

RESEARCH ARTICLE

Climate adaptation within the tourism sector of a small island developing state: A case study from the coastal accommodations subsector in the Bahamas

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Abstract

Tourism in Small Island Developing States (SIDS) is vulnerable to climate change. Using the Bahamas as a case study, this study presents findings from a survey administered with property managers from the coastal accommodations sector to identify their adaptation strategies to tackle climate change. We also evaluate their adaptive capacity by developing SIDS-specific indicators based on a capitals approach. Findings indicate that efforts toward adaptation were limited to disaster preparedness for hurricanes, reflecting a short-term focus in the face of climate change uncertainties. In addition to the lack of finances and knowledge for incorporating adaptation measures, their capacity to adapt is diminished due to a lack of access to climate change information, skilled staff, and specific climate change planning reflecting limited human and institutional capitals. Recommendations are provided for strategies synergistic with the resilience focus of our paper such as ecosystem-based adaptation and green jobs. The study informs tourism resilience and adaptation planning in the Bahamas which may apply to other SIDS.

KEYWORDS

adaptive capacity, climate adaptation, resilience, small island developing states, the Bahamas, tourism

1 | INTRODUCTION

Small Island Developing States (SIDS) are a group of developing countries with their specific social, economic, and environmental vulnerabilities and sustainability challenges (UN-OHRLLS, 2020). Many SIDS have specialized service sectors such as tourism because of their warm climates, beaches, coral reefs, and tropical landscapes. According to the World Travel and Tourism Council (WTTC, 2018), tourism in 40 SIDS contributed more than USD 100 billion to their GDP generating over 3 million jobs. SIDS such as Cuba, the Dominican Republic, and Singapore have the highest number of people employed in the sector (Figure 1). Tourism also provides work opportunities for females and youth thereby playing a crucial role in building the resilience of these SIDS. In the Caribbean, women constitute 60% of the total workforce in the accommodation and food service sector

and this segment provides an entry point for employment for the young population (UNWTO, 2019). For example, in Dominica, tourism provides an opportunity for young job seekers to diversify their income opportunities and contributes to their economic resilience (Weis, Chamber, & Holladay, 2018).

Climate change threatens the sustainability of many SIDS. A recent study using a Sustainability Index found that Trinidad and Tobago is progressing toward sustainability but scored poorly on climate change and disaster management indicators (Van Beynen, Akiwumi, & Van Beynen, 2018). Coastal tourism in these Caribbean SIDS is extremely vulnerable to climate change impacts such as sea level rise (Scott, Simpson, & Sim, 2012) and storm surge (Moore, Harewood, & Grosvenor, 2010). Given their vulnerability, a resilience discourse has been present in SIDS which has recently extended to their tourism sector as well (Becken, 2013; Holmes, 2017; Van Der

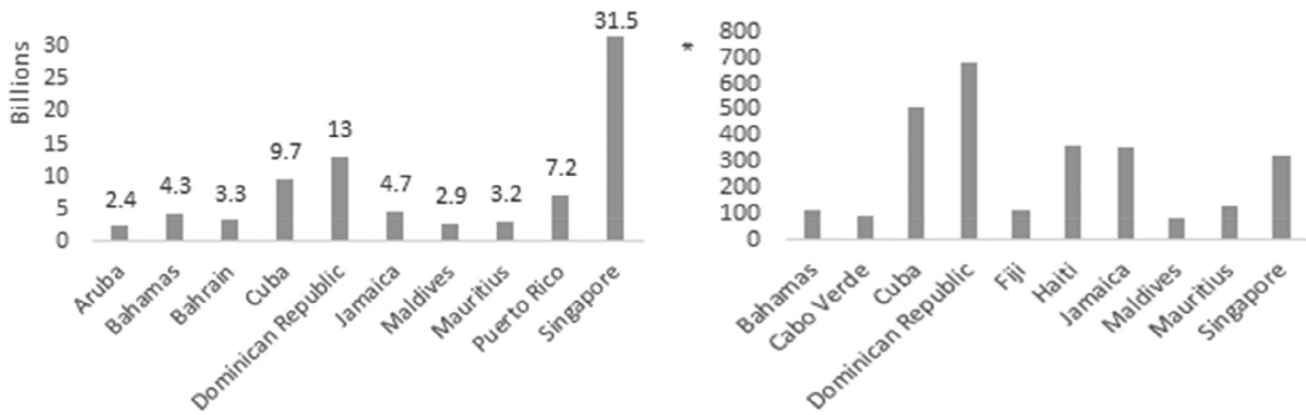


FIGURE 1 SIDS with the highest total contribution of tourism in billion USD to national GDP (left) and largest total employment in the sector (right). Based on the WTTC reports (2018) of 40 SIDS for which data were available

Veeken et al., 2016). A resilience-based lens can potentially enlarge the scope of adaptation to broader societal goals by including livelihood diversification and community development in addition to the short-term impacts of climate change (Engle, de Bremond, Malone, & Moss, 2014).

Here, we explore the climate change adaptation and broader adaptive capacity of the tourism sector in the Bahamas through a resilience lens. To achieve this, we focus on current climate adaptation strategies which pose a continuing challenge for many SIDS. We also assess the adaptive capacity of the tourism sector for prominent climate risks. Through this research, we will add to the growing literature on empirical investigations of climate adaptation within the tourism sectors of SIDS. Our practical goal is to examine adaptation planning that contributes to the broader resilience of the Bahamas.

1.1 | Overview of the Bahamas and climate change

The Bahamas is an archipelago situated in the northern Caribbean with a land area of approximately 10,010 km², and 700 islands (CIA, 2018). Similar to many SIDS, the Bahamas have a relatively flat terrain and tropical climate which makes tourism the key economic sector. In 2018, tourism businesses employed 50,000 workers indirectly supporting more than 55% of the total employment and contributed to 19.0% of the annual GDP (WTTC, 2018). In particular, the sector is the largest contributor to employment in New Providence (NP), the main touristic island of the country, with 53.1% of females and 46.9% of males earning on average USD 417 per week in wages (MOF, 2018). However, tourism in the Bahamas is extremely vulnerable to natural and anthropogenic impacts due to its predominantly coastal location and dependence on associated resources (The Commonwealth of the Bahamas, 2014).

Previous research findings suggest that 48 out of 133 coastal resort properties in the Bahamas will be inundated partially or completely by 1 m sea-level rise and 50% of properties will be at risk under the scenario of 100 m of beach erosion (Scott, Simpson, et al., 2012). Many properties in the two main touristic islands of NP

and adjacent Paradise Island (NP-PI) are currently situated in a storm surge zone and their extent increases with a future sea level rise of 1 m (Pathak, van Beynen, Akiwumi, & Lindeman, 2020). Climate change also threatens the coral reefs vital for tourism. Some 79% of the coral reefs in the Bahamas are threatened by climate-induced thermal stress and other local threats such as coastal development, pollution, and overfishing (Burke, Reytar, Spalding, & Perry, 2011). Sandy beaches, the primary attraction for the visitors in the country, are also vulnerable to erosion due to sea-level rise and hurricane-generated storm surge. For example, Hurricane Matthew in 2016 caused damages of more than 1 million USD due to the loss of sand and sand dunes on Grand Bahamas Island (ECLAC, 2019). Climate change is a major challenge to the tourism sector as well as the entire country of the Bahamas.

The tourism sector comprises of many sub-sectors such as accommodation (hotels, resorts), transportation, cruise ships, food and beverage concessions, tour operators, etc. In our study, we only focused on the accommodation sub-sector on the two islands, as it accounts for the largest number of visitors and generates the highest visitor expenditures in the Bahamas as compared to other sub-sectors such as cruise ships (Hendrickson & Skerrette, 2020; MOT, 2016).

2 | CONCEPTUAL FRAMEWORK

The concept of resilience has its original roots in theoretical and empirical ecology where it has been defined as the ability of a system to persist in the presence of change and disturbance (Holling, 1973). Cochrane (2010) considered tourism to be an excellent example of opportunities to develop resilience principles within a social-ecological system (SES) because of the interdependence among natural resources, cross-cultural characteristics, and international linkages. A linked SES perspective is particularly crucial for resource-dependent economies such as SIDS that rely on well-managed ecosystems to sustain a range of ecosystem services and, therefore, ecological and societal systems are co-dependent in terms of resilience (Walker,

Holling, Carpenter, & Kinzig, 2004). With respect to climate change, a resilient SES is better able to withstand both long-term trends and acute shocks, that can arise from diverse climate-related drivers. Understanding climate adaptation and adaptive capacity of a system through a resilience lens is considered relevant for SIDS that face several other socio-economic development challenges in addition to climate change.

Adaptation can be defined as the set of decision-making processes and actions undertaken to maintain the capacity to deal with external shocks, such as climate change, to a SES without undergoing significant changes in the system and maintaining its ability to develop (Nelson, Adger, & Brown, 2007). Within the tourism sector, six types of adaptation measures for climate change have been suggested: (a) technical, such as physical infrastructure; (b) managerial, such as water conservation plans and low season closures; (c) policy, such as hurricane waivers and building compliance; (d) research, such as risk analysis, (e) education, such as initiatives to educate staff and guests, and (f) behavioral, such as best practices and offsetting greenhouse emissions (Scott et al., 2008; Scott, Hall, & Stefan, 2012). Within this context, ecosystem-based adaptation (EbA) is recognized for its capacity to integrate ecosystem services in overall climate adaptation strategies and increase the system's resilience in the face of climate change (CBD, 2009; Munang et al., 2013; Scarano, 2017). EbA has the potential to achieve climate change adaptation and foster resilience in an SES (Munang et al., 2013).

The literature on climate change adaptation in SIDS is growing considerably (e.g., Klöck & Nunn, 2019; Mycoo, 2018; Robinson, 2017). While the tourism sector is included in these discussions to some extent, most adaptation research on tourism focuses on the developed countries. Coastal tourism destinations in SIDS receive considerably less attention (Becken, 2013; Becken, Mahon, Rennie, & Shakeela, 2014; Fang, Yin, & Wu, 2018; Kaján, 2013; Njoroge, 2015). A few SIDS case studies such as Samoa (Parsons, Brown, Nalau, & Fisher, 2018), Fiji (Becken, 2005), Grenada (Sander, 2015), and Maldives (Shakeela & Becken, 2015) have focused on the local adaptation options, policies and adaptive capacity in the tourism sector. Studies on Pacific SIDS (Becken, 2005; Parsons et al., 2018) have focused on identifying adaptation strategies within the tourism sector. In the Caribbean SIDS, Honey and Hogenson (2017) provided case studies from destinations such as the Dominican Republic and other examples from large resorts in SIDS for evaluating responses to climate change. Other studies undertook a more regional destination approach for evaluating adaptation within the tourism sector of the Caribbean and Pacific SIDS (Hinds, 2017; Warrick, Aalbersberg, Dumar, McNaught, & Teperman, 2017). Evaluating such adaptation strategies also plays an important role in understanding the environmental attitudes of a population (Hayes, Peterson, Heinen-Kay, & Langerhans, 2015) and helps in facilitating risk communication (Madsen, Mikkelsen, & Blok, 2019; van der Linden, 2014).

Adaptive capacity is a system's distinctive characteristic that reveals the effectiveness of the implementation of adaptation options and measures (Petzold & Ratter, 2015). For SES, it refers to the collective capacity of humans to manage resilience (Walker et al., 2004). A

higher adaptive capacity means a greater chance of the system being resilient in the event of climate stress (Engle, 2011). There are several quantitative and qualitative approaches to analyze adaptive capacity (Whitney et al., 2017). We chose a capitals approach that is based on the Sustainable Rural Livelihoods Framework (Ellis, 2000) which provides a basis to include a broad range of determinants of adaptive capacity. Recently, the capitals approach was applied to assess resilience in the tourism sector (Brown, Orchiston, Rovins, Feldmann-Jensen, & Johnston, 2018) with specific application to disasters in New Zealand (Brown, Rovins, Feldmann-Jensen, Orchiston, & Johnston, 2019). To the best of our knowledge, there are no studies that apply a capitals approach to the tourism sector in SIDS in terms of long-term climate change.

As stated earlier, our objective is to evaluate the adaptation to climate change in the tourism sector. We achieve this through exploring the current climate adaptation strategies and adaptive capacity of the sector. Based on our overall objective, we pose the following research questions:

1. What adaptation strategies do tourism accommodation providers take to deal with climate change impacts and potential challenges to adaptation?
2. What are the key factors that contribute to or limits the sector's capacity to adapt to climate change?

3 | METHODOLOGY

The database of accommodations including hotels, resorts, and time-shares published by the Bahamas Ministry of Tourism (MOT) served as an initial, major source of information (MOT, 2018). All coastal accommodations operating as businesses and designated as "beachfront" by the MOT were contacted for participation in July 2019. Chain hotels and resorts under the same management were grouped together and one interview was solicited for the entire establishment.

We administered a survey through face-to-face interviews with the managers, owners, or, in some cases, an environmental specialist for coastal tourism businesses in the NP-PI section of the Bahamas. We chose these two islands due to their significant contribution to the Bahamian economy through their highest room count, visitor arrivals, and related expenditures (MOT, 2016). A previous study conducted with hotelier responses on climate change on the two islands (Thomas, 2012) also provided a good baseline for comparing general trends in the responses from our study.

Ten out of the 21 businesses agreed to participate in the interview for survey completion. These included two chain businesses that contribute more than 50% of the total rooms on the two islands as well as seven other medium-sized accommodations. In an attempt to improve the response rate, the survey was also distributed online through Qualtrics using the email addresses obtained from the MOT website. One out of the 10 participants completed the survey electronically resulting in a final response rate of 47.6%. Some of the common reasons for non-participation were (a) lack of time,

(b) unwillingness of the businesses to be interviewed, and (c) unavailability of an employee in a managerial capacity during the study period. The basic characteristics of participating accommodations are provided in Table 1.

The survey design focused on contextualized questions for achieving our two research objectives regarding adaptation strategies (RQ 1) and adaptive capacity (RQ 2) in the tourism accommodations sector. The final survey, containing 23 items, was deemed exempt after being successfully reviewed by the Institutional Review Board (IRB). The survey was divided into three sub-sections. The first section gathered information on the accommodation size, length of their business, and respondents' knowledge of climate change and its observed impacts. The subsequent paragraphs describe the second and third sections of the survey in detail.

For RQ 1, measures for climate adaptation strategies were provided in the second section as survey choices. A total of 19 adaptation choices were included after a comprehensive review of the literature. Different structural, educational, behavioral, ecosystem-based, and policy adaptation options, and common barriers toward these, were identified from the tourism literature (e.g., Noble et al., 2014; Scott et al., 2008) in an SIDS context (Becken, 2005; Honey & Hogenson, 2017; Spencer, 2019). Responses were solicited for binary choices to the absence or presence of different adaptation options, and additional information was gathered for detailed adaptation responses. The binary response format places less burden on the respondents and is considered to perform better than other response options such as a seven-point multicategory response (Chan, 2014; Dolnicar & Leisch, 2012). However, to overcome their drawback of

losing any relevant information (Chan, 2014), and include responses outside of the pre-determined adaptation choices, an "other" option was included in the questions.

For RQ 2, the third section of the survey assessed adaptive capacity using a capitals approach based on the Sustainable Rural Livelihoods Framework (Ellis, 2000). Similar to Brown et al. (2018), we analyzed the adaptive capacity of the tourism system by developing specific indicators based on the five generic capitals—human, natural, social, institutional, and financial—that most closely fits the SIDS' context. Table 2 provides a list of the indicators that are most relevant to tourism in SIDS (Parsons et al., 2018; Petzold & Ratter, 2015; Van Der Veeken et al., 2016) and that helped develop our contextualized survey questions. In contrast to focusing on specific disasters, we chose the indicators that measure broader climatic changes and contribute to the long-term resilience of many SIDS. The presence or absence of these indicators through binary responses leads to our understanding of the planning and preparedness of the tourism sector for climate change and other extreme events. Similar to the previous section, anchored open-ended questions that elicited a further response on an otherwise binary question (W. C. Lee & Lutz, 2016) were used to provide participants with additional freedom to answer.

Data collection was conducted through face-to-face interviews for nine out of ten businesses by visiting their establishments. This allowed interviewees the opportunity to clarify any interview question. Therefore, the results included additional responses and opinions, thereby facilitating the collection of quantitative and qualitative data. Data were transferred to SPSS statistical software (version 26) and frequency and descriptive statistics were used to analyze the survey results.

TABLE 1 Characteristics of participating accommodations

	New Providence	Paradise Island
Number of properties (room count, % of total ^a)	5 (2,999, 28.3%)	5 (3,912, 37%)
Property type (class)	NP #1 hotel (budget) NP #2 hotel (deluxe) NP #3 chain resort (moderate, deluxe) NP #4 hotel/timeshare (economy) NP #5 all-inclusive resort (deluxe)	PI #1 all-inclusive hotel (economy) PI #2 hotel/timeshare (economy) PI #3 hotel/timeshare (economy) PI #4 chain property (moderate, deluxe) PI #5 condo hotel (luxury)
Average years of operation	49	22
Location (average distance from the coast, in meters)	41.37	44.76

^aTotal room count in NP/PI = 10,565.

4 | RESULTS

4.1 | Research Question 1: What adaptation strategies do tourism accommodation providers take to deal with climate change impacts and potential challenges to adaptation?

4.1.1 | Main adaptation strategies for tourism accommodations

The survey explored different strategies undertaken by tourism accommodations to cope with climate-induced impacts. Participants were provided with 19 different adaptation strategies identified from the literature that are relevant to coastal businesses. In addition, the open-ended choice was provided to account for excluded items. Table 3 provides a list of the most common adaptation strategies mentioned by the accommodations. These strategies are further categorized into the type of adaptation and the potential impact of climate change on which they are focused. The adaptation options that received low responses such as educational campaigns for guest awareness ($n = 3$) and coastal retreat ($n = 2$) and offering more indoor-based activities as compared to beach and coral reef-

TABLE 2 Description and rationale for the capitals approach

Capitals and measures	Description	Rationale for choosing
Human capital		
Access to information and knowledge	Measured as the status of current climate change assessment and discussion within an accommodation; access to external sources of communication; competent staff	Accommodations where information regarding climate change (Sander, 2015; Warrick et al., 2017), external communication of climate risks (Parsons et al., 2018) is provided, and highly skilled staff is present (A. V. Lee, Vargo, & Seville, 2013) demonstrate higher adaptive capacity
Cultural capital		
Perceived risks	Perceived climate-related impacts on their businesses	The way business managers/owners perceive environmental risks such as climate change determines their pro-environmental attitudes and practices (Chen et al., 2013; Hayes et al., 2015)
Climate awareness	General climate change awareness of the interviewee	High awareness among the private sector contributes towards adaptive capacity (Van Der Veecken et al., 2016)
Social capital		
Social networks	Presence of formal clubs/societies/ associations	Such associations bring different employees together, facilitate knowledge sharing and collective action in responding to climate change (Petzold & Ratter, 2015; Van Der Veecken et al., 2016; Warrick et al., 2017)
Participation	Measured as the extent of group events in an accommodation	Accommodations that hold regular group events encourage collaborations of employees to draw upon during climate-related events (Barnett & Waters, 2016; Warrick et al., 2017)
Institutional capital		
Climate change planning	Whether the accommodation has a current climate change adaptation strategy	Planning requires the integration of climate preparedness plans within existing institutional plans of the businesses (Bahadur, Ibrahim, & Tanner, 2013)
Political representation	Whether the accommodation is actively involved in the capacity-building initiatives at the regional/national climate change dialogue	Inclusion of tourism businesses in the national and regional decision-making process contributes to their capacity to act in addressing climate change (Parsons et al., 2018; Warrick et al., 2017)
Natural capital		
Importance of ecosystem services	Measured as Likert scale responses of the respondent's perspective	The tourism businesses in SIDS are dependent on natural resources for a range of ecosystem services that put pressure on these resources (Nurse et al., 2014) and diminish the sector's adaptive capacity
Presence of conservation projects	Measured as the absence or presence of coastal ecosystem protection measures	The businesses considerations of their impacts and protection measures can positively contribute to the natural capital (Brown et al., 2018)
Financial incentives	Measured as the absence or presence of financial mechanisms for coastal ecosystem protection measures	Businesses will be more willing to protect for ecosystems in the form of public-private partnerships where the government offers financial incentives to co-manage such ecosystem with private interests (Hess & Kelman, 2017; Lew & Wu, 2017)

(Continues)

TABLE 2 (Continued)

Capitals and measures	Description	Rationale for choosing
Financial capital		
Access to credit	Measured as the presence or absence of formal (e.g., banks) and informal (e.g., family, friends) means to access credit	Financial security of the businesses and employees are integral to the resilience of tourism and adds to their capacity to adapt to a climate-related event (Biggs, Hall, & Stoeckl, 2012)
Insurance mechanisms	Measured as whether an accommodation is insured against the potential risks or not	Presence of insurance helps in absorbing effects from climate-related events as well as cope up and continue business after an event (Brown et al., 2018; Orchiston, 2012)

TABLE 3 Adaptation strategies undertaken

Adaptation strategy	Frequency	Type of adaptation	Potential impact
Training for emergency evacuations	9	Educational	Hurricanes
Compliance to building regulations	9	Policy	Hurricanes; sea level rise
Supporting local climate research and monitoring	8	Managerial	Climate change
Developing emergency preparation and evacuation plans	8	Managerial	Hurricanes
Staff training for climate change awareness	6	Educational	Climate change
Buying pumps and generators	5	Technical	Water availability
Networking with other hotels and businesses to share best practices	5	Behavioral	Climate change
Increase representation of employees in the governing bodies for climate change	5	Policy	Climate change
Hurricane guarantees and waivers	4	Policy	Hurricanes
Hard infrastructure such as sea walls, breakwater, etc.	4	Technical	Sea level, storm surge

based tourism ($n = 1$) are excluded. Additionally, efforts to support EbA such as reef restoration, mangrove planting, and supporting Marine Protected Areas (MPAs) were not highly prioritized by respondents.

The most frequent responses were in the Educational and Managerial categories of adaptation types (Table 3). Most businesses were more focused on short-term hurricane preparedness as compared to the possible impacts of storms potentially attributable to long-term ocean heating and other documented effects of climate change. Most businesses ($n = 9$) provided emergency evacuation training to the staff members and had evacuation plans in place. Four businesses also provided hurricane guarantees and waivers to the guests, for example, refunds on their bookings or free meals in case of cancellations. As much as 80% of the surveyed businesses reported support for local climate research and monitoring for climate change. The Bahamas building code (Ministry of Works & Utilities, 2003) was mandated to provide standards on building design and most businesses reported compliance with the regulations. Water availability was another issue of concern for some businesses and 50% of them had pumps and generators in place (Table 3). One large accommodation had also invested

in a desalination plant due to the decreasing freshwater lens at its site.

4.1.2 | Challenges to climate adaptation

The two most common barriers to implementing climate adaptation were lack of knowledge ($n = 6$) and lack of finance ($n = 5$). Many participants felt that there is no clear knowledge of how climate change will impact their businesses, which limits their adaptation responses. During the survey, some participants did not attribute coral bleaching or increasing erosion observed on the island to climate change, indicating a limited knowledge of the causes and effects of climate change. Lack of finance was another barrier to climate change adaptation. This was common among businesses of all sizes. While the smaller establishments were directly financially constrained, large-sized businesses did not see climate adaptation as a necessary investment to direct funds, possibly because of the lack of knowledge. One respondent from a larger business mentioned that the issue of climate change lacks priority in the budget year of their establishment.

4.2 | Research Question 2: What are the key factors that contribute to or limits the sector's capacity to adapt to climate change?

Human capital was assessed through understanding the extent of climate information in a tourism establishment. Accommodations where information regarding climate change (Sander, 2015; Warrick et al., 2017), external communication of climate risks (Parsons et al., 2018) is provided, and highly skilled staff is present (A. V. Lee et al., 2013) demonstrate higher adaptive capacity. Access to climate information was measured as the extent of climate change-related discussions incorporated within a tourism establishment. Half of the interviewees agreed that there had been formal discussions in the form of workshops and meetings regarding climate change. These discussions were usually held by the Human Resource Departments and not entirely focused on climate change. Nonetheless, climate change was included as part of the wider environmental initiatives such as eco-certification, conservation, etc. Outside of their accommodation, information from external sources of communication such as television or newspapers was available to eight out of ten accommodations. Most of this information was on hurricanes and extreme events, however, two interviewees mentioned sea level rise, reef destruction, and precipitation levels as prominent climate issues in the media.

To ensure that an establishment has the necessary knowledge to deal with climate-related events, skilled staff with access to relevant climate information are an essential part of its human capital. When interviewees were asked whether they had specific staff for climate issues, two establishments had (a) an environmental team responsible for conservation efforts involving waste, water, and energy and (b) a facilities team responsible for hurricane-related issues. Three accommodations had an employee in an environment-related position whose job roles included providing training and presentations to spread awareness about climate change in their organization, collaborate with local and national organizations, storm preparation, and water level monitoring. In all other cases, the management team was responsible in case any climate-related event happens.

Cultural capital was examined through the respondent's awareness regarding climate change and its perceived impacts on their businesses. The literature on other SIDS suggests that high awareness of climate change among the private sector contributes toward the adaptive capacity of the sector (Van Der Veecken et al., 2016). Most survey participants had some understanding of climate change. The extent of their understanding varied from slightly aware ($n = 2$), to moderately ($n = 3$), to very aware ($n = 4$). Only one interviewee responded to be extremely aware of climate change issues. Most business owners and managers involved in the tourism accommodations sector had average to relatively high awareness regarding changing climatic conditions.

The way business managers/owners perceive environmental risks such as climate change determines their pro-environmental attitudes and practices (Chen et al., 2013; Hayes et al., 2015). Most of the interviewees agreed that they had witnessed examples of at least one climate-induced change. Storm frequency and intensity ($n = 4$) were the most common manifestation of potential climate change

mentioned, followed by beach erosion ($n = 3$), and coral bleaching ($n = 3$). Despite observing changes, half of the respondents believed that climate change had not affected their businesses.

Social capital was assessed through the absence or presence of social networks and the participation of employees. Social networks were measured through formal associations, clubs, and societies that strengthen the social ties of an organization. Such associations bring different employees together, facilitate knowledge sharing and collective action in responding to climate change (Petzold & Ratter, 2015; Van Der Veecken et al., 2016; Warrick et al., 2017) Six out of 10 interviewees stated that there were formal societies for their establishment employees. As these differ among different departments and employees, owners/managers were not able to provide detailed information regarding the nature of these associations.

Participation was measured through group events and gathering for the employees. Literature suggested that the accommodations that hold regular group events encourage collaborations of employees to draw upon during climate-related events (Barnett & Waters, 2016; Warrick et al., 2017). Seven interviewees agreed that their organization held group events for the staff. The frequency of these events differed among establishments, being held either annually ($n = 3$), quarterly ($n = 1$), and monthly ($n = 3$). One business also reportedly had weekly departmental events in addition to the events for the entire accommodation.

Institutional capital was predicted through climate planning and regional cooperation. Planning requires the integration of climate preparedness plans within existing institutional plans of the businesses (Bahadur et al., 2013). Interviewees were asked if their establishment had a current climate adaptation strategy or action plan. Only two reported having an active plan to tackle climate change as part of their broader business planning. Two others had such action plans in the development phase and were set to be in place within the next 4–6 months.

Interviewees were also asked if their establishment was involved in climate change dialogues at the national or regional level. The inclusion of tourism businesses in the national and regional decision-making process contributes to their capacity to act in addressing climate change (Parsons et al., 2018; Warrick et al., 2017). None of the businesses were directly involved at the wider Caribbean level, however, two reported to have indirect involvement in Caribbean Communities (CARICOM) risk mitigation plans and through other efforts. The participation was relatively better at the national level where some accommodations reported direct ($n = 2$) and indirect ($n = 1$) involvement in national efforts to support coral reef decline and engage in education and outreach for climate issues.

Natural capital was predicted through the reliance on ecosystem services, conservation efforts, and the availability of financial incentives. The tourism businesses in SIDS are dependent on natural resources for a range of ecosystem services that put pressure on these resources (Nurse et al., 2014) and diminish the sector's adaptive capacity. Ecosystem services such as the provision of fresh water, local seafood, recreational activities, and aesthetic beauty were considered important by each establishment. Unsurprisingly, recreational



activity was the most important ecosystem service for tourism businesses. This high reliance suggests potentially concentrated pressures on coastal systems such as beaches and coral reefs by the tourism businesses.

The businesses' considerations of the impacts and protection measures can positively contribute to the natural capital (Brown et al., 2018). In our evaluation of their efforts to protect these ecosystems, many participants stated that their businesses were undertaking conservation measures for the protection and restoration of beaches ($n = 7$) and coral reefs ($n = 4$). Beach clean-up campaigns were the most common conservation strategy incorporated by businesses ($n = 4$). Businesses also suggested innovative strategies such as offering the invasive lionfish in their restaurants to aid fishery protection, constructing coral nurseries, restoring mangroves, and planting seagrass plants along the coast to prevent erosion. Potentially unsustainable engineering measures that may result in maladaptation such as the construction of a break wall ($n = 1$) and dredging ($n = 1$) were suggested by two businesses as part of their conservation strategies. Besides, research suggest that businesses will be more willing to protect for ecosystems in the form of public-private partnerships where the government offers financial incentives to co-manage such ecosystem with private interests (Hess & Kelman, 2017; Lew & Wu, 2017). However, none of these businesses reported receiving any financial incentives from the government for protecting the coastal ecosystems they market.

Financial capital was measured through insurance mechanisms and access to credit. Presence of insurance helps in absorbing effects from climate-related events as well as cope up and continue business after an event (Brown et al., 2018; Orchiston, 2012). The majority of the businesses ($n = 9$) were insured against climate-induced risks. Most of these insurance plans primarily covered damages against natural disasters, specifically hurricanes. These included damages due to flooding, wind, and other structural damages induced by extreme weather events.

Financial security of the businesses and employees is integral to the resilience of tourism and adds to their capacity to adapt to a climate-related event (Biggs et al., 2012). Interviewees were asked about the likelihood of their business to receive credit through formal and informal institutions in case of a climate-related event. Most interviewees ($n = 7$) placed high likelihood—from extremely ($n = 5$) to very likely ($n = 2$)—for their business to access credit through formal institutions such as banks in case of an extreme event. On the other hand, most of them ($n = 7$) ranked the likelihood to access informal sources of credit as moderate.

5 | DISCUSSION AND RECOMMENDATIONS

Our findings suggest a low level of support for practices that are specifically related to long-term climate change adaptation. Two out of the four most frequently stated adaptation measures – emergency evacuation training and evacuation plans (Table 3) are aimed to

address hurricanes and disaster preparedness, indicating the short-term, extreme-event focus of many adaptation measures. Literature suggests that the tourism sector in many other SIDS such as Fiji and Samoa have invested in similar disaster preparedness strategies due to their inherent geographic vulnerabilities (Becken et al., 2014). Likewise, in the Bahamas, these measures are deemed necessary in the face of damages caused by the recent hurricanes Matthew and Dorian. Our findings also correspond with other studies that suggested experienced environmental threats such as hurricanes encourage pro-environmental attitudes and practices (Chen et al., 2013; Hayes et al., 2015). As revealed by our findings and other literature, the public does not always associate extreme events with climate change which calls for risk communication campaigns that frame such events within climate change to drive adaptation for other climate-induced impacts (Madsen et al., 2019; van der Linden, 2014).

Using a capitals approach, our study developed specific indicators most relevant to the tourism sector in the Bahamas for long-term climate change. Our findings highlight the capital resources that enhance or diminish the capacity of these accommodations to adapt to future climate change. While our study is focused on climate change, the five measured capitals are useful in determining the resilience of the Bahamas' tourism to other shocks. A current example is the Covid-19 pandemic that calls attention to the importance of adequate planning, diversified markets, and collective social action to a country's resilience in light of a global shock. Similarly, the indicators chosen in our study are useful in gauging the capacity and resilience for the future events of climate change and other external pressures.

Some actors in tourism accommodations in the Bahamas demonstrated high adaptive capacity in terms of social networks and participation. This social capital was manifested through the presence of social networks and regular participation of employees (social actors) in some hotels, an important factor to deal with climate impacts through collective action on small islands (Petzold & Ratter, 2015). Such social networks are also recognized as highly important for tourism destinations in SIDS (Van Der Veeken et al., 2016) and social interactions through participation can contribute toward the adaptive capacity and resilience of many island communities (Barnett & Waters, 2016; Warrick et al., 2017).

Other factors that contribute toward the adaptive capacity of the accommodation sector are its ability to access formal credit and insurance mechanisms in case of climate-related events. The Bahamas is a mature tourism destination in the Caribbean that explains its financial capital and ability to provide basic provisions to its employees, especially, the medium to large-sized coastal accommodations. Ease in accessing formal credit is valuable to a business's survival and resilience in the event of a climate event (Biggs et al., 2012). Despite the financial capacity of the sector itself, it is worth noting that the wages for employees have grown at a rate of 1.9% per year from 2000 to 2016 reflecting a marginal gain for employees (Hendrickson & Skerrette, 2020). This growth in salaries does not match up to the scale of tourism growth in the country. There is an evident difference between the financial capacity of the businesses and their employees, and this suggests a possible explanation for our findings of moderate

level expectations for the capacity of employees themselves to access credits from informal sources.

Tourism on the NP-PI islands demonstrated limited human and cultural capacity in terms of access to information and employing staff competent in climate change issues, which can be justified by the way climate change is perceived in general. The employees mostly rely on external sources of communication for any climate-related information and only a few accommodations invested in employing staff trained in environmental management. Half of the interviewees from the coastal accommodations stated that their business has not been affected by climate change despite observing erosion, coral bleaching, and storm surges. The literature has often shown that tourism businesses do not necessarily relate ongoing environmental changes to anthropogenic climate change (Becken, 2005; Chin, Day, Sydnor, Prokopy, & Cherkauer, 2019; Saarinen, Hambira, Athlopheng, & Manwa, 2012; Su, Hall, & Ozanne, 2013) which is often considered a distant risk (van der Linden, 2014). In the NP-PI islands, 8% of the hoteliers located on the coast and facing erosion in 2012 did not see any implications from climate change for their business and many small hotel businesses were completely unaware of climate change (Thomas, 2012). In our case, the majority of such responses included accommodations on Paradise Island that are also situated less than 50 m from the coast. Nevertheless, our findings still convey a generally increased awareness of the perceived impacts of climate change. While the tourism sector on the two islands demonstrated a higher awareness as compared to Thomas (2012) regarding their understanding of climate change, low levels of risk perception are a significant hindrance among the broader SIDS (Betzold, 2015), Bahamian people (Thomas & Benjamin, 2018), and among many in the tourism sector.

Barriers to institutional capital are not uncommon in SIDS (Betzold, 2015). In the Kingdom of Tonga, Van Der Veeken et al. (2016) found that limited cooperation and coordination between different tourism stakeholders contributed to the country's vulnerability and limited adaptive capacity. Similarly, we found little coordination among the private accommodation sector with the regional or national governing bodies responsible for climate change. At the regional level, for example, the Caribbean Climate Online Risk and Adaptation Tool—CCORAL—is an online tool available to stakeholders within CARICOM countries such as the Bahamas for climate-resilient decision making. The tool helps to identify actions to combat climate-related losses and build climate-resilient developments for the private sector (CCORAL, 2014). However, none of the establishments seemed to be aware of such tools or suggested they would incorporate them into their planning. At the national level, the government of the Bahamas introduced the National Climate Change Committee in 2010 and none of the interviewees stated that their accommodation had representation on the committee. The involvement of the tourism sector is primarily indirect through sustainability initiatives with limited government guidance on climate change. Within their businesses, the plans are limited for disaster preparedness and hurricane management, with few long-term strategies in place for climate change. Bahadur et al. (2013) stressed the importance of climate adaptation interventions as an important component of preparedness for climate change

uncertainties. However, these uncertainties in climate change projections also hamper planning for this sector. Additionally, the short-term profit focus of tourism differs from the timeframes of climate change (Chin et al., 2019), making consequential planning seem unnecessary for their businesses.

Based on our findings, we provide the following main recommendations for the accommodation sector in the Bahamas to improve their adaptive capacity and build resilience to deal with climate change. The initial steps should be taken in the direction of raising awareness and building a consensus on climate change among tourism sector leaders which should be followed by a specific focus on adaptation that is synergistic with the SDGs of the country.

1. Education: Even when the interviewees demonstrated high awareness of climate change, climate change knowledge within the sector remains one of the major barriers to adaptation. The school of Hospitality and Tourism Studies at the University of the Bahamas is the principal source of providing education, training, and internships through on-job experience for preparing future employees in the sector. In addition, the government offers a certified course called BahamaHost for training and skill development of the professionals and organizations in the tourism sector. A clear component of current and future climate changes is recommended for such programs. An understanding of how climate change may or may not affect their businesses is the first step in facilitating any adaptation planning.
2. Risk communication - Encouraging education may not lead to action unless it is placed into the context of local climate vulnerabilities. We agree with Thomas and Benjamin (2018) that risk communication should focus on specific impacts of climate change relevant to the Bahamians which is equally applicable within the tourism sector of the country. There is a need to better emphasize the linkages between impacts such as storm surge, sea-level rise, and coral bleaching to the economic resilience of the accommodations sector. While not discussed here, supporting work for this study conducted geospatial mapping and found that a large proportion of the total tourism infrastructure (hotels and resorts) on the islands of NP-PI are currently situated in Cat 3 (69%) and Cat 5 (83%) storm surge zones (Pathak et al., 2020). With the literature suggesting a potential increase in the frequency of severe Category 4 and 5 storms like Matthew and Dorian in the 21st century (Bender et al., 2010; Walsh et al., 2016), it is important to put such events in the context of sea level rise which will enhance the damage potential of such events. Risk communication can be emphasized following a local extreme event (Madsen et al., 2019) and is essential in bringing the focus of the sector toward long-term adaptation for other climate-induced impacts.
3. EbA - EbA aligns more closely with the adaptation and resilience framing of our study and thus needs to be better integrated within the tourism sector. While many businesses agreed that they had undertaken strategies for conserving natural capital, these were mostly limited to beach clean-ups and other more involved adaptation options were largely absent. Therefore, we propose two

important mechanisms for facilitating EbA among the tourism businesses in the country—product diversification and financial incentives.

- 3.1. **Product Diversification** - In a study conducted with 57 tourism operators in the Caribbean, 84% placed high importance on diversifying their tourism products to reduce the risk of overdependence on a few markets (Hendrickson & Skerrette, 2020). The scope of diversification ranges from diversifying the tourism product (eco-tourism and nature-based tourism) to market diversification from tourism. The Bahamas has now incorporated sports tourism, culture and heritage tourism, and eco-tourism (Hendrickson & Skerrette, 2020) to diversify from the traditional sun and sand tourism offered in the country. For example, fly fishing tourism, as part of eco-tourism in the country, can benefit from the protection of mangrove systems, an important habitat for many species, thereby protecting a system that plays a vital role in EbA to climate change. While our findings revealed little will among businesses to offer indoor activities in contrast to the beach and reef-based activities and diversify their tourism product, we propose that encouraging such can remove pressure from vital coastal resources and even enable their protection. Market diversification for SIDS to move from a single economic source of tourism to other sectors such as agriculture and fishing is another viable option discussed in the literature (Mycoo, 2018), however, it remains outside the scope of our sector-focused recommendations.
- 3.2. **Financial Incentives** - Financial incentives from the government in the form of incentives and tax breaks to co-manage beaches and coral reefs can also enhance the protection of such resources. Currently, no such incentives are available for the tourist sector in our study area. Such public-private partnership can be fruitful to encourage mutual coastal conservation benefits and is already favored as an adaptation strategy by many tourism stakeholders in some SIDS (Hess & Kelman, 2017).
4. **Green jobs:** The central responsibilities for green jobs are “reducing consumption of energy; limiting greenhouse gas emissions; minimizing waste and pollution; protecting and restoring ecosystems; fair work practices; and improvements to the welfare of nations” (Esposito, 2016, p. 7). Such jobs are increasingly becoming popular in other sectors such as building and government sectors; however, their potential remains largely untapped in the tourism sector in our findings. We propose incorporating such job roles in Bahamian accommodations tourism to enhance the human capital, knowledge, and adaptive capacity of businesses for climate change. These jobs also open further avenues for employment opportunities, particularly those staff competent in environmental and green business issues.

6 | CONCLUSION

The objective of this study was to explore climate change adaptation in the Bahamas accommodation sector through a resilience approach. According to our findings, there remain significant shortcomings in terms of climate change adaptation in the sector. The most commonly

identified adaptation measures were limited to disaster planning for hurricanes, and longer-term climatic changes (e.g., sea level rise) were not a high priority. These findings came to light when the businesses revealed limited knowledge and human capital for climate-related matters. Moreover, a disconnect between the perceived impacts on their businesses also hampered their adaptation planning. Most businesses did not have any formal climate adaptation plans or representation on any regional or national climate change bodies. Despite the barriers, the businesses demonstrated the potential capacity to adapt due to developed social networks and the financial strength of their enterprises. Many businesses also adopted some strategies to conserve coastal ecosystems necessary for their businesses. We suggest a need to expand on such measures to promote EbA, in addition to enhancing education and risk communication among the tourism sector in the country. These findings are highly relevant in providing a snapshot of the accommodation sector's preparation and planning toward climate change.

We have attempted to refrain from generalizing our findings as resilience, adaptation, and adaptive capacity are location and context-specific. Furthermore, there are no simplistic solutions to issues as complex as climate change adaptation and resilience. However, there are at least several contributions from this work that can be considered in future studies. First, our work contributes to the empirical investigation of some aspects of accommodations sector resilience with the challenges of climate change in an SIDS setting. The indicators for evaluating climate adaptation and adaptive capacity can be tailored for specific case studies. Nonetheless, including them in future studies for resilience is fundamental to all SIDS relying on single economies, coping with the impacts of climate change. More specifically, the capitals approach for adaptive capacity used in this paper provides a flexible methodology to incorporate a wide range of site-specific determinants and can be extended to other SIDS facing multiple challenges to their capacity to adapt. Finally, most of our findings reinforce the current literature on SIDS tourism which recommends immediate, proactive long-term climate adaptation plans and strategies that remain one of their biggest challenges for resilience in such coastal tourism locales.

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