

TOURISM AND CLIMATE: A SUBSTANTIVE THEORY ON ADAPTATION STRATEGIES IN THE ACCOMMODATION SECTOR IN “ÁGUAS PAULISTA” CIRCUIT, SÃO PAULO, BRAZIL

CRISTIANE N. BRANDÃO¹, JOSÉ CARLOS BARBIERI² & MARCILENE F. ARAÚJO³

¹FGV/EAESP & UFAM, Brazil

²FGV/EAESP, Brazil

³UNIFESSPA, Brazil

ABSTRACT

Recently, not only has the interest on climate change been increasing, but also many adaptations and mitigation efforts have been made by organisations and governments around the world to deal with this issue. The adaption to adverse effects of climate change, as well as the reduction of actions that can contribute to these changes, are vital to reducing uncertainties about the future of the humankind. Adaptation and mitigation actions have been necessary facing of the tourism potentialities to contribute to, and to be affected by, climate change. This research sought to analyse how the accommodation sector on the Águas Paulista Circuit (APC) has adapted to climate change based on the meaning the managers have attributed to specific experiences. In this research, we developed a “substantive theory” of adaptation to climate change. In this unique case study, mainly qualitative, and carried out in the APC region, it is worth noting that the primary driver of tourism in the region has been the quality of water from natural sources. Most of the municipalities belonging to the APC area have faced water rationing, therefore they have experienced economic losses in the tourism sector. In this research, the central category has been constituted of three major properties: the ability to cope with the climate change; the strategic adaptations; and the financial factors. It was noticed that the climate change and extreme weather events could interfere with travel decisions. At the same time, it was reported that news broadcast on the water crisis also negatively affected the tourism sector, causing uncertainty and damaging the image of the tourism destination. It is expected this work can contribute to the understanding of the need to adapt to the climate change and extreme climate events because of the risk of affecting business.

Keywords: tourism, climate change, adaptation strategies, water crisis, hotel sector, substantive theory.

1 INTRODUCTION

In recent years, there has been increasing interest in climate change, and efforts to implement adaptation and mitigation strategies by organisations and governments around the world have also increased. The impacts and risks associated with it are already happening in many natural systems essential for human subsistence such as water resources, biodiversity, oceans, polar ice cap, and coastal zones.

Adapting to the adverse effects of climate change and reducing actions that intensify these changes are vital to reducing uncertainties about the future of humankind. Simpson et al. [1] emphasise that the impacts of climate change on tourism, its stakeholders, neighbouring communities and related sectors at both low and high levels should not be underestimated. Climate change can, for example, have effects on climate and coastal topography and, consequently, affect travel patterns (Gossling [2], Bushell and Simmons [3]). Because they are sensitive to climate variability, many tourism destinations depend on the climate, which defines the duration and quality of tourism in a season (Cabrini [4]). Saarinen and Tervo-Kankare [5] and Correa-Macana and Comim [6] point out that developing countries and



communities that depend economically on tourism, especially those in which tourism is based on natural environments (beaches, mountains, rivers, etc.), are more susceptible to the impacts of changes of the climate. Although the phenomenon of climate change is a planetary problem, the developing countries are the ones that face the most significant risks, even if they are not the primary emitters of greenhouse gases (Correa-Macana and Comim [6]).

In tourism, research efforts on climate change are still restricted to studies conducted in Europe and the United States, as Gossling [2] and Scott and McBoyle [7] states. Research in the winter tourism segment has reported on some adaptation to climate change (Scott and McBoyle [7], Gossling et al. [8]). On tourism in other seasons or other regions, this is a heading there is practically no research. In Brazil, research on climate change and tourism are even more recent (Borda et al. [9]). To extend this field of study, it is crucial to carry out research related to climate change, sustainability and tourism. Also, due to the increase in the number and severity of extreme weather events, it is imperative to develop strategies for adaptation and resilience on a large scale (Linnenluecke et al. [10], Cabrini [4]). Based on the arguments presented, as well as on the urgency to increase scientific knowledge and in the attempt to fill some knowledge gaps in climate change in the context of organisations, we proposed this research. Its objectives are to analyse how the managers of the accommodation sector perceive the risks of climate change and to recommend a substantive theory of the adaptation strategy to climate change in the lodging facilities. The substantive theory is one that emerges from the data systematically collected and analysed, capable of capturing the essence of the phenomenon studied. How did the accommodation sector of the Águas Paulista Circuit adapt to climate change? Following Strauss and Corbin [11] we did not assume an *a priori* robust theoretical framework. In this research, we chose the subject and presented, in general, some concepts pertinent to the declaration of the research problem.

2 CLIMATE CHANGE AND TOURISM

According to the International Panel on Climate Change (IPCC), climate change is a change in the state of the climate that can be identified by changes in the mean and variability of its properties and persists for a long period, which may be decades or more. They may occur due to natural processes or due to persistent anthropogenic changes in the earth's atmosphere. It exposes people, societies, economic sectors and ecosystems to risk (IPCC [12]). There are two responses to climate change and variability: adaptation and mitigation [13]–[15]. The IPCC [16] defines adaptation in natural or human systems in response to current or expected climatic stimuli or their effects. Mitigation is the response to climate change that involves the reduction or stabilisation of greenhouse gases or their levels (IPCC [13]). Tourism has been receiving a variety of influences, and the vulnerability of tourism destinations has been emphasised by many authors (Scott and Becken [17] and Gossling et al. [8]), although the potential effects of natural or even man-influenced crises, few organisations have developed strategies for crisis and disaster adaptation and prevention (Gossling and Peeters [18]). However, the vulnerability or potential vulnerability of a system associated with medium- and long-term climate change hazards will depend on the system's ability to adapt adequately in anticipation of these hazards (Brooks et al. [19]). Thus, building capacity for adaptation is crucial to the selection and implementation of effective adaptation options (Linnenluecke et al. [10]).

2.1 Strategies for adapting to climate change

To Adger [20] the adaptation capacity or adaptability to Gallopín [21] is the ability of a system to adjust to climate change (including climatic variability and extreme events) and to



moderate potential harm, in order to take advantage of opportunities or deal with the consequences [14], [15]. According to Adger [20] it is the capacity of a society or an organisation to modify its characteristics and behaviours to better deal with changes in the external environment. Adaptive capacity allows the organisation to evolve to accommodate environmental risks or policy changes to expand the range of variability it can cope with (Adger et al. [26]). For Linnenluecke and Griffiths [22] the adaptation is presented as a way to reduce the vulnerability of the business.

Unsurprisingly, organisations are continually dealing with challenges and unexpected changes. However, few environmental changes present so much uncertainty and potential for disastrous consequences as those associated with climate change and extreme weather events in particular (Linnenluecke and Griffiths [22]). The formulation of adaptation strategies has been the best way to deal with such events [10], [23]–[25]. Nonetheless, so far, much of the adaptation literature has been theoretical reflecting the lack of empirical data on these adaptive efforts as state (Biagini et al. [27]).

3 METHODOLOGICAL APPROACH

The present work had a qualitative approach and adopted the case study as a research strategy. To a deeper understanding of the phenomenon investigated, the methodology of Grounded Theory (GT) was used. That is a method created in the 1960s by Glaser and Strauss [28], for the development of theory based on systematically collected and analysed data. Although each of these authors came from a different philosophical and research tradition, it was their equally important perspectives for the discovery of how to generate theory from the data (Glaser and Strauss [28]). However, they diverged on some points, and the method was divided into two perspectives: one defended by Glaser, the other by Strauss, with the collaboration of Juliet Corbin.

The Straussian perspective has two peculiarities concerning the Glaserian version: (i) it is more prescriptive since it suggests a set of procedures, techniques and more structured formatting for the theory generated; (ii) more specific in the delimitation (cut) of the research. With an emphasis on the Straussian current, Strauss and Corbin [11], chosen because it is more prescriptive, this investigation followed an interpretative line, aligned with a subjectivist view of the process of analysis. The adjustment method the purpose of this article, considering its emphasis on new findings (Goulding [29]), and its concern to detect and explain social phenomena in specific and delimited situations (Haig [30]). In the case of this research, the accommodation sector of Águas Paulista Circuit, in São Paulo, Brazil is the substantive area. Although the Águas Paulista Circuit is composed by nine towns, it was treated as a single case study. The research was based on data from multiple sources, as recommended by Bandeira-de-Mello [31], to obtain a rich and profound understanding of the phenomenon analysed. We followed the set of techniques and procedures proposed by Strauss and Corbin [11], also mentioned by Bandeira-de-Mello and Cunha [32]. This process starts with data collection followed by coding. The coding is the building blocks of the theory as states Goulding [29]. The coding process was divided into open, axial and selective coding, according to Strauss and Corbin [11].

Open coding is the process of breaking data into units of meaning (Goulding [29]). The careful exploration (line by line) of the transcribed interviews takes place to highlight what seems relevant. In this step, it is possible to discover properties and dimensions of the categories, which have been grouped into codes (or concepts). During axial coding, the following steps were explicitly developed, according to Strauss and Corbin [11]: (i) organizing the properties of a category and its dimensions; (ii) identify in these categories their possible varieties, conditions, consequences or interactions; (iii) relate the categories to

the subcategories, all of them to each other: that is, to do a systematically dense analysis; (iv) identify in the data, how the main categories can be related to each other.

Finally, in selective coding, the integration and refinement of the theory occur (Strauss and Corbin [11]). It must express the essence of the phenomenon investigated. At this stage, we made the necessary adjustments to correct possible inconsistencies. From the integration between the categories and the analysis of their interactions, the central category of the theory was identified. All other categories relate to the central category, which represents the central theme of the research.

We chose the Águas Paulista Circuit because it is nationally known for the medicinal and curative properties of water and for being one of the main national tourist destinations in Brazil, for its organization and management. Also because of the water crisis in the period from 2014 to 2016, which affected several towns and consequently tourism activities. Most of the cities lived at least six months of rationing potable water. This research sought to analyse how the lodging facilities adapted to the water crisis.

We used the following data sources: primary data (obtained in the field, through unstructured interviews, initially, and later semi-structured. Then we used field notes resulting from direct observation); and secondary data (obtained in newspapers, websites, reports, laws, specialized magazines, periodicals, published works and database of national bodies linked to tourism).

The interviews were recorded with the prior consent of the interviewees and then transcribed. Interviewees were intentionally chosen from the following procedures: (a) identify the informant who was able to provide the required information (general manager or operational manager, in most cases); (b) scheduling the interview (setting the date and time for the meeting); and (c) conducting the interview. 25 interviews were held, and some respondents were interviewed more than once. Interviewed were identified by letters from A to T followed by the number referring to the interview (1 for the first interview and 2 for the second, if any). Grammatical corrections were made, when necessary, as long as they did not alter the meaning of the citations. Some insertions were eventually made by the researcher to explain or complement the context of the quotation. These inserts were enclosed in brackets “[]”; the insertions of the interviewees themselves were placed in parentheses “()”, to differentiate themselves from the researchers’ insertions. In the analysis of the data, the support of the Atlas Ti software was used to summarise codes.

4 RESULTS AND DISCUSSIONS

4.1 Substantive theory of the formulation of strategies to adapt to climate change

This section presents the elements of the theory that explain the formulation of strategies to adapt to climate change in the lodging facilities of the Águas Paulista Circuit. To define the themes that are part of the properties of the central category, the number of codes that have appeared and of codes that have emerged and been linked to it. Initially, we describe the central category of the theory, which is the representation of the studied phenomenon. In the sequence, the relations of all the other elements that make up the theoretical framework explaining “how”, “when” and “why” the Águas Paulista Circuit accommodation sector adapt to climate change are presented. Throughout the section, we give the propositions that compose theory, and finally, we provide an evaluation of substantive theory, concerning the empirical foundation.



4.1.1 The central category: perception of the water crisis

In Grounded Theory, the central category is the representation of the phenomenon to be explained by substantive theory. From the analysis of the interviews, it was possible to know the manager's perceptions about the water crisis between 2014 and 2016. The managers' experiences in developing actions in response to the lack of water, allowed the explanation of how the formulation of strategies to adaptation occurs. During the analysis stages, the theory was being confirmed and refined. At the end of the selective coding, it was possible to answer the questions that follow the research in the method of Grounded Theory: what the data are about? Alternatively: how do the accommodation sector in APC adapt to climate change? The valid hypothesis was the perception of the water crisis that refers to the belief in climate change and the risks associated with it.

The elements of the theory revolve around the central category, so they should be able to explain how the lodging facilities adapt to climate change. To develop any adaptation strategy, you need to be aware that there is a threat to the continuity of business operations. One must realise what is happening and how this occurrence can affect the organisation. From the moment the crisis is perceived as a risk to the business, it is possible to intervene. The crisis took many people by surprise because they believed that it would rain soon and that the problem would be solved naturally with the rain. The following quotes show that most respondents perceived and attributed the water crisis to climate change.

In fact, I was afraid of what lay ahead, the moment called for prudence. Honestly, as I said, I'm from here, I was born here, but I've never seen such a situation. I even though it wasn't going to rain anymore (Interviewer C1).

The hotels were forced to drill the soil to make artesian well, to be able to survive, due to the climatic change. What I just said, because of the global warming that we have been suffering, also decreased the springs, reduced the flow. You see it has reduced (Interviewed L1).

Data analysis showed that the water crisis affected tourism, especially in 2014, the height of the crisis, causing problems of supply and rationing in the cities of the Circuit. It should be noted, therefore, that this perception is essential to adapt. When they realised the problem, the managers implemented actions to minimise the possible damages to the business, which leads to the following hypothesis:

H1: The perception of the crisis drives the implementation of adaptation strategies and increases the capacity to deal with its effects while allowing the continuity of operation of the business.

Table 1 presents the dimensions of the central category "crisis perception", which we classified as high and low level and impact on the chances of successfully adapting or not.

The central category has three properties: the ability to cope with climate change; strategic adaptations and financial factors. Properties are parts of the central category and assist in their definition. Such an interpretation will be constructed through propositions that will be presented in the course of this section. It should be noted that the properties were elaborated from what the data revealed. The properties and their concepts are summarised in Table 2 and will be explained in the following section.



Table 1: Dimensions of perception of the crisis.

Property	Dimensions	Definition
Perception of the crisis	High level	A higher and earlier the level of perception of the crisis, the higher chances of adapting and avoiding discontinuities.
	Low level	A lower the level of perception of the crisis, the lower chances of responding successfully to discontinuities.

Table 2: Key category property.

Key category	Properties	Definition
Perception of the crisis	Capacity to deal	Company's ability to solve or to minimise some problem or disturbance.
	Adaptations strategies	Actions to answer the discontinuities and climate changes impacts.
	Financial factories	It refers to the company's ability to continue its operation although the crisis and to finance the adaptations.

4.1.2 Properties of the key category

4.1.2.1 *Ability to deal*. The external environment imposes challenging situations to the survival of the business. Under these conditions, the ability to cope tends to be decisive. The ability to cope is related to the company's ability to, in the shortest amount of time possible, pool efforts to resolve or at least to minimise, in a successful manner, a problem or disorder that presents itself under adverse conditions. Therefore, we have Proposition 1.

P1: The higher the ability to cope, the lower the risks to the business.

4.1.2.2 *Strategic adaptations*. The water crisis was a reality and managers needed to implement adaptation measures that were effective during the water supply crisis, to continue operating with the minimum of failures. One of the actions performed was to combat waste. At the same time, additional supply actions were developed. During the period, there was also the replacement of old equipment by modern and economic models, aiming to reduce the waste of water. Demonstrating manager's efforts to face the water crisis, reduce vulnerability and continue to operate with more economy.

Hotels have invested in artesian wells. The generator of light to solar energy, we did replacement of taps, showers, etc. We invested heavily in modern equipment. Today the toilets use 6 litres of water; the old ones were 18 litres of water with each discharge. So it's an economy. (Interviewee L1).

The literature has widely recommended adaptation as a strategy for dealing with climate change and extreme weather events. However, not all adaptation is well employed. Sometimes no planned investments can thwart good ideas. That happened to one of the managers of a hotel: "We tried a solar heating system, but it did not work. It was a wrong purchase, a high investment that unfortunately did not work out. We do not have any of it, more" (Interviewee N1). Such a situation could have been avoided if the manager had

sufficient technical knowledge or if he or she had expert advice to plan for that change. These reflections converged to form Proposition 2.

P2: Strategic adaptations are developed as a response to business discontinuities and at the same time reducing vulnerability, but mainly costs.

Table 3 presents the dimensions of the strategic property adaptations. Three dimensions have emerged, the first refers to simple adaptations, those that are inexpensive and easy to implement. The second is made up of more complex adjustments, which require more significant financial investment, and the third, due to adaptations that did not work, called failures.

4.1.2.3 *Financial factors.* At the height of the crisis, when they felt the fall in the movement of tourists and visitors, managers began to operate at more modest prices, seeking to remain competitive although the crisis. The literature on adaptation strategy speaks to seizing the opportunities arising from climate change. That was not the case here but operating with lower prices can be considered an adaptation strategy to ensure at least the hotel's turn, especially in times of crisis.

(...) we are on top of promotions, with very low fares, so this gives the opportunity to anyone who has never had the chance to travel, to travel. That is good, it opens a new market, but for the hotel administration, not so much, you have to operationalise the hotel and make a profit. If you sell very cheap, you run the hotel and pay the bills. Also, that is not what I believe an executive wants. (Interviewee E1).

In fact, the challenge today is for you to be able to operate with quality and with prices that the market accepts, very low. It is no use adjusting my rate that I will not have people. (Interviewee J1).

Another relevant point, related to this property, refers to the value of investment in technology for energy and water efficiency. More than half of the managers said that the high costs and the lack of information and expertise still make it impossible to buy equipment that is more economical. They see as a challenge for hotel management the lack of incentives for access to technology. Thus, we have Proposition 3.

P3: Implementation costs of the adaptation strategy may impair or restrict the ability to cope.

Table 3: The dimensions of the strategies suitability category.

Properties	Dimensions	Definition
Adaptations strategies	Simple adequacy	These are low cost and easy to implement. It does not require massive financial investment.
	Complex adequacy	These are with the highest cost and highest level of difficult to implementing.
	Adequacy failure	These are wrong planned adaptations without achieving results.



4.2 Placing substantive theory in the literature

The contrast of substantive theory with specific literature is an essential step in the Grounded Theory method to validate, refine, and broaden the scope of the theory, as they say (Strauss and Corbin [11]). In this section, we intend to situate substantive theory concerning the specific literature, as revised in section 2, to identify convergent and divergent points.

The literature has as a consensus that climate change is one of the most significant challenges today, and tourism is one of the economic activities most vulnerable to it. They may trigger several changes in natural resources, which in turn may end up hurting tourism and interfering with travel decisions to tourist destinations [1], [2]. Substantive theory corroborates this approach by stating that tourism in the ACP has been affected by the water crisis, with the reduction in tourist flow. It has become clear that climate change and extreme weather events interfere with travel decisions. At the same time, it was reported that the media disclosure about the water crisis also affected tourism, causing insecurity and harming its image. Hoffmann et al. [24] corroborate this, when he says that the exposure about the water crisis damages the image of tourist destinations.

The literature points to findings that awareness of the impacts of climate change produces positive results in corporate adaptation (Hoffmann et al. [24]). The central category of this theory, risk perception, corroborates the finding, since it drives the implementation of adaptation strategies.

The literature defines adaptive capacity as a system's ability to adjust to climate change (including climatic variability and extreme events) and to moderate potential damage to take advantage of opportunities or deal with the consequences (Adger [20]). Substantive theory calls the ability to deal with the crisis, the ability the company has to solve or at least to minimise, successfully, a problem or disturbance, corroborating the literature.

Brooks et al. [19] mentions that some factors are determinants of adaptive capacity, such as economic resources, technology, information and skills, infrastructure, institutions. That is following the substantive theory, which has shown that factors such as high costs, lack of knowledge and expertise make it impossible to acquire efficient equipment and that the costs of implementing the adaptation strategy may not allow or restrict capacity to deal with the crisis.

According to Linnenluecke and Griffiths [25], organisations have undertaken anticipatory adaptation strategies, which extends their ability to cope with extreme events. However, these adaptation measures are not always implemented quickly enough to ease the business impact. The substantive theory provides no empirical evidence to support this approach. In the Circuit, the strategic adaptations can be considered reactive, that is, they were implemented after the beginning of the crisis. So far, no proactive approaches to dealing with climate change have been identified. It can be said that by a natural process, the reactive posture is the first that occurs in the face of adverse situations. This result is similar to what has been observed throughout history with the implementation of environmental management practices. First, managers need to accept an idea that will take them out of their comfort zone, then realise the opportunities they can take advantage of in crises. Proactive behaviour, therefore, is part of a more advanced stage of how to deal with climate change.

As can be seen, Proposition 3 (P3) of the theory corroborates the specialised literature on the financial factors to enable adaptation. On this, Fussler and Klein [15] state that effective adaptation depends on the availability of information on what to adapt and how to adapt, and the resources to implement such adaptation measures. The need for information was also mentioned in substantive theory as well as the question of knowledge about the feasibility of action to be implemented to avoid flaws in adaptation and unnecessary spending.



The work of Fussler and Klein [15] also show that the development of adaptation measures tends to reduce the vulnerability of businesses to extreme weather events. Which is compatible with Proposition 1 (P1), which says that the higher the ability to cope with adaptation practices, the lower the risks to the business and the less vulnerable it becomes.

The literature asserts that adaptation strategies are imperative to address extreme weather events, and Proposition 2 (P2) of the theory corroborates that strategic adaptations are developed in response to business discontinuity, but also aim to reduce vulnerability and, above all, the costs.

5 FINAL REMARKS

Climate change is one of the main challenges to business sustainability, and tourism is one of the activities most sensitive to climate variability since several tourist destinations depend on the climate. Thus, it is imperative that ventures realise that climate changes and extreme weather events associated with it are occurring more and more frequently and severely and can affect the business. The literature says that the best way to deal with the impacts of climate change is to develop adaptation. Adaptation is the implementation of actions that aim to minimise the adverse effects of climate change, to make the company less vulnerable.

The lodging facilities (hotel, farm, hostel and others) constitute one of the central tourism equipment, and certainly one of the first to feel the effects of a reduction in the flow of tourists in the destination. That, at a minimum, makes adaptation studies timely and relevant. One of the reasons that led us to choose the Águas Paulista Circuit apart from the water crisis, which affected the region, was the significant amount of hotels available, in the account of almost 24 thousand beds. It is a high number, considering that these are small cities of the São Paulo state. This research sought to analyse how the means of accommodation has adapted to climate change and through a single case study, a substantive theory of adaptation to climate change was constructed using the Grounded Theory method.

Grounded Theory, known as the theory based on data, has allowed adaptation to climate change to be studied from the meanings that host managers attributed to their experiences during the crisis period (2014 to 2016). The techniques and procedures for the development of this theory based on data made it possible to explain the most relevant aspects of the phenomenon studied, as well as to increase the credibility of the results, making them testable and evaluated by the readers.

This research made possible the advancement of studies on adaptation to climate change in the organizational context, especially in Brazilian tourism. The analysis of the data revealed that adaptation to climate change can be understood from the perception of the crisis, that is, from the moment the manager understands and perceives that the crisis will affect his business. The perception of the crisis is the central phenomenon for the explanation of the formulation of adaptation strategy. It is, therefore, the central category developed in this research.

The data made it clear that the perception of the crisis is the limit between belief in the natural solution of the crisis (it was expected that rain would solve the problem of water scarcity), and action (the rain did not come, so I have to solve otherwise). Initially, something like “management challenges” was thought of, but it was too generic; then it was thought “capacity to deal with crises”. But it was realised that it is only possible to deal with something that is aware that it exists, that it is happening and that it can affect at any moment. Based on the above, the term “crisis perception” seemed to be the one that best captured the essence of the phenomenon.

For the respondents, the “perception of the crisis” enabled the following reasoning: (i) understanding the dimensions of the crisis and identifying the risks that could affect the



company; (ii) dealing with risks and facing the crisis. Thus, the meaning of the perception of the crisis could be broadened by incorporating the terms “Capacity to cope”; “Strategic adaptations”; “Financial factors”. This evidence made possible the elaboration of the fundamental hypothesis of the theory, and from it derived the three propositions mentioned in the previous section.

Substantive theory, attending to the principle of flexibility, allows receiving new data and new contributions, as this would increase the set of variations and the explanatory power of the theory. Although it is focused on the substantive area of the hotel sector, it can be applied in other contexts, because the techniques and procedures allow this. For future studies, we suggest that the fundamental hypothesis and its propositions be statistically tested in a representative sample of the population of tourism managers and other sectors sensitive to climate change, such as agribusiness.

Like any research method, Grounded Theory requires some care when applying. One of it concerns the elaboration of the research question, which should not be too specific, to the point of already taking presuppositions to the field and make mistakes about what is relevant to the subjects involved. Another peculiarity of the method is that the research does not begin with a dense rescue of existing literature, which does not mean that the researcher should not know the state of the art of his research area. We indicate the method when there is a gap in the existing literature that can be filled and constructed based on the reality of the actors involved in the phenomenon under investigation. In this way, there must be a balance between the researcher’s knowledge and the need to keep an open mind to understand the perception of those involved. Finding this balance is one of the significant challenges of the method.

Finally, concern about the impacts of climate change should not be limited to the organisational environment, but society as a whole. Adaptation allows organisations and the society to cope with or neutralise the effects of the climate change, but it is not enough. It is an essential step in recognising the eminence of a planetary dimension problem. The next step is to tackle the problem at its root, unsustainable modes of production and consumption.

REFERENCES

- [1] Simpson, M.C., Gossling, S. & Scott, D., Report on the international policy and market response to global warming and the challenges and opportunities that climate change issues present for the Caribbean tourism sector. Barbados: Caribbean Tourism Organization, 2008.
- [2] Gossling, S., *Carbon Management in Tourism: Mitigating the Impacts on Climate Change*. Routledge: New York, 2011.
- [3] Bushell, R. & Simmons, B., Facilitating sustainable innovations for SMEs in the tourism industry: Identifying factors of success and barriers to adoption in Australia. *Tourism, Climate Change and Sustainability*, eds M.V. Reddy & K. Wilkes, Routledge: New York, pp. 42–57, 2013.
- [4] Cabrini, L., Foreword. *Tourism, Climate Change and Sustainability*, eds M.V. Reddy & K. Wilkes, Routledge: New York, 2013.
- [5] Saarinen, J. & Tervo-Kankare, K., Perceptions and adaptation strategies of the tourism industry to climate change: The case of Finnish nature-based tourism entrepreneurs. *International Journal of Innovation and Sustainable Development*, 1(3), pp. 214–228, 2010.
- [6] Correa-Macana, E. & Comim, F., Mudança climática e desenvolvimento humano: uma análise baseada na abordagem das capacidades de Amartya Sen. *Economía. Sociedad y Territorio*, 13(43), pp. 577–618, 2013.



- [7] Scott, D. & McBoyle, G., Climate change adaptation in the ski industry. *Mitigation Adaptation Strategy Global Change*, **12**(14), pp. 1411–1431, 2007.
- [8] Gossling, S. et al., Tourism and water use: Supply, demand, and security. An international review. *Tourism Management*, **33**(1), pp. 1–15, 2012.
- [9] Borda, G.Z. et al., Scenarios of climate change and impacts on Brazilian tourism: A case study on the Brazilian north coast tourism region. *Tourism, Climate Change and Sustainability*, eds M.V. Reddy & K. Wilkes, Routledge: New York, 2013.
- [10] Linnenluecke, M.K., Griffiths, A. & Winn, M. I., Organizational adaptation and resilience to extreme weather events. Annual Meeting of the Academy of Management. Anaheim, California, 2008.
- [11] Strauss, A. & Corbin, J., Pesquisa qualitativa: Técnicas e procedimentos para o desenvolvimento de teoria fundamentada / Anselm Strauss, Juliet Corbin; tradução Luciane de Oliveira da Rocha. Artmed, Porto Alegre, Brazil, 2008.
- [12] IPCC. Intergovernmental Panel on Climate Change, *Land Use, Land-Use Change, and Forestry: A Special Report of the IPCC*, eds R.T. Watson, I.R. Noble, B. Bolin, N.H. Ravindranath, D.J. Verardo & D.J. Dokken. Cambridge University Press: Cambridge & New York, 2000.
- [13] IPCC. Intergovernmental Panel on Climate Change, Climate Change 2001. IPCC third assessment report, 2001. www.grida.no/climate/ipcc_tar/.
- [14] IPCC. Intergovernmental Panel on Climate Change, *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, eds M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. Van der Linden & C.E. Hanson. Cambridge University Press: Cambridge, 2007.
- [15] Fussler, H.-M. & Klein, R.J.T., Climate change vulnerability assessments: An evolution of conceptual thinking. *Climatic Change*, **75**, pp. 301–329, 2005.
- [16] IPCC. Intergovernmental Panel on Climate Change, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, eds R.K. Pachauri & L.A. Meyer. IPCC: Geneva, 2014.
- [17] Scott, D. & Becken, S., Adapting to climate change and climate policy: progress, problems and potentials. *Journal of Sustainable Tourism*, **18**(3), pp. 283–295, 2010.
- [18] Gossling, S. & Peeters, P., Assessing tourism's global environmental impact 1900–2050. *Journal of Sustainable Tourism*, **23**(5), pp. 639–659, 2015. <http://dx.doi.org/10.1080/09669582.2015.1008500>.
- [19] Brooks, N., Adger, W.N. & Kelly, P.M., The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. *Global Environmental Change*, **15**, pp. 151–163, 2005.
- [20] Adger, W.N., Vulnerability. *Global Environmental Change*, **16**, pp. 268–281, 2006.
- [21] Gallopín, G.C., Linkages between vulnerability, resilience, and adaptive capacity. *Global Environmental Change*, **16**, pp. 293–303, 2006.
- [22] Linnenluecke, M.K. & Griffiths, A., Beyond adaptation: Resilience for business in light of climate change and weather extremes. *Business & Society*, **49**, pp. 477–511, 2010.
- [23] Linnenluecke, M.K., Stathakis, A. & Griffiths, A., Firm relocation as adaptive response to climate change and weather extremes. *Global Environmental Change*, **21**, pp. 123–133, 2011.



- [24] Hoffmann, V., Sprengel, D., Ziegler, A., Kolb, M. & Abegg, B., Determinants of corporate adaptation to climate change in winter tourism: An econometric analysis. *Global Environmental Change*, **19**, pp. 256–264, 2009.
- [25] Linnenluecke, M.K. & Griffiths, A., Assessing organizational resilience to climate and weather extremes: complexities and methodological pathways. *Climatic Change*, **113**, pp. 933–947, 2012.
- [26] Adger, W.N. et al., Successful adaptation to climate change across scales. *Global Environmental Change*, **15**, pp. 77–86, 2005.
- [27] Biagini, B. et al., A typology of adaptation actions: A global look at climate adaptation actions financed through the Global Environment Facility. *Global Environmental Changes*, **25**, pp. 97–108, 2014.
- [28] Glaser, B.G. & Strauss, A.L., *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Aldine: Chicago, 1967.
- [29] Goulding, C., Grounded Theory: Some reflections on paradigm, procedures and misconceptions. Wolverhampton Business School Management Research Centre Working Paper Series June, 1999.
- [30] Haig, B.D., Grounded Theory as scientific method. *The Philosophy of Education*, ed. A. Neiman, Philosophy of Education Society: Champaign, IL: 1995.
- [31] Bandeira-de-Mello, R., Uma teoria substantiva da adaptação estratégica a ambientes turbulentos e com forte influência governamental: O caso das pequenas construtoras de edificações. PhD thesis (Administração de Empresas), Universidade Federal de Santa Catarina. Santa Catarina, 2002.
- [32] Bandeira-de-Mello, R. & Cunha, C., Grounded Theory. *Pesquisa Qualitativa em Organizações: Paradigmas*, eds C. Godoi, R. Bandeira-de-Mello & A. Silva, Estratégias e Métodos: Saraiva, São Paulo, Brazil, 2010.

