

ANALYZING THE RESPONSES OF THE FINANCIAL SERVICES SECTOR TO CLIMATE CHANGE RISKS IN THE CARIBBEAN: A CASE STUDY OF ANTIGUA AND BARBUDA

Submitted by Delamine C. Andrew to the University of Exeter as a dissertation towards the degree of Master of Science by advanced study in Sustainable Development (Climate Change and Risk Management)

(September 2015)

I certify that all material in this dissertation which is not my own work has been identified with appropriate acknowledgement and referencing and I also certify that no material is included for which a degree has previously been conferred upon me



..... (signature)

Number of words: 9,562

ABSTRACT

Globally, the financial services sector has seen rising additional costs as a result of extreme climate events. The IPCC (2014) states that climate change will result in an increase in frequency and intensity of extreme weather events. Small Island developing states (SIDS) in the Caribbean are amongst the most vulnerable to the impacts of climate change (Lal et al., 2002; Taylor et al., 2012) but most specifically extreme weather events. Caribbean SIDS are exposed annually to climate hazards such as hurricanes, tropical storms, droughts, flooding, and landslides amongst others (CDERA, 2000; Ferdinand et al., 2012; Chmutina, K and Boshier, 2014). The increase in frequency and intensity of such weather events will in turn have negative impacts and disrupt economic processes and development in countries as well as organization, including the financial services sector. Unfortunately, there exists a dearth of research on the impacts of climate change on financial institutions outside the realms of insurance and as a result, the response measures undertaken by other financial institutions are unknown.

This research explores the responses of the financial services sector to climate change risks by using a case study of Antigua and Barbuda to include financial institutions such as banks, insurers, and credit unions. Factors relating to awareness and knowledge, perceptions of risks, risk assessment strategies, adaptive strategies, business products, and governance are examined and discussed. The perceived risks and implications of responses are identified. While the knowledge of climate change exists within the sector, the perceptions of risks to the sector and to the island are limited. As a result, there is no formal response from the sector, however, recommendations to enhance the response of Antigua's financial services sector are made.

This research contributes to the literature addressing private sector responses to climate change in the Caribbean region in terms of physical risks, business risks and adaptation. The research is derived from a two-month ethnographic study of financial institutions.

TABLE OF CONTENTS

ABSTRACT	2
GLOSSARY	6
ACKNOWLEDGEMENTS	7
1.0 INTRODUCTION	8
1.1 RESEARCH AIM	10
1.2 RESEARCH OBJECTIVES	10
2.0 LITERATURE REVIEW	12
2.1 RESPONSES AND RISK PERCEPTION	12
2.2 CLIMATE CHANGE RISKS AND THE FINANCIAL SERVICES SECTOR	13
3.0 METHODOLOGY	16
3.1 STUDY AREA	16
3.2 SAMPLING AND DATA COLLECTION	18
3.3 RESEARCH METHODS	18
3.4 DATA ANALYSIS	19
3.5 LIMITATIONS OF THE RESEARCH	19
4. RESULTS	21
4.1 SURVEYS: AWARENESS, RISK PERCEPTIONS AND RISK ASSESSMENT	21
RISK ASSESSMENT CONSIDERATION	24
4.2 INTERVIEW ANALYSIS	26
AWARENESS AND PERCEPTIONS	26
BUSINESS PRODUCTS	29
ADAPTIVE STRATEGIES	30
GOVERNANCE	31
EMERGING RISKS	32
4.3 SUMMARY OF RESEARCH FINDINGS	33
5. DISCUSSION & RECOMMENDATIONS	35
5.1 AWARENESS AND PERCEPTION	35
5.2 PRIVATE SECTOR ENGAGEMENT	36
5.3 FINANCIAL VULNERABILITY	36
5.4 FURTHER RESEARCH	38
5.5 RECOMMENDATIONS	38
6. CONCLUSION	40
REFERENCES	41
APPENDICES	45
APPENDIX 1: COMMUNIQUÉ AND SURVEY QUESTIONS	45
APPENDIX 2: LIST OF PARTICIPANTS	47
APPENDIX 3: SAMPLE TRANSCRIPT	48

LIST OF FIGURES

<i>Figure 1: Trends in weather related losses from 1980 to 2008</i>	9
<i>Figure 2: Map of the Lesser Antilles showing the location of Antigua and Barbuda</i>	16
<i>Figure 3: Respondents' self-rated knowledge of climate change mitigation</i>	22
<i>Figure 4: Respondents' self rated knowledge of climate change mitigation</i>	22
<i>Figure 5: Respondents' self rated knowledge of climate change risks and impacts to Antigua and Barbuda</i>	23
<i>Figure 6: Perception of climate change risks to Antigua and Barbuda</i>	23
<i>Figure 7: Perception of climate change risk to organization</i>	24
<i>Figure 8: Extent of organization's concern for climate change</i>	24
<i>Figure 9: Extent of environmental/climate hazard considerations in operations</i>	25
<i>Figure 10: Perception of role in addressing climate change risks</i>	25
<i>Figure 11: Perceived impacts of climate change</i>	26
<i>Figure 12: Perceived risks to organizations</i>	27

LIST OF TABLES

<i>Table 1: Areas of risks to the financial services sector</i>	<i>13</i>
<i>Table 2: Antigua and Barbuda Socio-economic Overview</i>	<i>17</i>
<i>Table 3: Data sources and qualitative methods used</i>	<i>18</i>
<i>Table 4: Characteristics of sampled financial institutions</i>	<i>21</i>

GLOSSARY

CARICOM	– Caribbean Community
CDERA	– Caribbean Disaster Emergency Response
CCRIF	– Caribbean Catastrophe Risk Insurance Facility
CSR	– Corporate Social Responsibility
CO ₂	- Carbon Dioxide
DCA	– Development Control Authority
ECCB	– Eastern Caribbean Central Bank
ECCU	–Eastern Caribbean Currency Union
FSRC	– Financial Services Regulatory Commission
GDP	– Gross Domestic Product
GIS	–Geographical Information Systems
GPS	– Geographical Positioning System
GOAB	– Government of Antigua and Barbuda
SIDS	– Small Island Developing State

ACKNOWLEDGEMENTS

I would first like to thank God for bringing me this far, and the CCRIF Technical Assistance Programme. Next, I say thank you to my fiancé, family, and friends who supported and encouraged me throughout this year of study. I would like to especially thank all the institutions that took the time to participate in this research. A final thank you goes to the support staff, and lecturers of the university.

1.0 INTRODUCTION

Increases in human population and the over consumption of Earth's natural resources are driving global environmental change (Meadows et al., 2004; Adger, 2005). Earth and its environmental processes have limits and planetary boundaries that once disrupted will have catastrophic and irreversible changes on the planet (Rockstrom *et al.*, 2009). One such process is climate change and the emissions of carbon dioxide (CO₂), which have now surpassed the natural variable range. Both scientists and policy makers are focused on greenhouse gas mitigation and adaptation to climate change. With a focus on sustainability, development must now consider not only the economy but also the environment and society. However, the growing impacts of climate change threaten the achievement of global sustainable development, particularly developing countries like small island developing states (SIDS) (IPCC, 2014).

Climate change will result in the increased frequency, intensity, and most likely the duration of extreme weather events (IPCC 2007, 2014). These extreme weather events include rainfall, "associated" sea level rise, intense storm surges, warm spells, and droughts, amongst others (IPCC 2007, 2013). Such extreme weather events will have negative impacts and disrupt economic processes and development in countries, regions, and organizations (Green *et al.*, 2010; Miles et al, 2010; Weinhofer and Busch 2012). International discourses on climate change impacts highlight the need for integrating climate change adaptation into development policy, and disaster risk management (UNISDR 2005; OECD 2009;), for which the activities of the financial services sector are pivotal.

The financial services sector plays a critical role in financing and investing developments (Lutzkendorf et al., 2011) that affects long-term economic growth (DFID, 2004). It therefore has a significant role in how society responds to climate because the physical impacts thereof will affect assets and investments (Sullivan, 2014).

While the physical effects of climate change are being felt across a variety of industries (Hoffmann et al., 2009; Winn et al, 2011), the financial services industry has seen rising additional costs brought on by extreme climate events (Cogan, 2005; UNEP FI 2006; Barthel and Neumayer, 2011). Globally, weather related losses, from reinsurance giants such as Munich, from 1980 – 2008, increased by an average of US\$1.4 billion per year (Barthel and Neumayer, 2011) *see figure 1*.

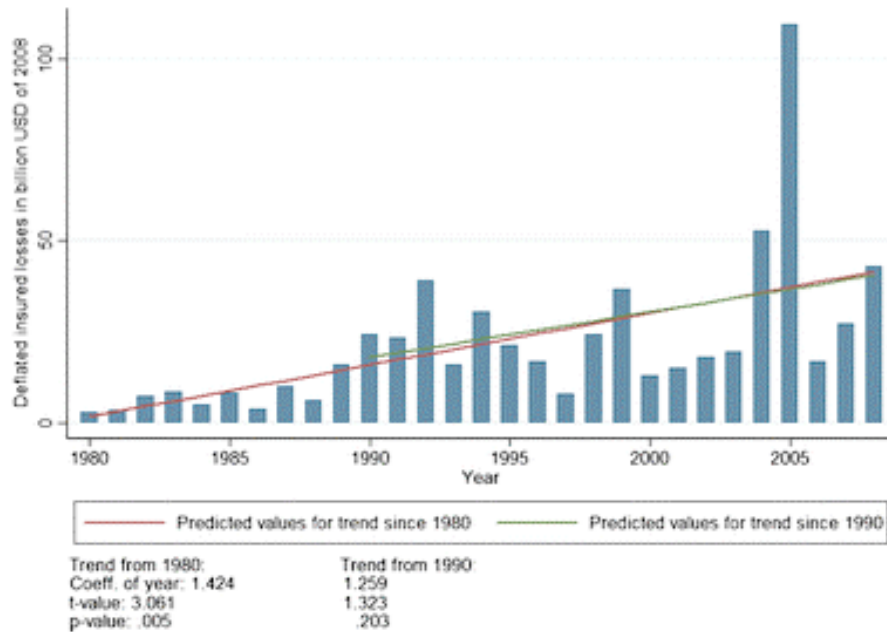


Figure 1: Trends in weather related losses from 1980 to 2008

Figure sourced from Barthel and Neumayer, 2011.

The IPCC (2014) notes, with the exception of the insurance sector, there is limited research on the impacts of climate change on other financial institutions and organizations. From an organizational viewpoint, the financial data of reinsurance companies provides an overview of climate impacts through “damages from property losses and business interruption due to natural disasters” (Winn et al., 2011). This data, however, gives little indication of the response measures being undertaken to adapt to climate change risks within the financial services industry.

The Caribbean is experiencing more intense extreme weather events, such as droughts, floods, and hurricanes (IPCC 2007, Leslie, 2008; Farrell et al., 2010). Moreover, the Eastern Caribbean, as a group of SIDS, has been ranked among the top ten disaster prone countries in the world (IMF, 2014) and are extremely vulnerable to climate change impacts and associated sea level rise (Joyette, 2014). This vulnerability is increased by the fact that the main settlements and economic infrastructure are most often concentrated in low-lying coastal areas (USCEC, 2006; Goldenberg, 2007; IPCC, 2007), and by the region’s inability to fully absorb the financial impacts of disasters (Joyette, 2014). Iyehen (2010) notes that natural disasters have equated to an average of two percent of the region’s annual GDP since 1970. The cumulative economic loss incurred by SIDS in the Caribbean as a result of storms during 1979 -2005 are estimated at US\$613 million annually (Ghesquiere et al., 2007; Mitchell, 2007).

Extreme weather events increases economic losses and despite the uncertainties regarding the impacts of climate change and its influence ration on past and occurring events, the region’s

exposure to natural hazards and climate change impacts could “undermine the economic, environmental and social resilience” of the islands (Joyete, 2014). Adapting to the impacts of climate change is now critical given the growing number of regional projects and initiatives currently undertaken (CYEN, 2011). However, corporate action in response to the physical impacts of climate change in developing countries, especially SIDS, is limited (Pulver and Benney, 2013).

Antigua and Barbuda, a small twin island state, recently participated in one such regional initiative and will now become the focus of this research. The Mainstreaming Adaptation to Climate Change Project (MACC), ran from 2004 -2008 with the aim of building the capacity of SIDs to develop adaptation strategies and measures to respond to climate change impacts (CARICOM, n.d.). Although the project enlisted participation across all sectors, little is known on the national financial sector responses to climate change.

Given the lack of data on the responses of the financial services sector to climate change risks in the Caribbean, this research will examine the responses of the financial services sector to climate change risks using a case study of Antigua and Barbuda.

The research sets out existing theories that may influence the response measures of the financial services sector through a literature review. The following section then provides an overview of Antigua and outlines the methodology used in conducting the research and analyzing data. The fourth chapter presents the results of the preliminary survey followed by key thematic areas presented during interviews. The fifth chapter analyzes these results and discusses the implications for the island based on the current responses to climate change risks within the financial services sector. Various recommendations are also offered in this chapter. The research concludes that there is no formal response to climate change risks in Antigua and Barbuda’s financial services sector. This status increases the vulnerability of both the island and the sector to climate change risks.

1.1 Research aim

- To analyze the responses of the financial services sector to climate change risks

1.2 Research Objectives

- To identify the perception and awareness of climate change risks

- To determine the responses of the Antiguan financial services sector to climate change risks
- To identify the factors that encourage or hinder responses to climate change risks

2.0 LITERATURE REVIEW

This chapter will first define responses to climate change risks, the major theories on institutional perceptions and responses and to climate change and outline climate change risks to the financial services sector. It will also provide a framework to assess responses based on knowledge, awareness, capacity and governance.

2.1 Responses and Risk Perception

Responding to climate change risks incorporates adaptation and it presents a significant challenge to decision making (Tompkins and Adger, 2005). Adaptive responses refer to the actions undertaken to address the consequences of climate change, both before and after the impacts are felt (Tompkins and Adger, 2005). The adaptive capacity would now refer to the ability or potential of an organization to adapt to change and requires various resources including finance, information, skills, and technology, amongst other things (UNEP FI, 2006). Given the long time frames, slow onset and scientific uncertainty about climate change impacts on all facets of society, adaptation to climate change impacts surpasses present capabilities of decision makers. Policy responses therefore depend on individual attitudes towards risks (Schneider, 2002).

Perceptions of climate change risk vary globally and individually (Tompkins and Adger, 2005; Van Der Linden 2014). It is viewed more seriously in developing countries. Various studies highlight a multitude of factors ranging from, political ideology, world view, culture, and experience, amongst others (Lewis, 2001; Van Der Linden, 2014).

Weinhoffer and Busch (2013) note that the “extent to which companies actually start managing climate risks depend on management’s risk beliefs and interpretations.” This implies that understanding management’s recognition of climate change risks is important in assessing their response measures to such risks. Winn et al. (2012) highlight that there is much research on climate change mitigation and “carbon management regimes for businesses” and organizations but there is sparse research on the impacts of climate change on businesses and organizations. The authors attribute this lack of research to the many uncertainties in the understanding of climate impacts that may affect response measures. These uncertainties relate to the type, severity, predictability, immediacy, and the location of anticipated impacts. Therefore, there is a need for a “better understanding of climate related organizational impacts and for firm capability to prevent, respond or adapt” to climate change impacts (Heal and Kristrom, 2002).

Despite the dearth of research on the impacts of climate change on institutions, various declarations and strategies have been developed in an attempt to respond to global climate change. Twenty financial institutions within the Climate Group, a non-profit international organization, collaborated to launch “The Climate Principles” in 2008 as a framework for the financial sector (Climate Group, 2008). The Climate Principles highlight the “stewardship role” of the financial sector in assisting clients’ response to the risks, opportunities, and adaptation needs relating to climate change (Climate Group, 2008). Although the principles highlighted the need for further research to understand climate change risks to the financial sector, little was done in the 2011 progress review (Climate Group, 2011). Moreover, Furrer et al. (2012) draw attention to the inconsistencies between the Climate Principles and the financial sector, as only five of the twenty financial institutions publically endorsed these principles and publicly disclosed commitments to action. However, little action has been taken since. Furthermore, research on the social and environmental disclosures of firms in the Caribbean has highlighted consistently low levels of responses to address environmental and social challenges (Bowrin, 2013). This demonstrates unresponsiveness to climate change and its related risks.

2.2 Climate Change Risks and the Financial Services Sector

Climate change poses many risks to the financial sector, particularly insurance and banking. An analysis of the North American financial sector, EcoSecurities (2006) highlights that climate change poses many risks to bank loan portfolios. These risks were categorized into policy related risks, input and output pricing risks, and physical risks (EcoSecurities, 2006). Input and output pricing are of sole relevance to climate change mitigation via greenhouse gas emissions reduction by the institutions’ operations and investments. Policy related risks incorporate both climate change mitigation and adaptation based on domestic and international regulations. Physical risks relate to the direct impact of extreme weather events associated with climate change. Moreover, UNEP FI (2006) draws attention to other physical risks via client behaviour, such as default on mortgage payments due to personal damages from extreme weather events. Physical risks of climate change may be further categorized according to the “classical six-point risk analysis” that banks use to determine the credit worthiness for investment proposals (UNEP FI, 2006). Table 1 provides a brief overview of these categories.

Table 1: Areas of risks to the financial services sector

Risk Form	
Market	If the price or cost of the basic material is volatile, that constitutes a market risk. The obvious concern here is that climate-related catastrophes will happen more frequently and cost more than anticipated, which would make all types of financial

	services connected with property riskier.
Operational	Extreme events will make operations (and productivity) more difficult for all businesses.
Reputational	A report by The Carbon Trust concluded that the banking sector was highly exposed to reputational risk on climate change, because of its size and the intangible product offering. During disasters, insurers and banks may ease their usual terms of business, which helps clients and improves their own image.
Counterparty	In banking, this might be client default during a drought. In insurance it could be moral hazard (inattention to risk), anti-selection (selective purchasing by high-risk clientele), or failure of a reinsurer.
Political/ Legal	The regulatory framework can increase costs for financial companies, or undermine markets. Lax control of development or construction results in a stock of property that is more vulnerable to damage. Conversely, regulations that promote hazard management will reduce risk and promote growth. Soft government loans after a disaster can reduce client defaults, but also make clients disinclined to buy insurance.
Business	Companies that ignore advances in knowledge underperform. Insurance underwriters have to use geographical information systems (GIS) for natural hazards. In investment, adding socially responsible factors, including climate change, into stock assessment and portfolio management gives a more reliable performance.

(Source: UNEP FI, 2006, climate change risks to the financial sector)

The major impact of climate change risk to the insurance sector is the increase in insured property losses from extreme weather events, which may affect their financial viability, longterm investment and property management (Linnenluecke and Griffiths, 2015). Response to climate change by the insurance sector ranges from disbelief, disinterest, acknowledgement to active action (Dlugolecki, 2000).

Furrer et al (2012) in assessing the effectiveness of climate strategies utilized a framework with three distinct levels, namely, operations, business, and governance. Operations related to the physical undertakings in response to climate change, focusing on GHG emissions. The business level relates to the offering of specialized climate investment products and services and by financing organizations that mitigate or adapt to climate change. Governance refers to the integrated structures and policy procedures to implement change at the business and operations level (Weaver *et al.*, quoted in Furrer *et al.*, 2012). Although this framework places emphasis on climate change mitigation, it also presents a foundation to assess responses to climate change risks in the case study of Antigua and Barbuda. For the purposes of this research, an analysis of the operations level focuses on the risk assessment strategies used in

financing or insuring properties on the island. It also includes adaptive strategies undertaken to mitigate against perceived climate change related risks. Finally, as previously captured, understanding the perceptions of climate change risks will be considered. The next chapter will detail the research design and methodology to respond to the initial research aim and objectives.

3.0 METHODOLOGY

The purpose of this study was to analyze the responses of the financial services sector to climate change risks. Given the dearth of research on this issue, set parameters/variables could not be used and therefore the research took an exploratory approach through qualitative data collection and analysis. The main objectives of the research are:

- To determine the perceptions of climate change risks
- To determine the responses of the perceived risks
- To identify factors that encourage or hinder responses

This chapter details the approach to the study by first describing the study area, followed by a description of the qualitative data collection methods undertaken, and the methods of analysis. A case study approach was used as it was deemed the most useful to explore unique settings (Yin, 2013).

3.1 Study Area

Antigua and Barbuda is a twin island state located respectively on the southern and northern edges of the Lesser Antillean Island Arc in the Caribbean Sea, *figure 2*. Other tiny uninhabited islands also surround it. The islands are the emergent parts of the Barbuda bank, which is one of the largest sub-marine platforms in the Eastern Caribbean (spanning 3,400 sq. km) with water depths ranging from 27 to 33 meters (GOAB, 2014). Cumulatively, the islands cover a total land area of 440 sq. km, and are generally low lying, surrounded by white sand beaches, wetlands and mangroves, shallow water and coral reefs.



Figure 2: Map of the Lesser Antilles showing the location of Antigua and Barbuda

Some information is provided below relating to the socioeconomic status of Antigua and Barbuda

(*Table 2*)

Table 2: Antigua and Barbuda Socio-economic Overview

Variable	Antigua	Barbuda
Area	108 square miles	62 square miles
Population (87,774)	86,159	1,615
Population Density	205 persons per sq.km of land area	
GDP	US\$1,200, 587, 519 (2014)	
GDP per capita	US\$13,050 (2013)	

Source: adapted from Antigua Population and Housing Census 2011, and World Bank Country Data

As highlighted in *Table 2* above, the country consists of a relatively small population of 87,774 and land mass which contains fragile terrestrial and marine ecosystems such as wetlands and coral reefs (GOAB, 2014). This not only contributes to the economic and social development challenges of the island but also its vulnerability to natural hazards, such as hurricanes, and climate change. Moreover, the location of this twin island state in the Caribbean establishes it as a disaster prone country. Globally, during 1970 -2002, Antigua and Barbuda continually ranked as one of the top 10 most disaster prone countries using a variety of assessment measures including capacity, human resources and infrastructure (Rasmussen, 2006).

With a GDP of US\$13,050 per capita (World Bank, 2013), the island state is serviced based with tourism and government services providing the main sources of employment. In 2005, the tourism sector accounted for over 60 percent of GDP while in 2011, a marginal decline was experienced. During this time, the financial and business services sector contribution increased to an estimated 10.28 percent of the national GDP (GOAB, 2012).

The island, like many other Caribbean islands, has a high financial sector ratio relative to its size (10 per 100,000 inhabitants in the case of insurance firms) (IMF, 2013). The financial services sector in Antigua and Barbuda consists of seven clearing banks, one development bank, six credit unions, 15 insurance agencies that also serve as agents for other international insurers, and 16 international off shore banking institutions.

Antigua, as the mainland, is home to all the country's financial institutions and as a result, all interviews were conducted there. However, for the purposes of this study and given the sensitive operations of offshore banks in non-property asset based (i.e. international stock markets and security bonds) they were excluded from the research. Only property insurers were contacted as they are mainly engaged in the physical risks of weather related risks.

3.2 Sampling and Data collection

The research focuses on the financial services sector and as a result, cultural data pertaining to shared operations, perceptions and awareness is required and therefore non probability sampling was used. It examines the attributes of organizations and requires informed or expert informants (Bernard, 2012).

The telephone directory provided the sampling frame for this research. A total of 31 institutions were contacted to participate in the research through formal letters of requests as well as electronic mail to senior managers and executives. These institutions included regulatory authorities, namely, the Financial Services Regulatory Commission (FSRC), as the regulating authority of insurers and credit unions, and the Eastern Caribbean Central Bank (ECCB) as the regulating authority for banks. Qualitative data collection from primary data sources was collected over a 7week period (May 29 – July 10th 2015) through surveys and interviews. A total of seven insurance firms, seven banks, and two credit unions participated in the research. Additionally, the Financial Services Regulatory Commission, as the regulating authority of the financial services sector, specifically insurance firms and credit unions, was interviewed regarding their response to climate change risks.

3.3 Research Methods

A preliminary survey was first developed and distributed electronically via survey monkey, and via post. The survey had two objectives: first to maximize interviews by obtaining information relating to the size of the institution, knowledge, and perceptions of climate change risks and institutional role in addressing perceived risks prior to the interview. The second objective was to sensitize and guide discussions with interviewees. Close-ended questions were used in addition to Likert scales to determine the extent of perceptions; see *Table 3*.

Table 3: Data sources and qualitative methods used

Data Source	Scope	Category of Data
Managers, senior executives, risk analysts	Survey	Characteristics of organization; awareness of climate change terms, and perceptions of risks
	Semi-structured interviews	Analysis of risk perceptions, business products, operations and governance.

Following receipt of some of the completed surveys, interviews ranging from 12 to 45 minute discussions were held with senior executives, managers and risk analysts. There was a low response rate via survey monkey and as such a majority of the surveys were obtained during interviews depending on the respondents' availability.

3.4 Data Analysis

Deductive and inductive approaches through content analysis were used to achieve the research's objectives. Survey responses were numerically coded and entered into Excel to identify descriptive statistics both cumulatively and based on institution type, e.g banks, insurers, credit unions, etc. The results of which have been presented in the following chapter.

Interviews were transcribed and entered into Nvivo¹ qualitative data analysis software. Both closed and open codes were used to highlight the objectives of the research as well as recurring and emerging themes. Textual analysis was used to identify the number of perceived climate change risks and impacts among respondents, while content analysis was used to highlight themes.

3.5 Limitations of the Research

- The time frame given to complete the research was limited to three months during the summer. This impacted the timeline for all activities including following up with institutions for a more holistic view of responses across the sector.
- Data collection was influenced by the allotted time made available to conduct this research and based on the time constraints and research focus, interviews could not be held with contracted engineers to review sample reports submitted to banks and insurers.
- Interviews with some institutions were significantly brief given the level of interest and perspective that the research was irrelevant to their institution as well as time available by respondents.

¹ http://www.qsrinternational.com/products_free-trial-software.aspx

- The research was undertaken during industrial action regarding changes to the banking system by the ECCB, and the public lawsuit of one major insurer.
- Responses from credit unions were limited given the structure, in which three only had two clerical staff personnel with decisions being addressed through an annual general meeting (AGM).
- The use of surveymonkey as online resource was noted as offensive by two respondents, which may have accounted for the low responses online.
- Interview questions were sometimes too heavily worded
- Inadequate knowledge of the intricate operations of the financial services to adequately identify areas for in-depth discussions.

4. RESULTS

This section presents the main findings of the research based on the previously mentioned framework that analyzes awareness and knowledge, operations, business, and governance. The section first highlights the descriptive survey results followed by the main results of the interviews obtained through content analysis. To ensure the anonymity of responses, the survey responses of the regulatory authority (FSRC) have been grouped with those of the insurers based on a stronger relationship with insurers.

A total of 18 institutions participated in this research. Participating institutions included seven banks (a representative sample of 88 percent of banks on the island); eight insurance firms (representing 62 percent of insurers on the island); and two credit unions (only 33 percent represented). The characteristics of respondents have been captured below in *Table 4*:

Table 4: Characteristics of sampled financial institutions

Gender	12 males 5 Females
Status of Institutions	4 International 4 Regional 10 Domestic
Number of Employees	13 (1- 50) 3 (51-100) 2 (100 and over)

4.1 Surveys: Awareness, Risk Perceptions and Risk Assessment

Overall, the majority of respondents felt they had an average knowledge of climate change issues namely, climate change mitigation, adaptation, and risks to Antigua and Barbuda. However, knowledge on climate change adaptation varied between a little and average, see *figures 3 -5*.

A look at knowledge based on institution type shows that a majority of banks (57%) rated themselves as having average knowledge across all three climate change related terms. However, average knowledge on climate change risks and impacts to Antigua and Barbuda was highest amongst insurance firms including the regulatory authority with a majority of 67 percent of respondents.

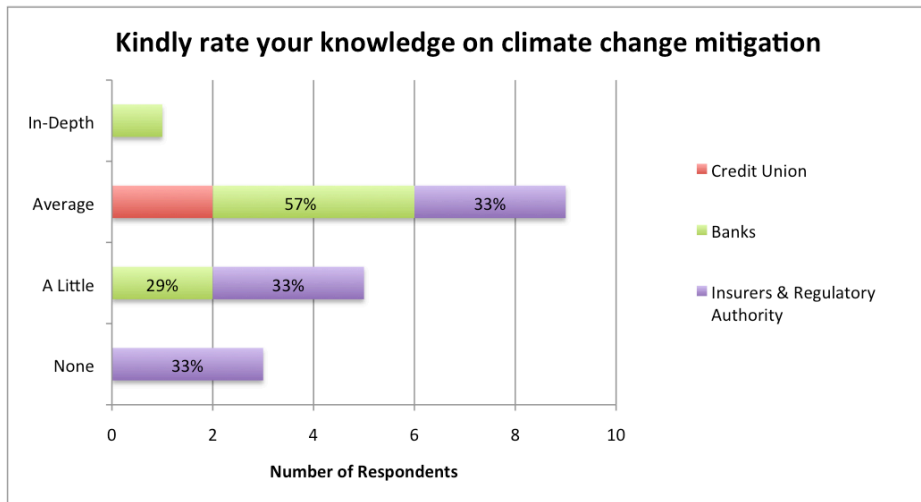


Figure 3: Respondents' self-rated knowledge of climate change mitigation

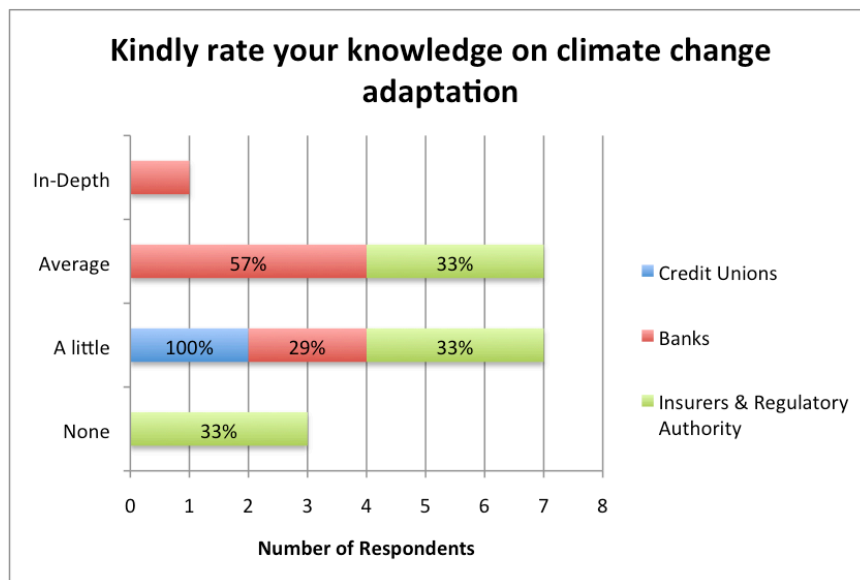


Figure 4: Respondents' self rated knowledge of climate change mitigation

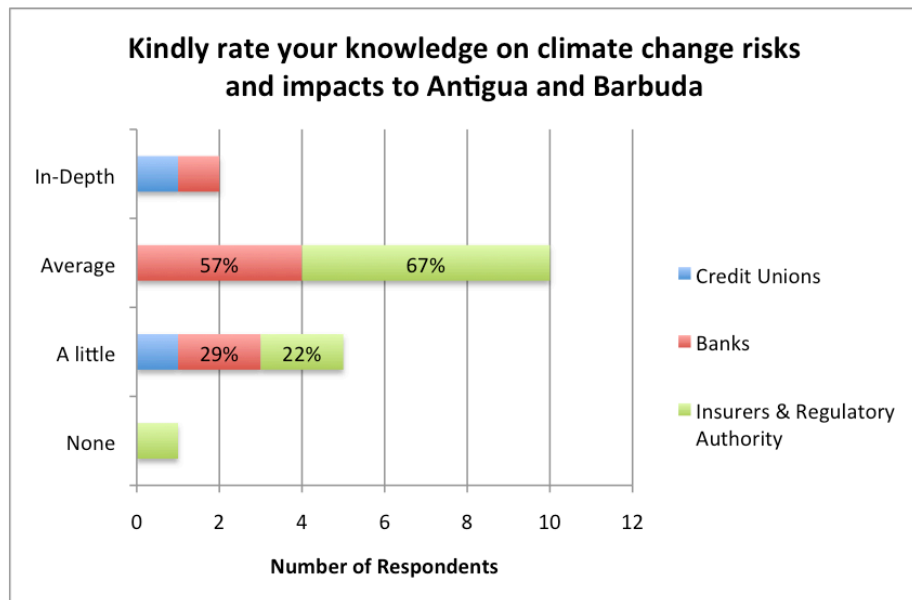


Figure 5: Respondents' self rated knowledge of climate change risks and impacts to Antigua and Barbuda

Majority of respondents (78%) felt that climate change was a major risk to Antigua and Barbuda while only a majority of 44% felt that climate change was also a major risk to their organization. This perception was highest amongst insurance firms; *see figures 6 and 7.*

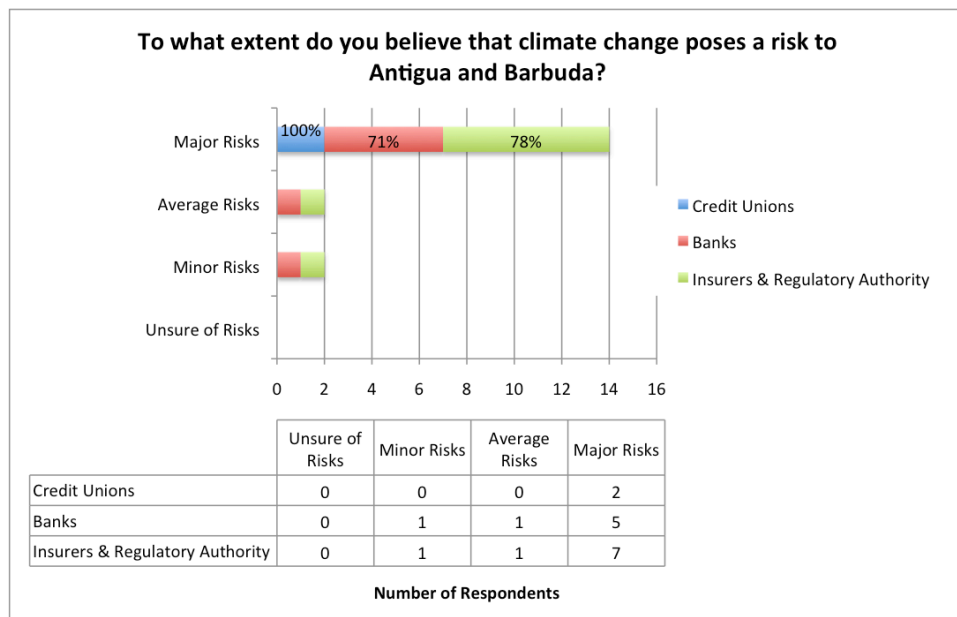


Figure 6: Perception of climate change risks to Antigua and Barbuda

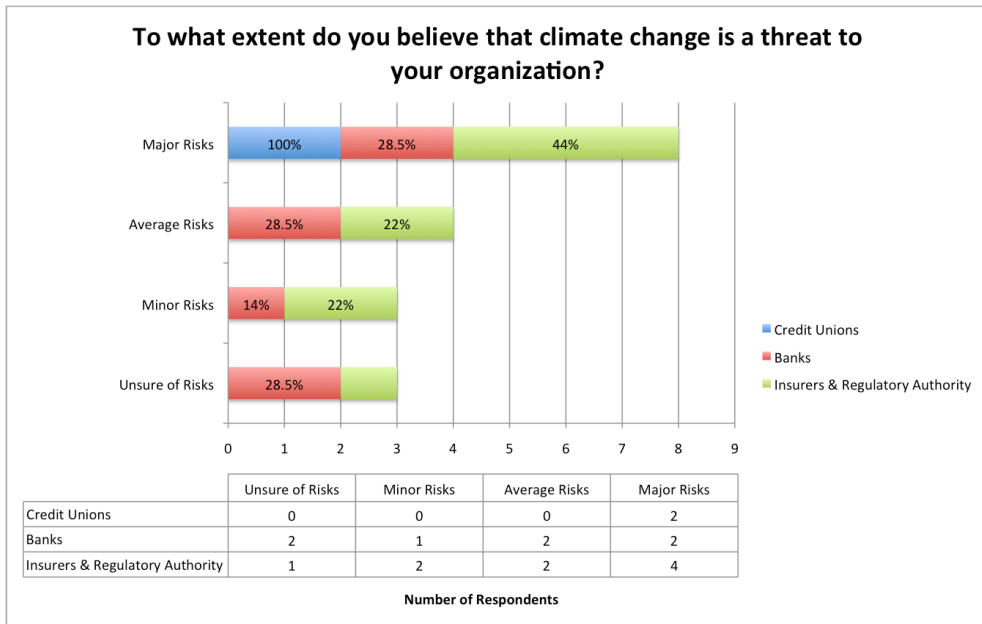


Figure 7: Perception of climate change risk to organization

The majority of respondents (44%) agreed that climate change had become a priority concern for their organization. This view was most common among insurers; see figure 8.

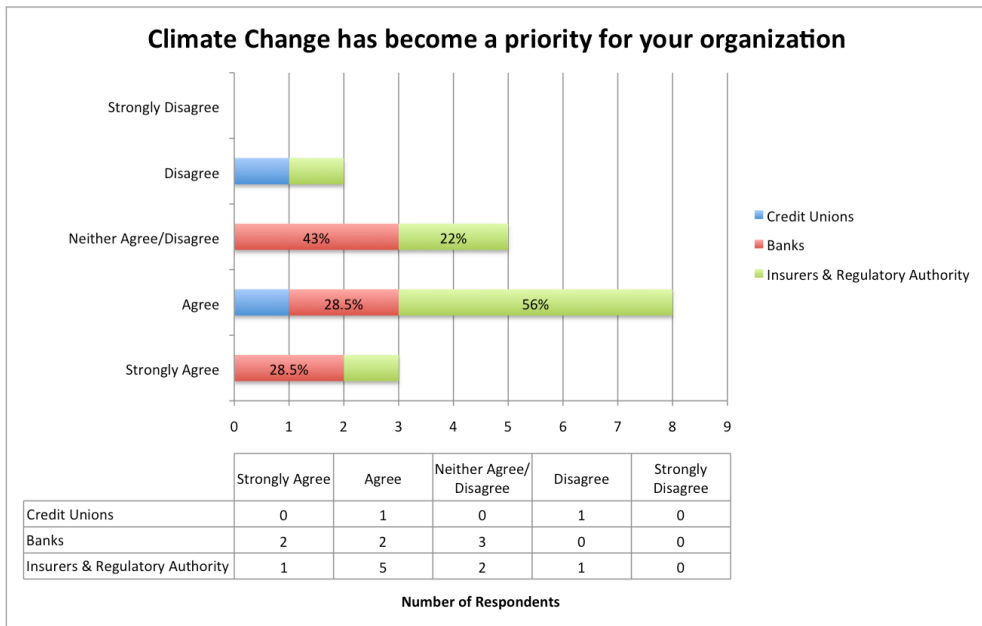


Figure 8: Extent of organization's concern for climate change

RISK ASSESSMENT CONSIDERATION

While the majority of respondents (50%) agreed that environmental hazards and climate risks were strongly considered by their institutions, this view was highest among insurers (67%); see figure 9

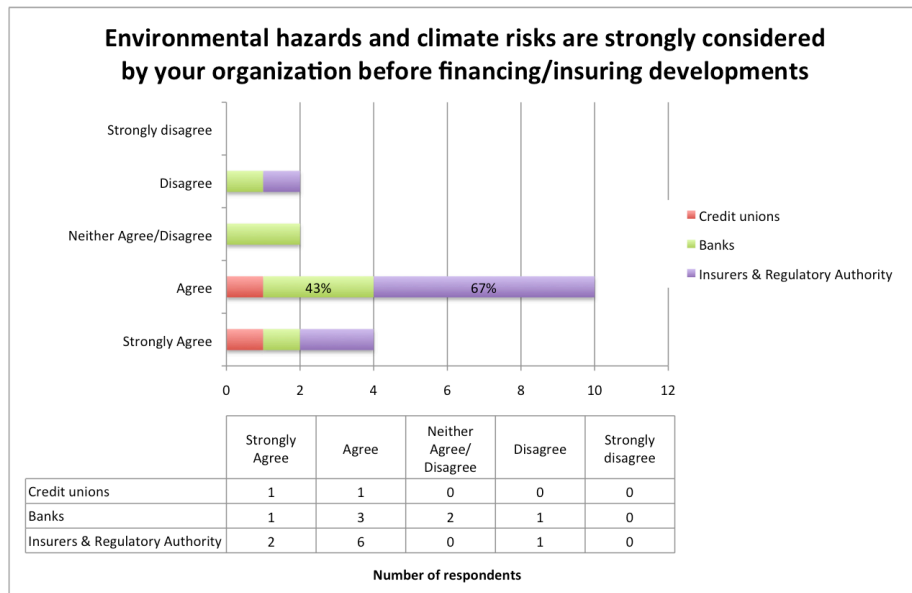


Figure 9: Extent of environmental/climate hazard considerations in operations

39 percent of respondents felt they had a major role to play in addressing climate change risks. This was also the same percent of respondents (39%) who felt they had a minor role to play in addressing climate change risks. On one hand, most insurers (44%) felt they had a major role to play. On the other hand, the majority of banks felt they had a minor role to play in addressing climate change risks.

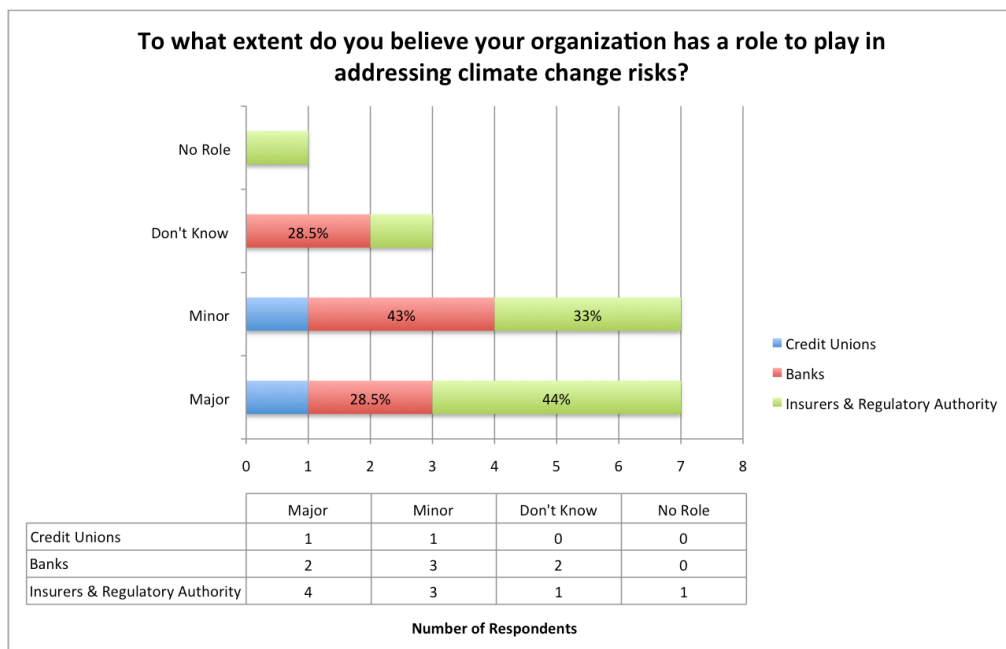


Figure 10: Perception of role in addressing climate change risks

Here concludes the major findings of the surveys:

- Knowledge of climate change mitigation, adaptation and risks to Antigua and Barbuda was considered average by the majority of respondents.
- Majority of respondents agreed that climate change has become a priority concern

- Environmental hazards and climate risks are strongly considered by the majority of financial institutions
- Respondents felt they had both a major and minor role to play in addressing climate change risks.

4.2 Interview Analysis

AWARENESS AND PERCEPTIONS

During the interviews when asked as to what were the major impacts of climate change to Antigua and Barbuda, all respondents highlighted hurricanes, both frequency and intensity, to climate change, *see figure 11*.

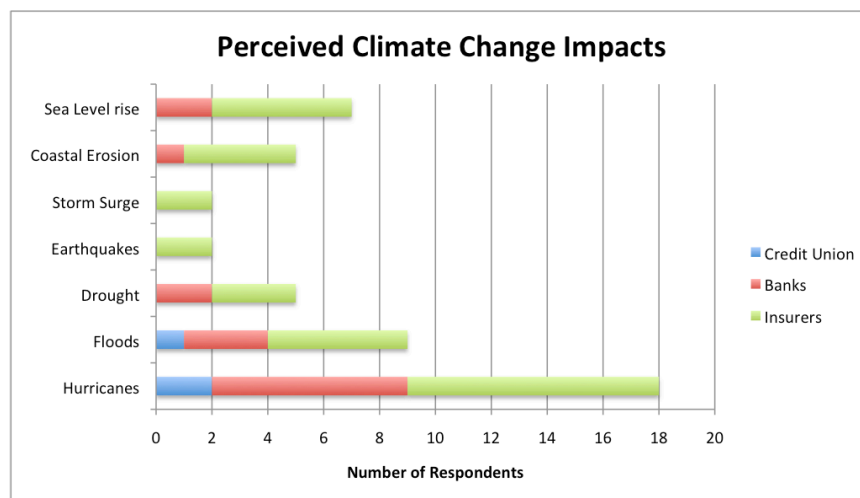


Figure 11: Perceived impacts of climate change

Respondents were also asked to comment on their opinion of climate change risks that could have an effect on their institutions. Interestingly, mainly insurance firms saw climate change as affecting their operations and financial solvency, *see figure 12*.

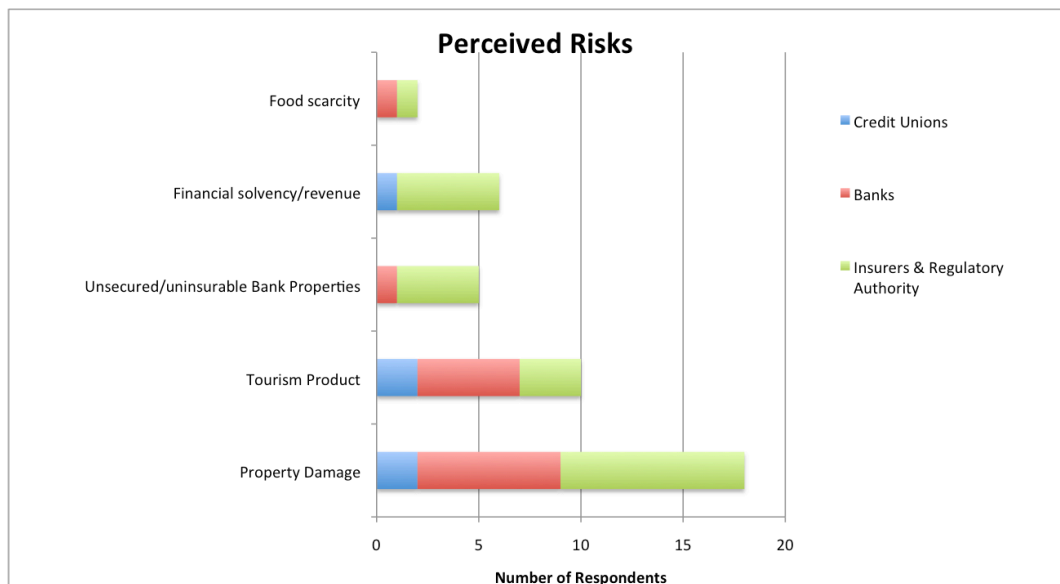


Figure 12: Perceived risks to organizations

Moreover, there were contradictions in the perceived risks to bank properties and their insurability. As a means of risk mitigation and security, banks require all financed properties to be insured but were unaware of insurers' ability to retract coverage as well as non-issuance of coverage. Here are a few comments relating to this coming from the interviews:

- a. *"Well an insurance would not retract a policy because claims are exceeded because that's why you have insurance. They would retract if you fail to pay your premium. I think there is a 3month grace period and if you fail to make the necessary arrangement with the insurance company then they are in their right to cancel their policy. But I've never heard of an insurance company canceling because of too many claims. There are systems in place that protects them for that, for example you have reinsurance, and the deductible." B3*
- b. *"I don't think we've had that issue here, the issue you mentioned is in developed countries. There's been no issue in terms of the relationship with insurance companies." B2*
- c. *"The financial sector puts things in place to mitigate against those risks, things like insurance. So therefore, the financial institutions and their clients won't bear that kind of costs anyway. And those loans that go delinquent maybe just a 5 or 10 percent of their portfolio while 90 is making you money." C2*

Further, when asked as to the sources of their information on climate change, the following were most cited by respondents:

- Media
- Reinsurance news letters and professional subscriptions
- Internet searches

- Personal investigations

Here are some additional comments in response to the above questions:

- 1) *“Just my general investigation, news stories, internet searches and stuff like that.”* C1
- 2) *“Internet, a little research, the media.”* B4
- 3) *“I’ve been to a few workshops with the reinsurance sector, every year they have an insurance conference. And every year there is a lecture on climate change”* I6

In establishing the role of financial institutions to address climate change risks, although the survey highlighted that the majority of respondents had a major role, many respondents were unaware as to how they could play such a role. Many respondents (11 respondents) felt they required more localized information on climate change risks. Additionally, the survey highlighted that majority of banks felt they had a minor role but during the interview majority of respondents (4 respondents) felt that it was outside of their financial mandate or scope of works. Comments on this topic included:

- i. *“We believe that it is minor risks, primarily because of the business that we do.”* B4
- ii. *“well it’s not a huge relevance to the financial services sector, I would say, mainly in terms of what we do.”* B2
- iii. *“Well I don’t think we would mind having more information, cause relating climate change specifically to Antigua and Barbuda would be more relevant and I believe the technicians in the Environment (Department) would probably know more about what specific risks we face with respect to climate change effects in Antigua and Barbuda. So highlighting those more to the financial services sector institutions would be useful.”* C1
- iv. *“For the sector, I think education is one of the things we need to push. We need to know the triggers, we need to have an idea as to what the effects climate change has on not only the island because we’re such a small country but there is a domino effect, if one industry is affected it trickles down to affect us all. Education is a key factor in helping us.”* I4

Operations: Risk Assessment Strategies

Although many respondents agreed that environmental hazards and climate risks were strongly considered prior to financing or insuring developments, risk assessment strategies were very limited as majority of institutions (93%) employed visual assessments through a site visit and an engineers structural report. There was only one institution that collected geographical positioning (GPS) data of properties prior to insurance for risk modeling. Moreover, risk

assessment strategies for retail and housing developments were very minimal from the perspectives of banks as they relied solely on planning approval via the DCA. See below for the respondents comments :

“No, it’s a visual assessment. We get an engineers report which usually doesn’t tell you about environmental factors so we do a visual site visit... he will look at the house or property and see it standing by itself and say any winds blow this house will be damaged. He doesn’t go deep enough to say that with the changes in the climate we are likely to have more intense hurricanes. Our risk managers don’t do that...” I4

“Well there are no assessments except that if we’re going to finance a mortgage, a home, then the requirement is that the developer or homeowner must acquire the relevant approval from town and country planning, DCA. We would expect that as part of the town and country planning, that the environmental impact would have been considered. So once they get that approval from the town and country planning then we move forward. So we don’t do any due diligence as far as homes are concerned.”

B3

“A lot of our personal retail loans, and mortgages, etc. we wouldn’t typically assess from an environmental standpoint. Now if there is a project which has an environmental consideration aspect we would assess it from not necessarily the specific risk but just to ensure that the borrowers or the principals have considered what impact it would have on the environment and potential lawsuits from a banking stand point. That is really the extent of it. It’s just an internal assessment not even visual, just an internal assessment of the project. ” B6

BUSINESS PRODUCTS

Although strongly associated to hurricanes, all insurers provided a rating factor to clients. Properties deemed most exposed to climate risks are given higher premium rates and higher deductibles than those less exposed; (7 respondents – 100% of insurance firms sampled). However, all banks and credit unions (8 respondents) offered hurricane or hurricane recovery loans in which the conditions for approval was relaxed. These institutions were also focused on exploring the development of green energy financing initiatives, which addresses climate change mitigation.

ADAPTIVE STRATEGIES

Adaptive strategies within the sector fell within three categories: business operations, structural, and societal adaptation. Insurance firms mainly undertook strategies relating to business operations, while the other institutions focused on securing their physical premises against extreme weather events as well as societal adaptation. Only three banks highlighted their development phases of a business continuity plan to maintain service to customers. This incorporated all disasters, including fire, and earthquake.

Adaptive strategies within insurance firms were as follows:

- No sale of insurance during the advent of a storm or extreme weather event
- Education of clients on ways to mitigate risk exposure- if recommendations for mitigation of climate risks are undertaken, clients are given reduced premium rates (7 respondents -100% of sample size).
- Improved data collection through GPS mapping of properties (1 respondent); and the use of photographs and a thumb tacked paper map to highlight parishes with vulnerable insured properties (2 respondents).
- Establishment of an internal catastrophe fund (1 respondent)
- Discriminate policies – e.g no insurance coverage offered to beach front properties and, or flood prone areas (3 respondents)
- Retracting coverage/Non renewal of coverage: in the event of excessive claims related to climate hazards, (2 respondents)
- Random site inspections of properties prior to policy renewal (3 respondents)
- Consultation with reinsurers prior to offering insurance coverage (4 respondents).

Sample responses:

- a. *“Over the years we have seen the encroachment of the sea on a number of properties that we insure and as a result of this; I know of one particular property we actually came off risk because of the fact that the sea has come so far into that property...we’ve made that decision with respect to properties in Barbuda because it’s just too close to the ocean.”*¹¹
- b. *“One of the strategies that we have here, is that over the years we stay away from beach front properties. Because coming out of Hurricane Luis in 1995, a lot of the insured properties we had were washed away*

and we are aware that those are aspects that climate change can affect our businesses,...” I4

Banks, and credit unions, through their corporate social responsibility activities as well as structural adaptation, engaged in societal adaptation activities but were unaware of the linkages to climate change:

1. *“Last year, we installed water tanks to eight different schools in Antigua, focus was mainly on the primary schools, cause we recognize many of them didn’t have adequate water and we wanted to ensure that this was captured. So those are some of the initiatives we undertake as part of our CSR...climate change affects the whole island is something that should be addressed by the government.” B1*
2. *“Now the storms are coming more frequent and more violent so therefore we have to put more things in place to protect the building, so for example, shutters and so on.” C2*
3. *“Actually, this institution has had instances with flooding in the past. And when it used to seriously rain, our neighbours yard would flood and the water would backup and flood the whole parking lot. So all the cars would get flooded and so on. And it’s flash too, it’s not like 4,5, 6 hours. It would happen in an hour so we would have to be running outside to move our cars. It was really pretty bad. We had to spend upwards of about \$250,000 to build a box drain at the back, which alleviated flooding for all the residents living upwards...If climate change was a priority concern we would have a policy and we don’t.” C1*

GOVERNANCE

There were no institutions within the sector with a climate strategy or policy. Moreover, many institutions, particularly banks, felt that a government mandate was needed to initiate an effective response to climate change risks and adaptation:

- a. *“I think a direction needs to come from a central authority, a bankers association, etc. In reality, there is no force pushing us in that direction, we do it as a good corporate citizen. But if as a country there is a policy that comes down then that further pushes the process together to get to the levels of addressing it, and that’s what you want.” B2*

- b. *“There is no mandate from government requiring us to do that. I think if we channeled our efforts into that (adaptation) then it would make a big impact in addressing adaptation and climate change risks.” B4*

- c. *“I don’t think there is any coordinated approach. I think to a larger extent it is left to individual entities to carve their own niche and find their own road within the grand scheme of things. What would help is to have a coordinated approach led by a Government agency to take charge and set the policy framework so that others can follow. This will avoid the sort of haphazard approach with various organizations doing one thing and another doing some other thing; it’s disorganized.” B7*

EMERGING RISKS

The interviews further highlighted two key emerging risks which primarily related to the role of the government, and the role of reinsurance. A major concern among insurers is the role of reinsurance not only within the island but throughout the Caribbean Region. As climate change impacts are realized in frequency and intensity, the performance and rates of reinsurance fluctuates. Respondents’ comments:

“Let me tell you what happened during that 10 year period we had those hurricanes as an insurer. The reinsurance costs went through the roof and as a result of that we had to increase our rates... and that is passed on to the consumer. There is a serious risk to Antigua, as well as the Caribbean Region. At one point, Antigua was known as Hurricane Alley because of the frequency of storms coming this way. And at one point reinsurers were threatening to not cover Antigua cause you have to consider that premiums and revenue generated here are small when compared to the high risk coverage due to the region’s frequent disasters.” 11

“I recalled us going through that. Not only did they threaten to withdraw but some of the reinsurers folded or collapsed because they couldn’t manage the claims. I mean we were being hit almost twice every year and then they couldn’t afford to pay us.” 17

In addition to requiring government guidance to climate change risks, activities of government agencies were often seen as increasing the vulnerability of the sector to climate change risks through development planning, as well as through public works and maintenance of drains and waterways. Responses:

“ I believe that watercourses should be cleared from time to time but again, you see them (Government) clearing water courses where you see them clearing all the vegetation so its now just earth waiting to be washed away. What I think needs to happen, is to clean the watercourses not just 10ft wide then if you get heavy rains then it overflows into property areas around. Maybe it needs to go to 20ft wide. Do it one time, don't just go there every year doing the same 10ft wide and when it rains. Do a proper assessment, maybe it needs to be 20ft wide and let the grass grow back so when we do get the heavy rains it will contain water in that area .”¹¹

“...we had an incident in Barbuda where we were getting the business and we hadn't gone to look at it but we got the engineers report and sent it to the reinsurers. When they saw the location of the property, they said the property was built incorrectly and the DCA shouldn't have approved it because it was built too close to the coastline. This presents a challenge cause in the case of Barbuda, it was a hotel, and they couldn't get insurance here so they had to get it from someone over seas. Had it been a private home where all local insurers refused to insure that property can you imagine the repercussions? One, the bank would not be pleased because the bank can't get security for their properties, and two, the home owner would be left at the mercy of the environment....So DCA needs to pay more attention. I was wondering where was DCA, did they not see that it was too close to the water line; was there no site visit before approving...this exposes everybody. If insurance firms are silly enough to cover it then they have that exposure, and the bank already loaned money to build it and they would have loaned the money because of DCA's people and approval. So they are trusting the government to know what they are doing and in that case they let us down, and I am very sure that they have let us down quite a few other times.”¹⁷

4.3 Summary of Research Findings

Antigua and Barbuda's financial services sector is aware of the physical risks of climate change but limited in their perceptions of risks to the island as well as to their organization and their role in addressing climate change risks. In terms of the sector's operations, risk assessment strategies are minimal and consist mainly of visual assessments and an engineer's structural report. Insurers mainly undertook operational adaptive strategies while other institutions undertook structural as well as societal adaptation activities through their CSR policies. Some banks are in the final stages of finalizing their business continuity plans to maintain their operations in the event of a catastrophe, which is inclusive of extreme weather events as well as

other hazards including earthquakes and fire. At the governance level, there is no formal climate policy or infrastructure to address climate change risks.

The following chapter will now highlight and discuss the main implications of the research's findings.

5. DISCUSSION & RECOMMENDATIONS

This research took an exploratory and qualitative approach to analyze the responses of the financial services sector to the physical risks of climate change. The aim and objectives were as follows:

Aim:

- To analyze the responses of the financial services sector to climate change risks

Objectives:

- To identify the perception and awareness of climate change risks
- To determine the responses of the Antiguan financial services sector to climate change risks
- To identify the factors that encourage or hinder responses to climate change risks

The preceding chapter captured the main findings of the research and as a result, this chapter will now analyze and discuss the implications of those findings.

5.1 Awareness and Perception

While the financial services sector is marginally aware of the physical risks of climate change, the perceptions of risks to the island and to the various financial institutions are limited, given the small majority in responses. Weather losses experienced are predominantly by hurricanes (Dlugolecki, 2000), which may be a contributing factor in the strong association to climate change despite the science. This association may also hide the increasing trends and risk perceptions of other ongoing extreme events such as flooding, and droughts. The limited perception of risks may primarily stem from their sources information. Respondents often cited their own investigations and personal readings through various media as major sources of information. The implication of this is that the information may not be localized and, or contextual. While the media has considerable influence in framing opinions and perceptions of climate change (Cavahlo, 2010; Lyytimaki, 2011; Dolsak and Houston, 2013) it lacks content on adaptation activities, and it primarily frames adaption as just a needed response to climate change risks (Ford and King, 2015). Moreover, scientists who wish to lobby certain interests, including climate skeptics, can also use the media and mitigate the perceptions of risks. As a means of validating and ensuring consistency in the information provided to the financial sector, the government through its various agencies must therefore play a lead role (Stern, 2009).

5.2 Private Sector Engagement

The research indicates low levels of private sector engagement not only in development planning but also in addressing climate change risks. Biangini and Miller (2013) argue that private sector engagement in developing countries are low despite the vast opportunities available. Engaging the private sector, such as financial institutions, enables the mobilization of resources, technical capacity, advances government efforts and also engages other members of society (Biangini and Miller, 2013). In the case of Antigua and Barbuda's financial services sector, through CSRs of financial institutions, adaptation efforts were undertaken but not linked to climate change efforts on the island. This highlights awareness as a barrier to climate change response by the financial services sector.

The research concurs with previous international studies that highlight the awareness of risks, risk assessment methodologies, and the lack of government and political engagement and leadership hinders the progress on adaptive responses to climate change (IPCC, 2014; Linnenluecke and Griffiths, 2015). As highlighted in the research, risk assessment strategies were minimal within the financial services sector, despite the availability of GIS data through government agents.

5.3 Financial vulnerability

As a developing SID, the physical risks of climate change can significantly threaten the financial viability of the financial services sector. The projected increases in frequency and intensity of extreme weather events will inevitably negatively affect insurers as well as banks, and individuals. Hawker (2007) notes that changes in climatic events will possibly reduce the ability and capacity of insurers to price and cover weather related risks owing to increases in claims for damaged properties. Following the occurrence of Hurricane Andrew in 1992 in south-eastern Florida, nine insurers became insolvent owing to unforeseen losses (Herweijer et al., 2009). Such firms did not anticipate the intensity of the hurricane and how it would affect their business as it occurred during an inactive season based on historical records. This implies that use of historical records and trends can no longer be used as a basis for risk pricing. Given climate variability, the response of some insurers to increased weather impacts in the United States was to drastically reduce the number of homeowner policies or complete pull-out from regional markets. Consequently, approximately 3 million U.S. households remained without private insurance coverage as well as being exposed to risks between 2003 and 2007 (Stenek et al., 2010). The interviews highlighted that such occurrences have occurred within Antigua

“We have historic information on companies who have underestimated their need for catastrophe reinsurance coverage, have failed and are now no more. Antigua has such experiences with companies going under as a result, going back to 1989 with Hurricane Hugo and 1995 with Hurricane Luis.” 17

The frequency of extreme weather events potentially increases the maximum risk of losses (Herweijer *et al.*, 2009) and as such increase in insurance premium levels is a usual response (Linnenluecke and Griffiths, 2015). This in turn adversely affects insurance affordability and availability, which is already materializing in the case of Antigua and Barbuda given the previously mentioned adaptive strategies undertaken by insurers within the island. Additionally, the availability and rate fluctuations of reinsurers presents a major challenge not only to the sector but also to individuals as this cost is passed on to individuals through higher premiums and deductibles. This presents a challenge for persons living in vulnerable areas. As an island surrounded by the sea the majority of the country’s population resides in coastal communities, and the economy is highly dependent on tourism. With insurers opting to either increase premiums, retract coverage, or non-issue of coverage, specifically in the case of coastal properties, increases the vulnerability of the island both socially and economically. Vulnerable coastal communities will be left to carry the risks of extreme weather events. Further, with banks in Antigua and Barbuda being unaware of such strategies, their asset based loan portfolios and the real estate market may increase with uninsurable properties and irrecoverable debts (Linnenluecke and Griffiths, 2015):

“There was a period of time where we had a lot of boats and fishermen claiming on insurance and that involved one particular insurance company pulling out of the market and that happened all of a sudden. So that could be something like what you’re referring to about retracting coverage. Yes they did give us notice alternative insurance and go through the whole process of getting the boats valued and so on, which is an expense to them. That actually impacted one of our customers quite significantly because after that, he couldn’t get insurance and we were left with the debt.” B6

This has further implications for an already weak bank system in the Eastern Caribbean Currency Union (ECCU), which is made up the smaller islands, like Antigua and Barbuda. IMF (2013) notes that poor risk management strategies, and inadequate regulatory supervision, particularly within domestic banks, have led to capital shortfalls increasing the vulnerability of the financial sector. It is also noted that there have been an increase in non-performing loans or irrecoverable debt. While this may not be explicitly linked to impacts of climate change, without proper diligence, the banking sector may become plagued with uninsurable properties

(Linnenluecke and Griffiths), which could further add to the value of non-performing loans. Additionally, Strobl (2012) highlights that on average, the effects of natural disasters, specifically hurricanes, reduce the financial output by one percent within the region as well as increases the debt to GDP ratio by five percent following storms. Given the slow onset of climate change impacts, the cumulative risks of extreme weather events in addition to a weak system, the vulnerability of the sector is increased as well as the island's pursuit of sustainable development.

Moreover, Herweijer *et al.* (2009) adds that discriminate policies may increase the proportion of un-insurable properties as well as threaten the financial viability of private insurers through a reduced number of policies sold. It is therefore imperative that both insurers and banks specifically address climate change risks through improved risk assessment methodologies, and anticipate how their respective asset and risk based properties can adapt to the increasing frequency and intensity of extreme weather events.

The findings of this research are indicative of both areas of further research, and strategic areas of improvements, namely, awareness, risk assessment strategies and capacity, and governance.

5.4 Further Research

1. Climate change awareness and perceptions of property development stakeholders to include engineers, contractors and developers.
2. Government and private sector engagement in climate change issues within the Caribbean
3. The role and performance of reinsurers within the OECS
4. The value of Non-performing loans attributed to the un-insurability of assets
5. The value of financial impacts of extreme weather events on residential and commercial property developments

5.5 Recommendations

1. Increase private sector engagement with Government national authorities through formal information exchange and through the development of a sustainable development public private partnership initiative. Through the CSR policies of the financial services sector, advancements in climate change adaptation and mitigation can be attained.

2. Financial institutions should develop and foster national sustainable development goals within publicly disclosed formal policies on corporate social responsibilities. These policies should address climate change and the institutions actions to address national policies.
3. Development of a national climate change strategy that includes a strategic framework for engaging the private sector.
4. The financial services sector should lobby the government on the risks of developments in hazardous areas and the enforcement of stricter laws and regulations (Clemo, 2008). Both banks and insurers have a role to play in the quality of developments.
5. Improve risk assessment strategies within the sector through the increased use of GPS mapping and by establishing a shared Geo-database with a central hub, either through a government agency or private association. As part of a public private partnership, the Government could facilitate basic GPS and GIS training within the sector. Financial institutions can pay for an annual service that enables them to access the existing Geo-database and facilitate GIS simulated queries.
6. All financial institutions should complete and utilize business continuity plans.
7. All insurers should establish internal catastrophe funds to alleviate the reliance on reinsurer payouts.
8. Development of public relief insurance scheme to assist individuals living in vulnerable areas who are also unable to secure property insurance
9. Mobilize regional action to improve the responses of the financial services sector to climate change via CARICOM, CCRIF, CDB, and the ECCB.

6. CONCLUSION

While the financial services sector is seeing rising additional costs from the occurrences of extreme weather events associated to climate change, little is known about the responses of the sector to the physical risks of climate change. This is particularly true in the case of the Caribbean, which is one of the most vulnerable regions to climate change impacts.

This research took an exploratory approach to analyze the responses of the financial services sector to the physical risks of climate change, using a case study of Antigua and Barbuda. The sector was analyzed across four main areas, namely, awareness and perception; operations to include risk assessment strategies and adaptive strategies; business products; and governance in terms of policy. The research methods involved a preliminary survey to ascertain the awareness and perceptions of risks, followed by interviews. A total of 18 institutions participated in this research

The major findings of the research were that although the sector was marginally aware of climate change risks, the perception risks were limited. This maybe attributed to the communication of climate change risks, minimal risk assessment methodologies, and low levels of private sector engagement by the government. The research concludes that there is no formal response to climate change risks within the financial services sector of Antigua and Barbuda and that adaptive strategies are uncoordinated.

It is important to note that the findings of this research are not to be generalized but are rather indications of the factors that encourage and hinder responses to climate change within the OECS.

REFERENCES

- Barthel, F. and Neumayer, E. (2011) A trend analysis of normalized insured damage from natural disasters. *Climate Change*, 113: 215-23.
- Bernard, H.R. (2012) *Social Research Methods: qualitative and quantitative approaches*. Sage Publications Ltd., London
- Biaginia, B., and Miller, A. (2013) Engaging the private sector in adaptation to climate change in developing countries: importance, status, and challenges. *Climate and Development*. Vol. 5 (3): 242 -252.
- Bowrin, A. (2013) Corporate social and environmental reporting in the Caribbean. *Social Responsibility Journal*, 9 (2): 259 – 280.
- Caribbean Youth Environment Network (CYEN).(2011) Caribbean Adaptation Efforts. Website accessed 10th February 2015 at http://www.cyen.org/climatechange/documents/cc_adapt_efforts.php.
- CARICOM (n.d) CARICOM Mainstreaming Adaptation to Climate Change Project (MACC). Website accessed 10th February 2015, http://www.caricom.org/jsp/projects/macc%20project/macc_components.jsp
- Carvalho, A. (2010) Media discourse and climate change: a focus on political subjectivity and (dis) engagement. *Wiley Interdisciplinary Review climate change* Vol. (1): 172 -179.
- Chmutina, K., and Bosher, L. (2014). Construction in Barbados: keeping natural hazards in mind. *Disaster Prevention and Management*. Vol.23 (2):175 -196
- Clemo, K. (2008) Preparing for climate change: insurance and small business. *The Geneva Papers on Risk and Insurance: issues and practice*. Vol. 33 (1): 110 – 116.
- Climate Group. (2/12/2008) The Climate Principles: a framework for the financial sector. Website accessed on 18th January 2015, http://www.theclimategroup.org/_assets/files/The-Climate-Principles
- Climate Group. (26/1/2011) The Climate Principles Progress Review. Website accessed on 23rd January 2015, <http://www.theclimategroup.org/what-we-do/publications/The-Climate-Principles-Progress-Review-2011/>
- Cogan, D. (2006) *Corporate Governance and Climate Change: making the connection*. Ceres, Boston.
- Cogan, D., Good, M. and McAteer, E. (2008) *Corporate Governance and Climate Change: The banking Sector*. Ceres Report. The Risk Metrics Group, Boston.
- Department for International Development (DFID). (2004) *The Importance of Financial Sector Development for Growth and Poverty Reduction*. Policy Division Working Paper. DFID, UK.
- Dolsak, N. and Houston, K. (2013) Newspaper coverage and climate change legislative activity across US states. *Global Policy*

- Dlugolecki, A. (2000). Climate change and the insurance industry. *The Geneva Papers on Risk and Insurance: issues and practice*. Vol. 25 (4): 582-601
- Farrell, D., Trotman, A., and Cox, C. (2010) 'Drought early warning and risk reduction: a case study of the Caribbean drought of 2009–2010'. In Andrew Maskrey (ed.) *Global Assessment Report on Disaster Risk Reduction 2011*. United Nations International Strategy for Disaster Reduction, Geneva. pp. 54-69.
- Ford, J. and King, D. (2015) Coverage and Framing of climate change adaptation in the media: a review of influential North American newspapers during 1993 – 2013. *Environmental Science and Policy* Vol. 48: 137 - 14
- Furrer, B., Hamprecht, J., and Hoffmann. (2012) Much Ado about Nothing? How Banks respond to climate change. *Business and Society*. 51 (1): 62-88
- Ghesquiere, F., Mahul, M., Forni, and Gartley, R. (2007) *Caribbean Catastrophe Risk Insurance Facility: A Solution to the Short-term Liquidity Needs of Small Island States in the Aftermath of Natural Disasters*. World Bank, Washington, DC.
- Goldenberg, S. (2007) Impact of climatic variations on the Caribbean. National Oceanic and Atmospheric Administration, Washington, DC.
- Goodall, A. H. (2008) Why have the leading journals in management (and other social sciences) failed to respond to climate change? *Journal of Management Inquiry*, 17 (): 408 -420.
- Government of Antigua and Barbuda (GOAB). (2014) 2011 Population and Housing Census. Statistics Division
- Green, D., Alexander, L., McInnes, K., Church, J., Nicholls, N., White, N. (2010) An assessment of climate change impacts and adaptation for the Torres Strait Islands, Australia. *Climatic Change* 102(3–4): 405–433.
- Heal, G., Kristrom, B. (2002) Uncertainty and climate change. *Environmental and Resource Economics* 22: 3 -39.
- Herweijer, C.; Ranger, N., Ward, R. (2009) Adaptation to climate change: threats and opportunities for the insurance industry. *The Geneva Papers on Risk and Insurance: issues and practice*. Vol. 34 (3): 360 -380.
- Hoffmann, V., Sprengel, D., Ziegler, A., Kolb, M., Abegg, B. (2009) Determinants of corporate adaptation to climate change in winter tourism: an econometric analysis. *Global Environmental Change*, 19: 256–264.
- International Monetary Fund (IMF). (2013) Caribbean small states: challenges of high debt and low growth. Website accessed 23rd June 2015, <https://www.imf.org/external/np/pp/eng/2013/022013b.pdf>
- IPCC. (2007) Contribution of Working Group 2 to the Fourth Assessment Report: Impacts, Vulnerability and Adaptation. Website accessed 20th January 2015, https://ipcc.ch/publications_and_data/ar4/wg2/en/contents.html

IPCC. (2014) Contribution Working Group 2 to the Fifth Assessment Report: Impacts, Vulnerability and Adaptation. Website Accessed on 13th January 2015, <http://ipcc.ch/report/ar5/wg2/>

Iyehen, E. (2010) CCRIF: a natural catastrophe risk insurance mechanism for Caribbean Countries. Insurance reinsurance and risk transfer. Paper presented at the IDB Capacity Building Workshop on Climate Change Adaptation and Water Resources in the Caribbean, Trinidad and Tobago, 22-23 March 2010.

Joyette, A., Nurse, L., and Pulwarty, R. (2013) Disaster risk insurance and catastrophe models in risk-prone small Caribbean islands.

Lal, M., Harasawa, H. and Takahashi, K. (2002) Future Climate Change and its Impacts over Small Island States. *Climate Research*. 19:179-192.

Leslie, K.R. (2008) Global climate change and the Caribbean: seeking solutions for an endangered region'. Paper presented at the Caribbean Community Climate Change Centre XVII Malente Symposium, Lübeck, Germany, 12–14 October 2008.

Linnenluecke, M.K., and Griffiths, A. (2015) *The Climate Resilient Organization: adaptation and resilience to climate change and weather extremes*. Edward Elgar Publishing, Cheltenham, U.K.

Lutzkendorf, T., Fan, W., and Lorenz, D. (2011) Engaging financial stakeholders: opportunities for a sustainable built environment, *Building Research & Information*, 39 (5): 483-503

Lyytimaki, J. (2011) Mainstreaming climate policy: the role of media coverage in Finland. *Mitigation Adaptation Strategy, Global change*. Vol. 16: 649 -661.

Meadows, D., Randers, J. Meadows, D. (2004) *Limits to Growth: 30 year update*. Chelsea Green Publishing Company, United States.

Miles, E., Elsner M., Littell, J., Binder L., Lettenmaier, D. (2010) Assessing regional impacts and adaptation strategies for climate change: the Washington Climate Change Impacts Assessment. *Climatic Change* 102(1–2): 9–27.

Mitchell, K. (2007) 'Statement by Dr The Right Hon. Keith C. Mitchell, Prime Minister of Grenada'. Presented at the Donors' Pledging Conference for the Caribbean Catastrophic Risk Insurance Facility, Washington, DC, 26 February 2007.

OECD. (2009) Integrating climate change adaptation into development cooperation: policy guidance. Website accessed 8th February 2015, <http://www.oecd.org/dac/environment-development/dac-publications.htm>

Rasmussen T. N. (2006) Natural Disasters and their macroeconomic implication, in Sahay, R., Robinson, D. and Cashin, P. eds. *The Caribbean: from vulnerability to sustained growth*. International Monetary Fund, Washington: 181 -205.

Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley. (2009) Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society* 14(2): 32, viewed 12th February 2015: <<http://www.ecologyandsociety.org/vol14/iss2/art32/>>

- Stenek, V., Amado, J C., Richenda, C., (2012) Climate Risk and Financial Institutions: challenges and opportunities. IFC, Washington
- Sullivan, R. (2014) IPCC AR5: Implications for investor briefing. Website accessed on 3rd February 2015 at <http://www.unepfi.org/publications/climate-change/>
- Taylor, M.A., Stephenson, T.S., Chen, A.A., Stephenson, K.A. (2012) Climate Change and the Caribbean: Review and Response. Caribbean Studies. Vol.40 (2) pp. 169-200.
- Tompkins, E. L., and Adger, W, N. (2004) Defining response capacity to enhance climate change policy. Environmental Science and Policy. Vol. 8: 562-571
- UNEP Financial Initiative. (2006) CEO Briefing: Adaptation and Vulnerability to Climate Change: the role of the finance sector.
- UNISDR. (2005) Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters (HFA). Website accessed 5th February 2015 <http://www.unisdr.org/eng/hfa/hfa.htm>.
- USCEC (United States Climate Emergency Council). (2006) Climate Change could Cause Earthquakes and Volcanic Eruptions. USCEC, Washington, DC.
- Van der Linden, S. (2015). The social-psychological determinants of climate change risk perceptions: towards a comprehensive model. The Journal of Environmental Psychology . Vol. 41: 112 -124.
- Weinhoffer G. and Busch, T. (2013) Corporate strategies for managing climate risks. Business Strategy and Environment, 22: 112 – 124.
- Winn, M., Kirchgeorg, M., Griffiths, A., Linnenluecke, M., Gunther, E. (2011) Impacts from climate change on organizations: a conceptual foundation. Business Strategy and the Environment. 20: 157- 173
- World Bank (2015) World Databank: word development indicators - Antigua and Barbuda Accessed online on June 29th 2015 at <http://databank.worldbank.org/data//reports.aspx?source=2&country=ATG&series=&period=>
- Yin, R. (2013) Case Study Research: design and methods (applied social research methods). Sage Publications, Ltd., London

Appendix 1: Communiqué and Survey Questions

Dear XXX,

Research Survey and Interview

I am currently conducting research to examine the roles of financial institutions in addressing climate change. The research uses Antigua and Barbuda's financial services sector as a case study. As a leading financial institution on the island, (institution) has been selected to participate in this case study.

I am writing to request your participation to complete an 11-item questionnaire followed by a brief interview. Your responses will be kept confidential and provide valuable insight into concerns of the financial services sector regarding climate change. Your participation in this study will contribute greatly to the development of strategies and programmes tailored to financial service institutions within the Caribbean, and to the successful completion of this research project.

The survey is available online at <https://www.surveymonkey.com/s/financialservices> . Alternatively, it has been attached to this letter. It would be greatly appreciated if you could complete the questionnaire before **22nd May 2015**. Upon completion of the survey, I will contact you to schedule a brief interview at your earliest convenience.

This study has been approved by the University of Exeter (U.K.) as part of the Sustainable Development Masters programme. Should you have any questions about the research, I may be contacted at XXXxxxxx

Thank you in advance for your kind cooperation.

Yours sincerely,

.....

Delamine Andrew

MSc Sustainable Development Climate Change & Risk Management

Regulatory Authority

1. How often does your organization participate in environmental activities? Never

Once a year

2 -3 times a year Monthly

2. Kindly rate your knowledge on the following issues None A little

Climate change adaptation

Average In-depth

Climate Change mitigation

Climate change risks to Antigua and the Caribbean Region

3. Climate change has become a priority concern for your organization and its subsidiaries.

Strongly Agree

Agree

Neither Agree/Disagree Disagree

Strongly Disagree

4. Environmental, climate hazards and risks are strongly considered by your organization in monitoring the operations of the financial services sector.

Strongly Agree

Agree

Neither Agree/Disagree Disagree

Strongly Disagree

5. To what extent do you believe that climate change poses a risk to Antigua and Barbuda?

Major Risks

Minor Risks Average Risks Unsure of Risks

6. To what extent do you believe that climate change poses a risk to your organization and monitored financial institutions?

Major Risks Minor Risks Average Risks Unsure of Risks

7. To what extent do you believe that your organization and the financial services sector have a role to play in addressing climate change?

Major Role Minor Role Don't know

Appendix 2: List of Participants

Banks
Antigua Barbuda Investment Bank (ABIB)
Antigua Commercial Bank (ACB)
Antigua Barbuda Development Bank (ABDB)
Bank of Nova Scotia
CIBC FirstCaribbean International Bank (FCIB)
Eastern Caribbean Amalgamated Bank (ECAB)
Royal Bank of Canada
Insurance
Anjo Massey United
ABI Insurance
Kelsick Insurance Agents
Kenneth A Gomez
Sagicor
State Insurance Corporation
PIC
NAGICO/ Brysons Insurance Agents
Credit Union
Community First Cooperative Credit Union
St. John's Cooperative Credit Union
Regulatory
Financial Services Regulatory Commission

Appendix 3: Sample Transcript

Transcript File		
Interviewee	I6	1 st Interview
Interviewer	Delamine Andrew	
Date	07 th July 2015	
Place:	St. John's, Antigua	
Duration:	36minutes	
Other Information	Tape Recorder used with permission	
000	<p>DA: If we could start with you giving an overview of the company, its operations and types of policies offered.</p> <p>IB6: We are a composite insurance company so we offer general insurance which includes motor, property, and general third party liabilities and also life and medical.</p> <p>DA: What's your approximate number of staff?</p> <p>IB6: We have 12 staff members</p> <p>DA: How often would you say the company participates in environmental activities, or initiatives ?</p> <p>IB6: Never. We haven't done that</p> <p>DA: Is there a reason why, may I ask?</p> <p>IB6: No reason. We don't have a policy to say we don't or do but it's never come up.</p> <p>DA: In terms of climate change related issues how would you rate your knowledge on adaptation, mitigation, and risks to Antigua and Barbuda?</p> <p>IB6: Mitigation would refer to those people that are trying to lessen the impacts or reduce the gases in the air, so I would say a little, yeah. Adaptation and risks and impacts would also be a little.</p> <p>DA: Although a little, what were your main sources of information?</p> <p>IB6: News, both on TV and on Radio and my own little research</p> <p>DA: Climate change has become a priority concern for your organization.</p> <p>IB6: Disagree</p> <p>DA: Environmental, climate hazards and risks are strongly</p>	

<p>07:10</p>	<p>considered by your organization before offering insurance coverage?</p> <p>IB6: Agree</p> <p>DA: To what extent do you believe climate change poses a major threat to your organization?</p> <p>IB6: Could be major but I'll say average. We're going through a bad drought right now and the temperature is just soaring and those things are not insured against basically. If climate change was causing really bad hurricanes or really active hurricane seasons, bad earthquakes in Antigua then I would say we would be extremely concerned. Until I see where climate change is causing damages that are insurable then it would be major but now it's average.</p> <p>DA: To what extent do you believe climate change poses a major risk to Antigua and Barbuda?</p> <p>IB6: I see it as average risks but maybe I'm not educated enough about climate change.</p> <p>DA: What sort of risks do you see impacting Antigua?</p> <p>IB6: One of my concern is, whatever is causing the high temperatures , I worry about the tourists because we depend on tourism. I mean I saw it happen in St. Lucia the other day where a tourist got a heat stroke. I worry about that and whether these people are being educated enough. I know they come here for sun, sea, and sand, but our temperatures have reached alarming rates. I know they said it hasn't reached 100 Celsius but sometimes it feels like that. Even those of us who live here can't tolerate it now so I wonder about the tourists and our tourism product. I also worry about the agriculture sector because no rain is coming, water is scarce so how are we going to feed ourselves. Those are the two things I worry about but maybe I haven't thought much about it. I've heard old people say that we're going to get some bad earthquakes because of the increased temperatures and hot sun and the earth is so dry. I can see how climate change can damage us but I don't want to say major. Perhaps if I was more abreast of climate change I would say major but for now, I'll say average.</p> <p>DA: In light of what you've just mentioned, to what extent do you believe that your organization has a role to play in addressing climate change risks on the island?</p> <p>IB6: First of all, I think we need to get educated as to what is causing this and then we can see how we can help. I am not sure I have ever heard it addressed locally . Maybe it has been said locally but I don't think I have ever heard it being addressed. I've heard the Environment people talk about how we destroying mangroves and so forth but I am unsure how that and climate change are related.</p>	
--------------	--	--

08:34	<p>So I haven't heard climate change people telling me what is causing this and where are we heading if it's not moderated. If we were educated we would know how to play a role (Unsure)</p> <p>DA: Previously, you highlighted that environmental and climate risks are considered before offering coverage. What sorts of procedures are undertaken to assess a property?</p> <p>IB6: Ok, when we insure a property, we do something called a COPE Analysis. This stands for construction – what type of construction you have, can it withstand 150mph winds. So of course , with regards to the Construction component, the environment and climate change is important. Occupation – are you using the property as a cook shop, or to run a hazardous business. The P stands for protection – so do you have fire extinguishers, do you have hurricane shutters, burglar bars, etc. Then we have Exposure which is the biggest one and that looks at environment and climate change. We look at where your house is located – is it by itself on a hill, is it near to the sea shore and will it get washed away when the seas are high; is there serious erosion taking place there.</p>	
10:38	<p>Because of the COPE analysis the environment does play a critical part of whether or not we offer insurance. How we think the property will stand up to environmental factors is absolutely essential.</p> <p>DA: In terms of your COPE Analysis, is there any sort of software or technology used?</p> <p>IB6: No, it's a visual assessment. We get an engineers report which usually doesn't tell you about environmental factors so we do a visual site visit.</p> <p>DA: Ok. Has your organization ever experienced an extreme weather event or been impacted? E.g flooding, etc.</p> <p>IB6: Well we weren't around when Hurricane Luis came but last year with Hurricane Gonzalez we got a number of claims and some homes that were damaged, we found that they were damaged before the storm. So in other words, the property was already weakened so when the hurricane comes, it gets destroyed pretty easy. However, we are not responsible for all the damages because you never made any preparations to maintain the house or property. But we were impacted by the number of claims received.</p> <p>DA: Has there been any plans or adaptive strategies put in place to buffer this type of impact?</p>	
14:02	<p>IB6: Well what we've done now is that when people take out property insurance we make sure to inform them that it is there duty to keep this property in a particular condition. What we've also done is visit every home now. Before we would just take the money and the engineers report, especially for new homes but now we visit and take photos of every home. We want to capture every</p>	

<p>16:33</p>	<p>detail of the property, even a crack in the wall before we insure it. Gonzalez was our biggest test since we opened. Persons are not maintaining their properties .</p> <p>DA: So are there incentives or penalties for clients who do or don't maintain their homes? Are there any specialized products or services given?</p> <p>IB6: Well the people who prepare the homes to withstand environmental changes, they are given specialized rates. Those who don't care or undertake no measures to withstand the hurricane then we charge them at a higher rate. In terms of penalties, if there is a claim and we find that the property was not maintained then we settle at a reduced percentage. So we may say you are reliable for 50 percent of the damage since due diligence was not exercised. Also, upon renewal of the policy, we would not renew until the required maintenance has been done to the property based on our site visit.</p> <p>DA: So in cases where a premium is due prior or during an extreme weather event, maybe excessive rainfall, but the client has been severely impacted are there any special considerations or measures to assist such policy owners?</p> <p>IB6: Any event that lasts for 72 hours and has occurred prior to the day the premium is due, we would still hold the client covered because the event would have started before the premium is due . Even if the premium or coverage has expired during the event, we would still hold them cover so they wouldn't have to come in to pay immediately.</p>	
<p>21:54</p>	<p>Whenever there is a storm out and whether the Met office has declared it a hurricane watch or not, we don't sell new business or insurance. We may renew but not issue new policy covers. We don't wait for Met Office to tell us if it's a hurricane watch or alert because sometimes its wrong and it's God sent. However, if you were up for renewal since February and now that a hurricane is coming, you come to renew the day before, we will decline to sell you insurance. We have to protect ourselves to because of reinsurance. So if we tell the reinsurers we have 150 homes on the books and valued at 8million then a storm comes and Antigua is wiped out. We now tell the reinsurers we have 175 homes valued at 9 million after the storm even after we've paid the reinsurance premium for 8 million. It now becomes difficult for the reinsurers to determine what they should pay and what they shouldn't pay. The question is whether we are now willing to pay the bulk because the reinsurers would not have known about the additional 25 homes. So we have to be careful because the day before the storm, reinsurers want to know the number of properties you have on your books and their value. Our reinsurers are European based. Now the reinsurers do an analysis so they know what percentage of your books would be wiped out. They'll estimate for example that projected damages may be one million dollars worth. We therefore</p>	

<p>24:44</p>	<p>cannot return to them asking for two million because we issued new businesses just before the storm. Also with new business during the storms we would be unable to visit these homes.</p> <p>DA: In terms of reinsurance, would you say there is any support given with regards to assessing risks?</p> <p>IB6: Yes. They do risk modeling, so they come twice a year most of the time. We have a paper map that shows them where most of where our houses or properties are. Because their British and used to larger cities, they look at parishes and we would use thumb tacks to pin point the whereabouts for all our properties. Now the parishes each have different colours, so the reinsurers may look at a cluster in St. John's and recommend a site visit on those properties. We do this with motor vehicles also. So they do the risk modeling and we get to know our areas of high risks. So like St. John's is near the harbour and say a Tsunami is coming, we will know to charge them a little bit more because of their location.</p>	
<p>27:25</p>	<p>DA: A few years ago when the region experienced a series of hurricanes, reinsurers were threatening to pull out the market. Have you ever experienced that or had to change reinsurers?</p> <p>IB6: No, cause we're fairly new but personally from my previous work experience with a larger insurance firm here, I recalled us going through that. Not only did they threaten to withdraw but some of the reinsurers folded or collapsed because they couldn't manage the claims. I mean we were being hit almost twice every year and then they couldn't afford to pay us. At one point, the company I was with sued the broker because they gave bad advice particularly when those reinsurers didn't have sufficient funds to pay us. Fortunately, those reinsurers only had two percent of the business; most were with the bigger reinsurance so it wasn't too bad. But here at this company what we've had is that one of our major reinsurers dropped his rates tremendously this year because we haven't had any major claims and Gonzalez wasn't a major hurricane and we didn't go to them for any deductibles. Now because this one reinsurer dropped his rates, another reinsurer pulled out because he could not afford to go that low. And this was a leading reinsurer so if he drops his rate then the others would have to follow. The one that couldn't follow blatantly said he could not charge so low for a Caribbean leeward island company because they're prone to hurricanes, maybe for Trinidad but this area. He has the right to do that so the broker got us another reinsurer.</p>	
<p>28:40</p>	<p>DA: And then has there been any incidence where you had to retract coverage from a client because of increased risks and claims, say for example, coastal properties?</p> <p>IB6: No but we had an incident in Barbuda where we were getting the business and we hadn't gone to look at it but we got the engineers report and sent it to the reinsurers. When they saw the location of the property, they said the property was built incorrectly</p>	

<p>32:38</p>	<p>and the DCA shouldn't have approved it because it was built too close to the coastline. So we later contacted the company and told them that we couldn't offer coverage because of feedback from our reinsurers and the development was located in an unsafe zone. But we never had to retract coverage from anybody.</p> <p>DA: Finally, you mentioned education to enable the company to play a role in addressing climate change risks, what about the sector as a whole? What other recommendations would be needed to improve the role of the financial sector?</p> <p>IB6: I think it's to our benefit to play a role but I think the climate change people or experts should be more proactive. The insurance companies may have an interest in what is happening but the majority of the financial sector, especially the banker or banks, I don't think they have a vested interest. So the climate change people in the government have to be proactive. I think if they are proactive then the financial services sector will respond but we in the financial services sector are not really sensitized as to what is happening. Insurance companies have a risk manager but the risk manager doesn't do climate conditions or environmental changes. He assesses the actual property or vehicle that is being insured. Yes, we use the COPE Analysis but the risk manager wouldn't go that deep to look at environmental changes. He will look at the house or property and see it standing by itself and say any winds blow this house will be damaged. He doesn't go deep enough to say that with the changes in the climate we are likely to have more intense hurricanes. Our risk managers don't do that because they haven't been sensitized by people from the government to encourage them to do that.</p> <p>I think we have a very big role to play and it's of particular interests to the banks to make sure that homes are built properly and look at where they are being built. However, we have a different focus and unless someone from the government or environment agencies hold us by our necks and tell us to pay more attention to this, we won't. We will go to workshops, talks but if the government is going to tell us to employ people to do this then it's not practical but we need to be sensitized. I've been in the insurance sector for almost 30 years and I have not been sensitized. Anything I know is from a little radio or tv or a few online talks. I've been to a few workshops with the reinsurance sector, every year they have an insurance conference. And every year there is a lecture on climate change and I went once by the door just to hear a little but the room was empty and it supposed to hold 1500 persons. It's just important or catching us and it should. I think we need to be dragged.</p> <p>DA: You actually touched on two things, one was the role of government agencies in sensitizing the sector and in the issue with DCA approving a development in Barbuda , do you see the government as having a more major role to play in how they approve development or educate the sector?</p>	
--------------	---	--

	<p>IB6: Definitely. This presents a challenge cause in the case of Barbuda, it was a hotel, and they couldn't get insurance here so they had to get it from someone over seas. Had it been a private home where all local insurers refused to insure that property can you imagine the repercussions. One, the bank would not be pleased because the bank can't get security for their properties, and two, the home owner would be left at the mercy of the environment. So whatever happens the home owner would have to refurbish or rebuild their house on their own. So DCA needs to pay more attention. After that happened to us, there was a major discussion in the media about that particular hotel and how it wasn't built properly. I was wondering where was DCA, did they not see that it was too close to the water line; was there no site visit before approving. It brought up a lot of questions and it exposes everybody. If insurance firms are silly enough to cover it then they have that exposure, and the bank already loaned money to build it and they would have loaned the money because of DCA's people and approval. So they are trusting the government to know what they are doing and in that case they let us down, and I am very sure that they have let us down quite a few other times. The banking sector, insurance sector and the government don't work collaboratively, and if this continues things like these will continue to happen and people will lose. It's either the bank, the insurance or the property owners that lose but the government never loses anything and that's sad. So if your house get damaged, you figure the insurance will pay, that's if you have, and we insurance firms may have some technicality that may prevent us from paying, so then the bank is left with an unpaid mortgage or the customer will have to pay the bank without getting an income. So you see, somebody suffers just not the government agencies. We need to be sensitized and the government agencies need to do their jobs. I never thought about all this before you came, so guess you sensitized me.</p> <p>DA: Well thank you, and thank you for participating in this research, your information was very insightful but here ends our interview.</p>	
--	--	--