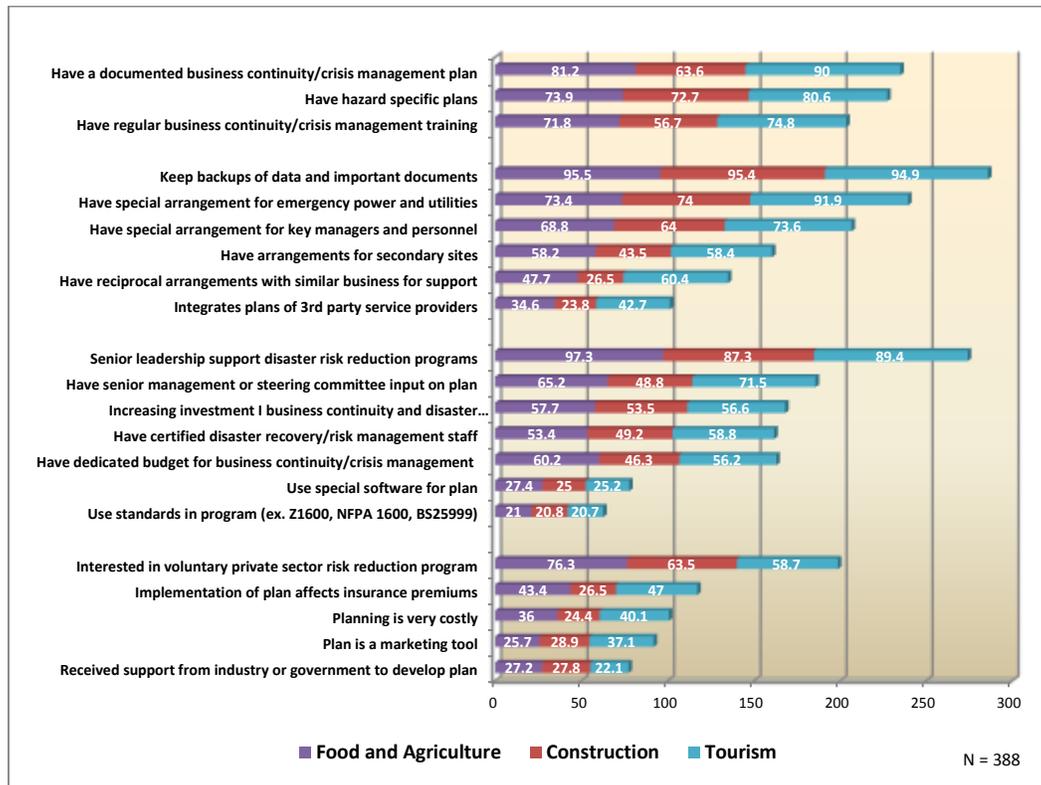
Figure 17. Context and Characteristics of Business Continuity and Crisis Management Plans¹ By City



¹ Question text in English reads, "Please indicate your opinion (agreement/disagreement) about the following statements: "The percentages above reflect the proportion of all respondents indicating agree or strongly.

A higher percentage of the three sector respondents cited that they keep backups of data in their businesses (94.9 to 95.5%). Similarly, the three sectors emphasized existing senior leadership support in DRR programs (87.3% to 97.3%). Differences also exist across sectors. A higher percentage of tourism respondents noted the existence of documented plans in their businesses (90%) in comparison to the food and agriculture sector (81.2%) and construction sector (63.6%). Interesting to mention is the scarce support from government or industry to development business continuity plans, with all three sectors reporting a percentage between 22 and 28%.

Figure 18. Context and Characteristics of Business Continuity and Crisis Management Plans¹ By Sector

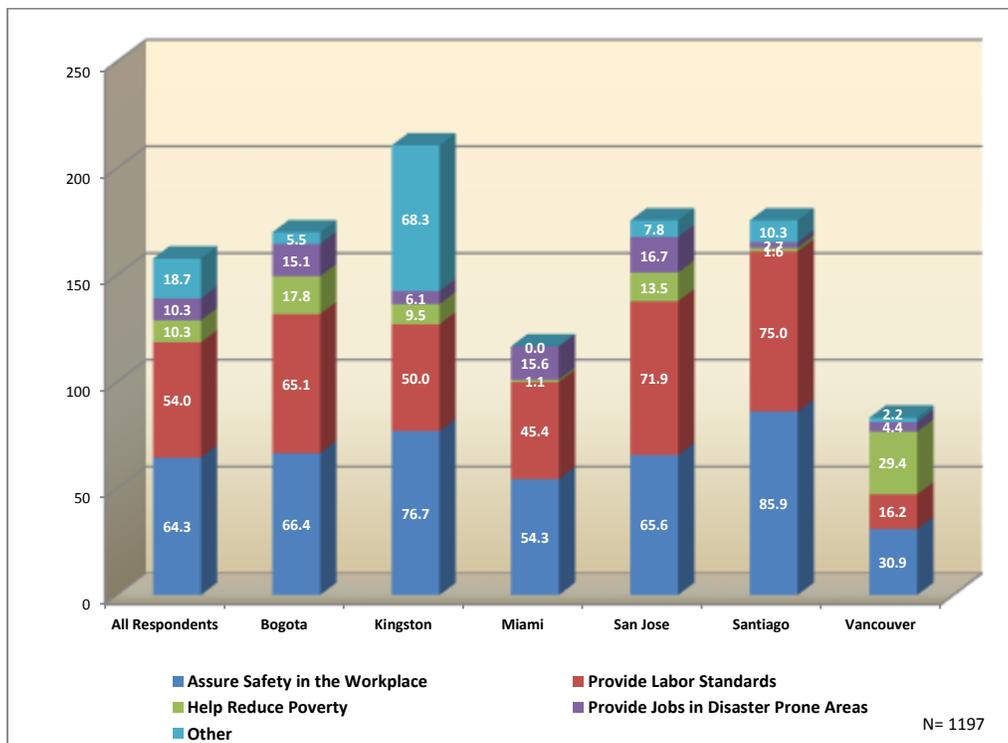


¹ Question text in English reads, "Please indicate your opinion (agreement/disagreement) about the following statements:" The percentages above reflect the proportion of all respondents indicating agree or strongly.

▪ **Attitudes Toward Risk Management Policy**

Figures 19, 20, 21 depict attitudes toward risk management policy in the context of the larger society and community. The aspect of social responsibility cited by more respondents overall and in each city was assuring safety in the workplace, followed by providing labor standards (64.3%, and 54% respectively), with Santiago and San Jose being the two cities that most contributed to this pattern.

Figure 19. Policy as corporate social responsibility

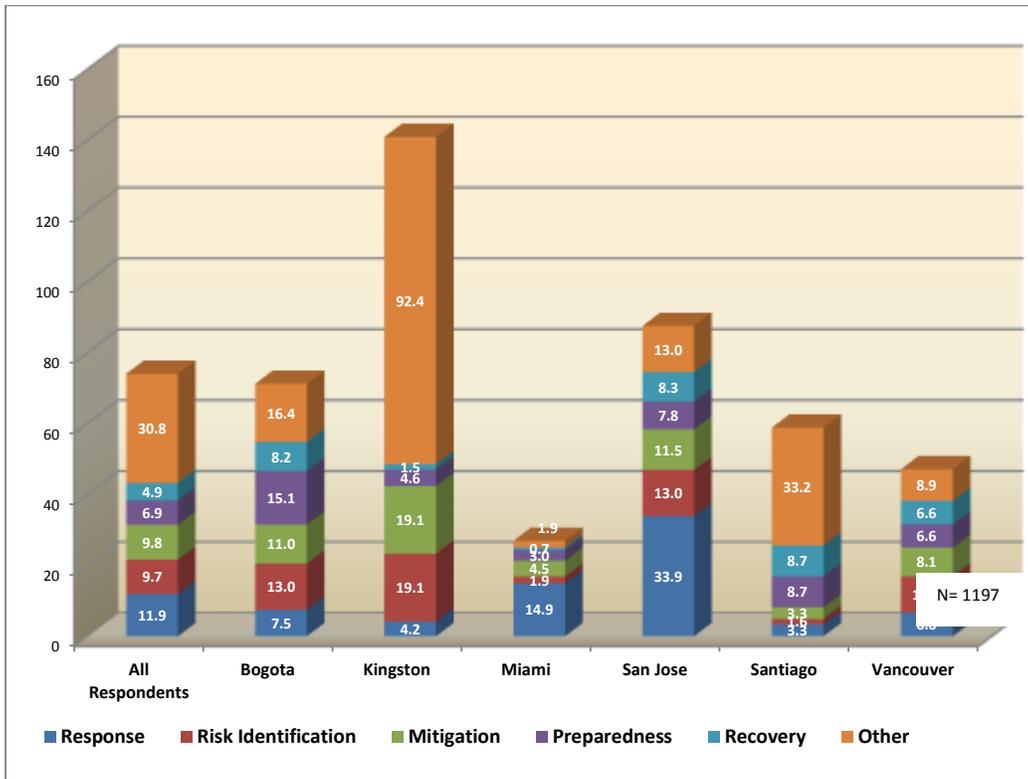


¹ Question text in English reads, "Has your company policies/interventions associated to corporate responsibility and risk management? (select all that apply)"

Responses concerning company policy as supporting NGO's and civil society varied more. The most selected category in all respondents in Figure 20 is other (30.8%). The second most selected category in all respondents was response (11.9%), with San Jose being the city that most contributed to this trend (34%). While assisting in disaster response was the top

category in San Jose, it was the second most selected category in Miami. In Vancouver, risk identification was the most frequently selected response. No dominant pattern can be identified and the results vary across cities.

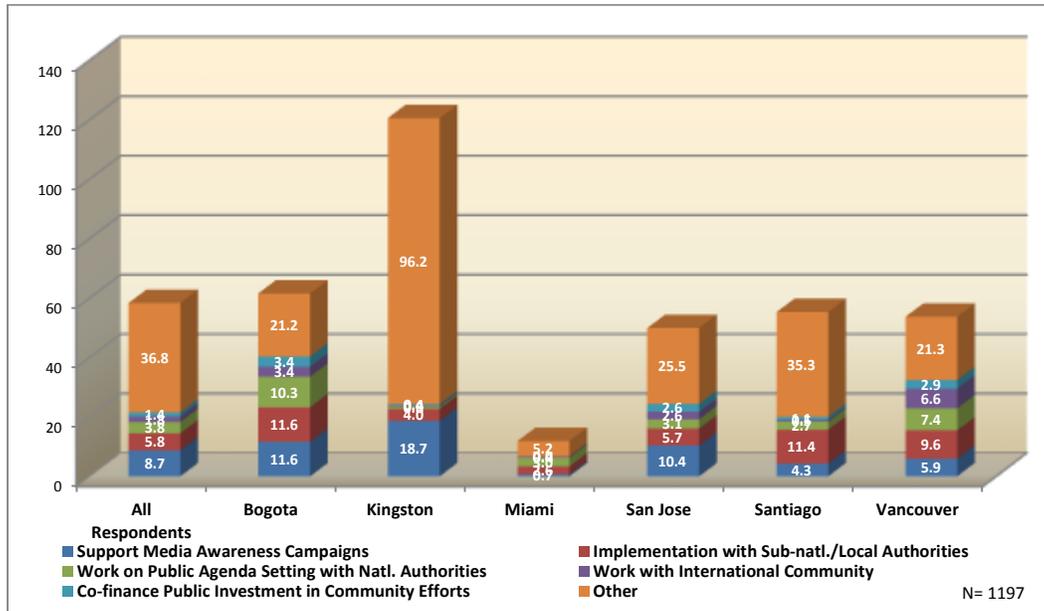
Figure 20. Table Policy Supporting for NGOs and Civil Society Organizations¹:



¹Question text in English reads, "Has your company supported NGO's or other civil society organizations in activities related to disaster risk management at the community level? (Select all that apply)" n= 1197

In figure 21, the two most selected categories across all respondents were other (36.8%) and advocate for media awareness campaigns (8.7%), with Bogota, Kingston and San Jose contributing to this pattern. Important to note is the percentage of respondents who noted in the cities of Bogota, Santiago, and Vancouver (11.6%, 11.4% and 9.6%) who indicated that their businesses have worked in the implementation of disaster risk management policies with subnational and national authorities.

Figure 21. Advocate for Disaster and Risk Management Policy¹:



¹ Question text in English reads, "Has your company advocated for disaster risk management policies/measures? (Select all that apply)"

Across all three sectors, more respondents chose assuring workplace safety and providing labor standards as ways in which their company policies encouraged social responsibility. More food and agriculture and construction respondents saw their company policy supporting NGO's in ways other than those included compared to other respondents. In the food and agriculture and tourism sectors, more respondents selected the disaster response option compared to any other mode of support for NGO's. In the construction sector, the risk identification category is the second highest percentage selected by respondents with 14.4%. Construction and tourism respondents favored the advocacy for media awareness campaigns with 11% and 8.2% respectively, while food and agriculture respondents cited with a percentage of 8% in implementation with subnational and local authorities.

Table 6. Company Disaster Mitigation and Risk Management Policy, Society, and Government by Sector

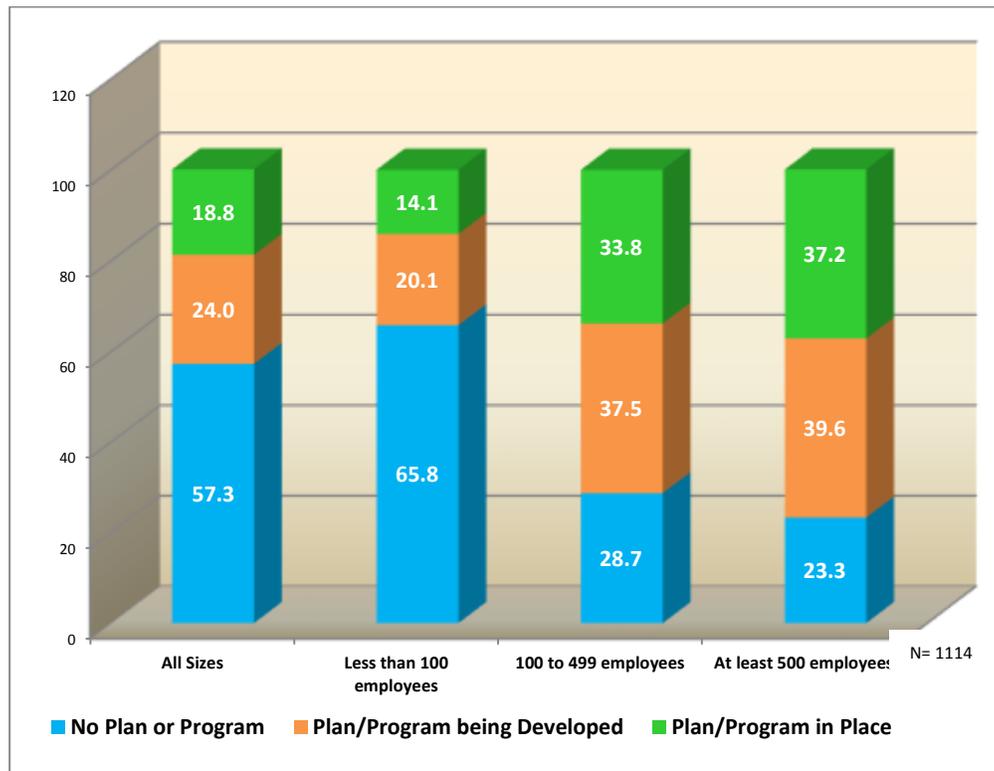
	Food/Agriculture	Construction	Tourism
Policy as Corporate Social Responsibility:			
Assure Safety in the Workplace	70.5	67.7	64.2
Provide Labor Standards	63.5	56	52.2
Help Reduce Poverty	6.7	12.1	6.9
Provide Jobs in Disaster Prone Areas	12.5	9.1	10.7
Other	17	27.5	11.3
Policy Supporting for NGOs and Civil Society Organizations:			
Response	16.3	9.7	11.9
Mitigation	7.7	12.1	9.1
Risk Identification	6.1	14.4	6
Preparedness	7.7	5.1	7.9
Recovery	7.1	4.9	2.8
Other	28.5	42.9	20.4
Advocate for Disaster and Risk Management Policy:			
Work on Public Agenda Setting with Natl. Authorities	4.5	3.2	3.1
Implementation with Sub-natl./Local Authorities	8	4.4	6
Support Media Awareness Campaigns	5.1	11	8.2
Work with International Community	1.9	1.3	1.6
Co-finance Public Investment in Community Efforts	1.3	1.1	1.9
Other	34	49.7	24.5

Total N for food and agriculture sector is 312, for construction sector 473, and for tourism sector 318. Total N for table: 1103

▪ **Company Size**

The survey examines the differences that may exist as a result of company size, highlighted in Question 21. A far greater percentage of respondents from small businesses (those with fewer than 100 employees) indicated that their businesses had no BCM plans (65.8%).

Figure 22. Status of Business Continuity Plan/Crisis Management Program By Company Size¹



¹ Question text, in English version, reads "Which of the following best describes your company's current business continuity/crisis management program status (please check one):" Total N is 1114 with n=866 for less than 100 employees, n=195 for 100-499 employees, and n=43 for 500+ employees.

In comparison, about 28.7% of respondents from companies with 100 to 499 employees and 23.3% of respondents from companies with 500 or more employees indicated that no plan was currently in place. Fewer respondents from small companies (20.1%) noted that plans were being developed at their businesses compared to medium and larger companies (37.5% and 39.6% respectively). Similarly, fewer respondents (14.1%) from small companies indicated that a plan was currently in place, compared to medium sized companies (33.8%) and larger companies (37.2%).

Conclusions

The moderate advances that the private sector has made in terms of risk management are a promising starting point but do not amount to a sustainable effort in the field of DRR. The fact that many companies engage primarily in philanthropic interventions during disaster emergencies than in incorporating business continuity plans into their daily operations suggests that the crucial role that the private sector could be playing in DRR has yet to be discovered.

More and more, newly created risk is urban risk. Since much of the critical infrastructure of the urban environment is privately owned, disaster risk reduction efforts become central not only to the fundamental existence of the private enterprise, but also for the ultimate benefit of society. This involves building better, planning better, and maintaining what we build better.

The study of regulatory frameworks across the Americas has led to the discovery of three different trends: (1) Canada and USA mainstreaming prospective and reactive risk management into development and regulatory processes, with specific emergency management laws focused on addressing existing risks and responding to them; (2) Colombia and Costa Rica enjoying modern laws based on a comprehensive approach to disaster risk and emergency management, facing now the challenge of their enforcement; and (3) Chile and Jamaica still preserving traditional approaches to disaster and emergency management, even though they have new regulations in process.

While these legal frameworks include generic statements about the private sector's role as a key stakeholder in disaster and emergency response, often this is done in a rather vague way, without mention of specific roles, responsibilities, or mechanisms to facilitate the sectors formal inclusion into DRR processes. Additionally, with the exceptions of the U.S. and Canada,

the four countries studied do not have public policies or incentives for BCP and CSR promoted by their respective public sectors or their national disaster risk and emergency management systems.

In all countries building codes and land use regulations are showing benefits with potential positive impacts on prospective risk reduction efforts. However, these are only passive governmental measures, often unaccompanied by actions aimed at changing behaviors and attitudes, as demonstrated in this study. This analysis is reinforced by the results of surveys that show respondents from the private sector indicating the scarce support from government or industry to development business continuity plans.

The data collected on hazards in the cities under study show an important level of risk awareness, but this awareness is not translated into concrete actions; thus, the problem is not limited to a lack of information.

The previous statement is consistent with the data that show over 56% of respondents across all cities and economic sectors in the study indicating that their business had no business continuity management plan in place, and that 36.5% of them considered the BCP is desirable but other priorities take precedence. This is more than a financial constraint; we are dealing also with a behavioral problem, an issue of attitude and ultimately, a matter of accountability.

Two trends stand out from the survey analysis. First, company size does matter. The findings indicate an important gap between the companies of at least 500 employees, the ones between 100-499 employees, and those with less than 100 employees (small businesses). Small businesses show the least progress in the establishment of a business continuity plan (about 14%). The fact that they do not have attractive incentives to engage in DRR strategies leaves them

more vulnerable to hazard and less prepared to build resilience in the aftermath. Second, if we understand that awareness of disaster risks as events can trigger a process of anticipation, through risk management measures, the finding that disruptions caused by power outages are the most mentioned variable of concern across cities and sectors is important. This fear could become the gateway to a process of reflection and action to address disasters and emergency risks of different types.

Given the magnitude of the problem identified in the topic of business continuity plans in the three sectors analyzed, we can understand the lack of progress seen in the area of corporate social responsibility, and even less or no contribution to reduce the vulnerability in at-risk population within their sphere of influence.

There is a need to deepen the analysis on this attitudinal problem to better understand the factors that intervene in the observed “risk indifference,” to identify possible interventions by sector, type and size of business, so we can move away from the status quo. The private sector is a key component of society and has a singular responsibility in advocating for sustainable development. The challenge is to identify those windows of opportunity that would facilitate the sector’s long-awaited intervention.

Finally, it is essential to promote studies that quantify and measure private sector losses due to disasters and emergencies, while also championing cost-benefit analyses of risk interventions at different scales, in order to obtain solid evidence that can be taken into account in all private sector investments, and as a result, contribute to building a less vulnerable and more resilient society.

References

Adams, Wayne, and Alfrico Adams. "Status of Building Codes in Jamaica and other English Speaking Caribbean Countries with respect to earthquake provisions and enforcement ." *The University of the West Indies*. 2010.

http://www.uwiseismic.com/Downloads/GEM%20Caribbean%20Regional%20Programme%20Workshop_Status%20of%20Building%20Codes%20in%20Jamaica%20-%20W.%20Adams.pdf (accessed 9 18, 2012).

Adams, W., & Adams, A. (2010). *Status of Building Codes in Jamaica and other English Speaking Caribbean Countries with respect to earthquake provisions and enforcement* . Retrieved 9 18, 2012, from The University of the West Indies:

http://www.uwiseismic.com/Downloads/GEM%20Caribbean%20Regional%20Programme%20Workshop_Status%20of%20Building%20Codes%20in%20Jamaica%20-%20W.%20Adams.pdf

Cardona, O. D. (2011). Colombia Chapter. In B. Wisner, *Political will for disaster reduction: What incentives build it, and why is it so hard to achieve?* . Geneva: UNISDR.

Cuny, F. (1994) *Disasters and development*, INTERTEC Press, Dallas, 1994.

Decreto Ley 369: Crea la Oficina Nacional de Emergencia. (1974). Valparaíso, Chile: Biblioteca del Congreso Nacional de Chile.

Disaster Preparedness and Emergency Management Act. (1993). Kingston, Jamaica.

Emergency Management Act. (2007). Ottawa, Canada: Ministry of Justice.

Emergency Program Act. (1996). Victoria, British Columbia, Canada: Queen's Printer.

Emergency Program Management Regulation. (1998). Victoria, British Columbia, Canada: Queen's printer.

EPICC. (n.d.). *About EPICC*. Retrieved 9 18, 2012, from Emergency Preparedness for Industry and Commerce Council: <http://www.epicc.org/showcontent.aspx?MenuID=494>

FEMA. (2012, 08 27). *Building codes*. Retrieved 09 18, 2012, from Federal Emergency Management Agency: <http://www.fema.gov/earthquake-site-index/building-codes>

FEMA. (2012, 8 27). *Quake Smart*. Retrieved 9 18, 2012, from Federal Emergency Management Agency: <http://www.fema.gov/quakeSMART>

FEMA. (n.d.). *Ready Business*. Retrieved 8 18, 2012, from Ready: prepare, plan, stay informed: <http://www.ready.gov/business>

FM Global. (2011). *Flirting with disaster. Reason: property risk and insurance solutions for a complex world* , 1.

Gongreso de Colombia. (2012). *Ley 1523, Por la cual se adopta la política nacional de gestión del riesgo de desastres y se establece el Sistema Nacional de Gestión del Riesgo de Desastres y se dictan otras disposiciones*. Bogotá, Colombia: Congreso de Colombia.

Gordon, N. (n.d.). *The New National Building Code of Jamaica*. Kingston.

IADB. (2010). *Indicators of Disaster Risk and Risk Management*. Washington: IADB.

Kovacs, P. (2010). *Reducing the risk of earthquake damage in Canada: Lessons from Haiti and Chile*. CLR Research Paper Series – Number 49. Toronto, Canada: The Institute for Catastrophic Loss Reduction.

Lavell, A. (2008, August). *Community and Local Level Disaster Risk Management: Considerations as Regards Relations with Poverty Alleviation*. Geneva.

Lavell, A. (1998). *Decision Making and Risk Management*. Port of Spain.

Ley 8488: Ley Nacional de Emergencias y Prevención del Riesgo. (2005). San José, Costa Rica: La Gaceta.

Ley de planificación urbana N. 4220 y sus reformas. (1968). San José, Costa Rica: La Gaceta.

Linayo, A. (2011). *Linayo, Alejandro. 2011. Lineamientos para la cooperación entre gobiernos y sector privado en la reducción de riesgo de desastres. Enfoques, avances y retos*. . Venezuela: Sistema Económico Latinoamericano y del Caribe (SELA).

MINAE. (2006). *Decreto Nº 32967-MINAE: Manual de Instrumentos Técnicos para el proceso de Evaluación de Impacto Ambiental (Manual de EIA)*. (M. d. Energía, Ed.) San José, Costa Rica: La Gaceta.

Moroni. (2011). *Terremoto en Chile y sus efectos en las infraestructuras*. (O. T. construcción, Interviewer)

Narváes, L., Lavell, A., & Pérez, G. (2009). *La gestión del riesgo de desastres: un enfoque basado en procesos*. (C. A. PREDECAN, Ed.) Lima: Comunidad Andina.

NEHRP. (2009, 6 3). *About us: background and history*. Retrieved 9 18, 2012, from National Earthquake Hazards Reduction Program: <http://www.nehrp.gov/about/history.htm>

NFIP. (2012, Julio). *FloodSmart*. Retrieved 8 18, 2012, from The National Flood Insurance Program: http://www.floodsmart.gov/floodsmart/pages/about/nfip_overview.jsp

PUBLIC LAW 107–296: An Act to establish the Department of Homeland Security, and for other purposes. (2002). Washington D.C., USA: Congress, 107th.

Public Safety. (2012, 6 2). *A guide to business continuity planning*. Retrieved 9 18, 2012, from Public Safety: <http://www.publicsafety.gc.ca/prg/em/gds/bcp-eng.aspx#a01>
Public Safety. (2011). National Emergency Response System. Ottawa, Canada.

The World Bank. (2011). *Natural Hazards, UnNatural Disasters: The Economics of Effective Prevention*. Washington: World Bank.

Thindwa, J. (2001). *Enabling environment for Civil Society in CDD Projects*. Washington, D.C.: World Bank .

UNISDR. (2011). *Global Assessment Report (GAR 2011)*. Geneve: UN.

UNISDR. (2011). *Global Assessment Report*. Geneve: UNISDR.

Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2005). *At Risk: Natural hazards, people's vulnerability and disaster*. London: Routledge.

World Economic Forum. (2008). *Building Resilience to Natural Disasters: A Framework for Private Sector Engagement*. Geneva: World Economic Forum.

Zurich Insurance Group. (2012). *The Role of Insurance in Latin America*.

The World Bank. *Natural Hazards, UnNatural Disasters: The Economics of Effective Prevention*. Washington: World Bank, 2011.

Thindwa, J. *Enabling environment for Civil Society in CDD Projects*. Washington, D.C.: World Bank , 2001.

UNISDR. *Global Assessment Report (GAR 2011)*. Geneve: UN, 2011.

Warhurst, Alyson, Disaster prevention: a role for business? ProVention Consortium, 2006
Wisner, Ben, Piers Blaikie, Terry Cannon, and Ian Davis. *At Risk: Natural hazards, people's vulnerability and disaster*. London: Routledge, 2005.

Witty, Roberta, Research Roundup: Business Continuity Management and IT Disaster Recovery Management, 4Q10. Gartner Research, 2011

World Economic Forum. *Building Resilience to Natural Disasters: A Framework for Private Sector Engagement*. Geneva: World Economic Forum, 2008.

Zurich Insurance Group. *The Role of Insurance in Latin America*. 2012.