International Journal of Islands Research

Volume 4 | Issue 1 Article 4

2023

Climate Change and Tourism in the Seychelles: Perceptions and Measures

Tatjana Thimm
HTWG Konstanz – University of Applied Sciences, tthimm@htwg-konstanz.de

Climate Change and Tourism in the Seychelles: Perceptions and Measures

Cover Page Footnote

Acknowledgements The author would like to thank the two anonymous journal reviewers for helpful comments. The research was funded by Hochschule Konstanz, Germany. The author would also like to thank Andreas Heller (Hochschule Konstanz, Germany) and Lisa Rehn for English proof reading. Declarations of interest: none.

© International Journal of Islands Research
ISSN: 2737-7776
Available at: http://arrow.tudublin.ie/ijir/ Volume 4, 2023

Climate Change and Tourism in the Seychelles: Perceptions and Measures

Tatjana Thimm
HTWG Konstanz – University of Applied Sciences
tthimm@htwg-konstanz.de

The aim of this paper is to find out in how accommodation providers in the Seychelles perceive climate change and what mitigation and adaptation measures they can provide. In order to answer these questions, a qualitative mixed-method-approach, comprised of twenty semi-structured interviews, an online-survey and participant observation was used. Results show that accommodation providers especially perceive the effects of climate change that directly affect their business and that they have already partly implemented some mitigation and adaptation measures. However, strategies and regulations are needed at the Seychelles' government level and on a global level to actually achieve CO_2 neutral travel.

Key Words: Seychelles, climate change, mitigation, adaptation, tourism

Introduction

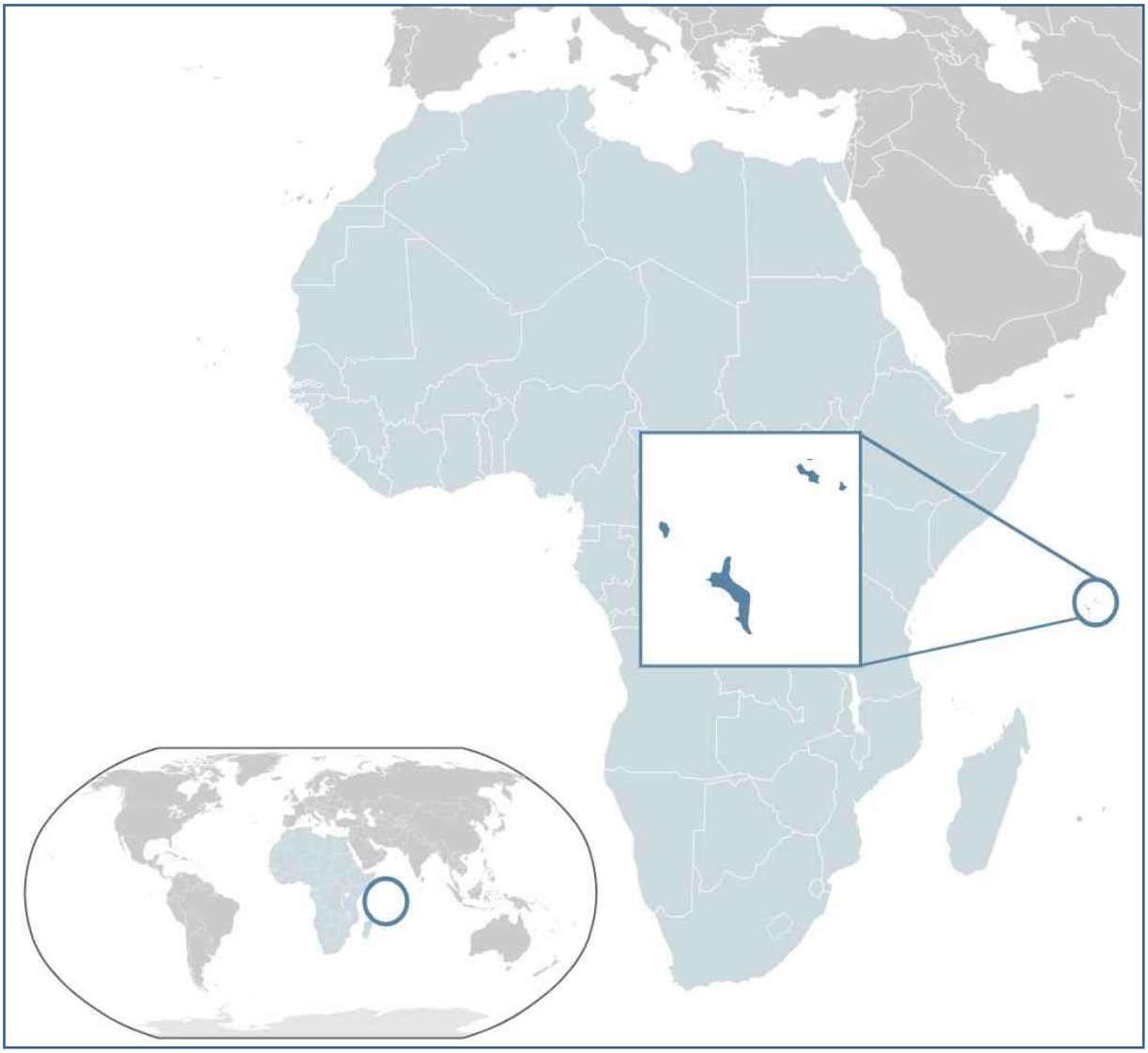
Small Island Developing States (SIDS) are considered vulnerable to climate change due to their geography, topography, demography, size, and economies. They are often highly dependent on imports, focus on only a few economic sectors, have limited human capital and resources in general, limited access to international markets, a small domestic market, are remote, depend on air access and have a small land mass (Hampton & Jeyacheya, 2013; Shareef *et al*., 2008; Mitropoulou & Spilanis, 2020; van der Veeken 2016). They are, according to Ratter (2018:19, 178), 'outposts of globalization' and have an 'intrinsic vulnerability such as isolation and smallness'. However, looking at islands exclusively as intrinsically vulnerable (the so called 'vulnerability paradigm' according to Moore, 2010:119) is an oversimplification, especially as the opposing narrative of islands as being intrinsically resilient exists as well: sea level rise caused by climate change is, of course, a serious threat, but with flexibility, social cohesion and networks as well as a deep connection to the place, islands can compensate or even overcompensate for this vulnerability with their resilience (Lacher, 2015; Ratter, 2018; Campling & Rosalie, 2006).

Many islands depend exclusively on tourism, which leads to challenges regarding accessibility, overtourism via cruise ship tourism and competition between replaceable island destinations (Hampton & Jeyacheya, 2013; Shareef *et al*., 2008). Although SIDS are not the main contributors of CO_2 emissions, they belong to the countries and territories most affected by climate change, especially in the case of low-lying atolls, due to the threat of rising sea levels (Payet & Agricole, 2006; Magnan *et al*., 2016; McCarthy *et al*., 2001; Soomauroo *et al*., 2020) The north-south divide in terms of CO_2 emissions raises the issues of climate justice and financial compensation (Thomas *et al*., 2020).

Tourism simultaneously contributes to and is threatened by climate change: the CO_2 emissions from travel activities, especially long-haul flights, are severely contributing to climate change (Gössling *et al*., 2002; Mishra *et al*., 2022). On the other hand, rising temperatures, more frequent weather extremes, and sea level rise affect the tourism industry itself: Most of the tourism infrastructure in SIDS is located in coastal areas and thus increasingly prone to spring floods, salination, beach washout, and rising sea levels (Jones & Zarb, 2021). Knowledge about the need to reduce CO_2 emissions is widespread, the technology is available, but implementation efforts continue to be less than the actions required or are only discussed controversially (Jones & Zarb, 2021; Schmitt, 2015).

Like most tropical islands, the Seychelles (Figure 1) face specific challenges related to climate change. These

Figure 1: Seychelles Location Map



https://en.wikipedia.org/wiki/Seychelles#/media/File:Location_Seychelles_AU_Africa.svg

include, for example, mass coral bleaching, changes in rainfall patterns, rising air and water temperatures, salination of soil and ground water resources caused by wave over-wash, sea-level rise and beach erosion (Persaud, 2015; Nurse *et al*., 2014). These challenges will increasingly affect the tourism business on which the Seychelles depend economically (Ministry of Agriculture, Climate Change and Environment, 2020).

The aim of this paper is to identify the perceptions that hotel managers and owners in the Seychelles have regarding climate change and to find out in what ways the hotel sector in the Seychelles can contribute to mitigating and adapting to climate change.

Literature Review

Tourism and Climate Change

According to Dogru *et al*. (2019) the tourism industry is more vulnerable than resilient to climate change in comparison with other sectors of the economy. Tourism in fact may even be one of the most harmed by climate change (Pang *et al*., 2013) while at the same time continuing to increase its world-wide contribution to CO_2 emissions (Scott *et al*., 2012). The projected effects of climate change on tourism include loss of species and assets (snow, reefs), degradation of landscapes, higher operating costs, beach erosion, an increase of forest

fires, thermal stress and heat waves, damage to tourism infrastructure, drinking water shortage, loss of cultural heritage, and increased business risks due to declining socio-economic stability (Arabadzhyan *et al*., 2020; Gössling & Scott, 2018; Cevik & Ghanzanchyan, 2020; Perch-Nielsen, 2010). This might lead to a redistribution of tourism flows regarding time and space as well as changes in the competitiveness of destinations: tourists may choose to travel in more northern locations or during the shoulder periods to current summer destinations and thereby, change demand patterns (Amelung *et al*., 2007; Scott & Gössling, 2022, Scott *et al*., 2012, Yu *et al*., 2009). Since tourism, like other sectors in the global economy, continues to be based on a pro-growth paradigm, thus continuing to contribute to CO2 emissions, this situation is unlikely to change anytime soon (Hall *et al*., 2013, Scott *et al*., 2012). Therefore, adapting to climate change on the business, consumer destination, policy or framework level in tourism (Njoroge, 2015) is currently much more common than the actual mitigation of climate change (Hall *et al*., 2013). Despite the fact that there is abundant research on the topic of climate change and tourism, the tourism sector stakeholders themselves are far from actually putting research results into practice (Scott & Gössling, 2022). Part of the problem in this regard is the lack of immediate consequences to pursuing business as usual tourism and the economic advantages gained from a growing tourism industry (Weaver, 2011), although anthropogenic climate change and tourism is not a new topic at all (Weir, 2017).

Tourism and Climate Change in SIDS

SIDS are areas of the world disproportionately vulnerable to climate change effects due to their small size, strong dependency on tourism, a lower adaptive capacity, the impact of climate change on tourism infrastructure and assets, and the long distances to the tourism source markets (Scott *et al*., 2012; Bangwayo-Skeete & Skeete, 2021, Scott *et al*., 2019). In particular, air transport, which is unavoidable when traveling to SIDS, causes the lion's share of CO_2 emissions in their tourism sectors and contributes to climate change (Antequera *et al*., 2021). The effects are evident and consist of multiple sources of stress, such as sewers and septic tanks overflowing due to hurricanes; beach erosion; saline intrusion into the ground water due to sea levels rising - resulting in water shortages, droughts and effects on the marine ecosystem in, for example, the Caribbean islands (Attzs, 2009; Belle & Bramwell, 2005; Clayton, 2009; de Bruijn & Dieperink, 2022, Moghal & O'Connell, 2018); tropical cyclones and droughts in the Pacific islands (Foley *et al*., 2022) or; storms, coastal erosion, heat stress and flooding in the Canadian islands (Haldane *et al*., 2023). All of these effects reinforce each other and lead to a deterioration of the tourist experience, the attractiveness of the destination and quality of life (Hernández-Delgado, 2015, Wolf *et al*., 2022) and in the end will lead to a decline of the tourism-based industry itself (Pedapalli *et al*., 2022; Seetanah & Fauzel, 2019; Susanto *et al*., 2020). For the population of some low-lying islands the effects of climate change, especially sea level rise, may even lead to displacement or resettlement (Thomas *et al*., 2020).

The resilience or adaptive capacity of SIDS may differ depending on management, stakeholder cohesion and innovation (Bangwayo-Skeete & Skeete, 2021). During the pandemic, some islands implemented visas for long term stays, e.g., for digital nomads or retirees (Foley *et al*., 2022). As the tourism numbers bounce back however, this business model will remain a niche. Some SIDS may even have limited means to adapt to climate change due to financial restrictions or inadequate governance structures (Leal Filho, 2021).

Although several SIDS are considering implementing measures to mitigate climate change and to overcome the carbon lock-in (Gössling & Schumacher, 2010; Soomauroo *et al*., 2020), the costs involved represent a major barrier (Guden *et al*., 2021), and investment in mitigation measures is more likely if they are viewed as a way to mitigate business risk (Hess, 2023). Sometimes stakeholders in SIDS, however, are not able to implement effective responses to climate change (Moghal & O'Connell, 2018); in some cases, even – like the Cayman Islands or Vanuatu - mitigation is not occurring at all (Johnston & Cooper, 2022; Klint *et al*., 2012). In other cases – like in Barbados or some Pacific islands – the policy is in place, but a lack of implementation and monitoring of measures can be observed (Mycoo, 2014; Wong *et al*., 2013), or – as in the Bahamas – measures are only short-term in nature and focused on imminent disasters (Pathak *et al*., 2021).

Tourists, even when they understand that their long-haul flight to SIDS is contributing to CO_2 emissions, would not want to give up their air travel. On the contrary, this pressure may even be reinforcing a mentality of last chance tourism (Huebner, 2012; Kelman, 2021).

Tourism and Climate Change in the Seychelles

Due to a lack of other resources (Doumenge, 1987; Gössling *et al*., 2002), the Seychelles' economy is, apart from the fishing industry, primarily dependent on tourism (67% of GDP) (Giampiccoli *et al*., 2021; Benoit, 2021; Christ *et al*., 2020; Clifton *et al*., 2012). This overdependence on tourism may lead to high economic volatility in times of crisis (Campling & Rosalie, 2006). The main competitors fot the Seychelles are the Maldives, Reunion and Mauritius (Gay, 2004; Podhorodecka, 2018). As an island tourism destination, the Seychelles produces an 'island imaginary' (Kothari & Wilkinson, 2010) that often follows the sun and beach stereotype (Vorlaufer, 1991). This stereotype is an asset in terms of island tourism promotion (ibid.), but also hinders the individual islands from differentiating from each other.

Regarding the resilience-vulnerability discourse (see introduction), Philpot *et al*. (2015) point out that in the Seychelles both perceptions exist and, moreover, that they may appear conflicting, complementary, as a compromise, a symbiosis, or a transformation, depending on the respective topic. According to the authors, tourism in this regard belongs to both: on one hand it leads to vulnerability, e. g., when demand decreases during crisis; on the other hand, tourism helps improve the islands' resilience by providing employment and income as well as preserving biodiversity, which attracts tourists (Dogley, 2010; Fotiou *et al*., 2002; Vorlaufer, 1991). In other words, in the Seychelles, vulnerability and resilience with regard to tourism co-exist in the sense of being complementary (Philpot *et al*., 2015).

As a group of small islands, the Seychelles are not a major contributor to climate change (Gössling *et al*., 2002), however, the lion's share of its energy supply comes from oil instead of renewable energies (exception: solar collectors for water heating), although there is potential for alternative sources, such as biogas, photovoltaics, and wind (Gendron & Kristoferson, 1983; Ministry of Agriculture, Climate Change and Environment, 2000; Van Vreden *et al*., 2010; Rothstein & Nuhiu, 2021). At the same time, the Seychelles formally enshrined sustainability in their constitution and declare renewable energy sources as part of their strategic planning (Ministry of Agriculture, Climate Change and Environment, 2012). Regarding tourism, long-haul flights from, e.g., European source markets are the main contributor to $C0_2$ emissions and they are mostly not compensated via a carbon offset scheme. This offsetting could be increased by enabling the tourist to visit the compensation project in the destination itself (Wernsdörfer, 2019; Rothstein & Wernsdörfer, 2020). A study by SSTF, Valsen, and BERI (2019) showed that 80% of visitors of the Seychelles are willing to pay an environmental fee between US$ 1 and 100 (mean = US$ 39) to support environmental measures on the Seychelles.

One visible effect of climate change in the Seychelles was the mass coral bleaching that occurred in 1998 due to increasing ocean temperatures (Payet & Agricole, 2006). Payet & Agricole (2006) predicted the following future effects: increase in surface air temperatures, changes in annual and seasonal rainfall, sea level rise, and increases in weather extremes. Since most of the Seychelles islands have portions of land that are above sea level (see Figure 2), rising sea levels will not cause the islands to disappear in the near future. However, salination and beach erosion are problems that have already become apparent and threaten agriculture and the tourism infrastructure on the coastline (Ministry of Agriculture, Climate Change and Environment, 2020; Sager & Sundberg, 2020).

To counteract the tourism sector's effect on climate change, the Seychelles have introduced the 'Seychelles Sustainable Tourism Label (SSTL)' certification program (Ministry of Tourism, 2022), but the expected advantages in marketing have not materialised and recognition of the label is low (Enander & Hasselberg, 2016). In addition, the Seychelles are promoting the 'Blue Economy Concept', which refers to encouraging sustainable activities and governance of the ocean and coastal areas (Purvis, 2015; Schutter et. al., 2021).

Gössling & Schumacher (2010) developed a concept of carbon neutral tourism for the Seychelles, suggesting that tourists and tourism stakeholders alike should pay

Figure 2:View of Praslin, Second Largest Island of the Seychelles

https://en.wikipedia.org/wiki/Seychelles#/media/File:Praslin_vom_Nid_d'Aigle.jpg

for offsetting tourism induced CO_2 emissions. However, it can be concluded that the Seychelles are not entirely prepared for climate change (Khan & Amelie, 2015; Sager & Sundberg, 2020), that mainstreaming climate adaptation is urgently needed (Etongo, 2022), and that the tourism industry must be willing to sacrifice certain activities and services (de Miguel Molina *et al*., 2014).

Based on the above literature review, the following research questions have been formulated for this paper:

- What are hotel managers' and owners' perceptions of climate change in the Seychelles?
- In what ways can the Seychelles' hotel sector contribute to mitigating or adapting to climate change?

Methodology

The data for this study were collected during the author's five-week field stay in the Seychelles in 2019 and follows a triangulating concept that combines three qualitative approaches (Merriam & Tisdell 2015):

Eighteen qualitative semi-structured interviews were conducted predominantly with hotel and guest house managers or owners, in person or on the phone. Two accommodation owners/managers preferred to respond to the list of interview questions via email. Therefore, the two email responses have limitations: they lack the interactive element of the interview and follow therefore a structured, not semi-structured, approach. The average length the interviews was around one hour. Most of the interviewee contacts were provided by the University of the Seychelles and the Seychelles Sustainable Tourism Foundation (SSTF); others were gathered via snowball and convenience sampling. One interviewee was from a hotel association, one from the Ministry of Tourism, and a third from a renewable energy company. The hotels ranged from small family run businesses to international hotel chains, from bed and breakfasts to five-star luxury resorts. All interviews were audio recorded with two exceptions: two interviews were only noted down. All interviews were anonymised and numbered (see list below). Informed consent was given prior to the recording. The list of interview questions was developed in collaboration with the above-mentioned institutions plus the Ministry of Tourism and the Seychelles Hospitality and Tourism Association (SHTA).

Furthermore, in a second phase of research, an online survey addressing the members of the Seychelles Hospitality and Tourism Association (SHTA) was conducted via a questionnaire using the same list of open-ended interview questions as in the interviews of the first phase of research (see above). Sixteen members of SHTA responded to this questionnaire. This second phase of research were conducted to supplement the intreview sample size and to reach saturation.

In order to triangulate, the findings, the qualitative interviews and the survey were complemented by a third phase: two participant observations on Bird Island and

Praslin. Participant observation means that the researcher observes situations and people while participating him/herself in the observed activity (Lopez-Dicastillo & Belintxon 2014). In the case of Bird Island and Praslin, the author visited in the role of a tourist observing other tourists and accommodation staff. The results of the participant observations were recorded in a research diary.

This approach differs from the one Hess (2023) applied when he implemented a mixed-method approach combining quantitative and qualitative data analysis in Koh Tao, Thailand. The he author of the current paper triangulated three qualitative approaches. Pathak *et al.* (2021) based their research in the Bahamas exclusively on interviews. The target group for these comparative studies and the current paper are the same: accommodation owners or managers.

Results

In this section, the results of the semi-structured interviews and the survey will be presented. They have been organised into the following categories: perceptions, mitigation, adaption, because the interviews and the survey were structured around these categories. First, the results are listed according to the frequency of responses to specific topics. Then, in a second step, indirect and direct quotes from the data explain more specifically the results from the categories perception, mitigation and adaption. The analysis of the results comprises and combines all three phases of the research: the interviews, the survey, and the participant observation.

Perceptions

Participants were asked during the interviews to describe their subjective perception of climate change in the Seychelles. Most of the interviewees were able to identify a number of possible effects of climate change, particularly the following:

- Rising air temperatures (I1[1], I8, I12, I14)
- Changing weather patterns (rain / wind) (I2, I4, I6, I8, I15, I19, I20, 4xS)
- Increase in humidity (I5, I20)
- Rising sea temperatures (I20, 1xS)
- Landslides (I1, I4, I8)
- Flooding (I8, I11, 1xS)
- Drainage blocking due to heavy rainfall (I1)
- Beach erosion (I3, I4, I5, I6, I8, I11, I12, O2, I14, I15, I20)
- Higher waves (I2)
- Hot European summers preventing guests from going to Seychelles, because they are then discouraged to travel to a warm destination (I2, I9, I15)
- Coral bleaching (I3, I5, I6, I10, I13, I17, 3xS)
- Changes in flora / fauna (I5, I13, I20, 2xS)
- Droughts (I5)
- Sea level rise (I7, I17, 4xS)

According to most of the interviewees, the effects listed above are going to affect their tourism businesses in the following ways:

- Some potential tourists will not come because the climate (heat / humidity) has become unbearable (I1, I8, 1xS)
- Divers will no longer come due to the loss of corals (I3, I10, 4xS)
- The tourism infrastructure at the coast will get damaged or lost because of rising sea level (I7)

The Seychellois mentality was described by several interviewees as reacting only after something happens (I1, I3, I8, I15) and that the tourism stakeholders need to display more commitment in terms of sustainability measures. As one participant noted:

> *I can bring a cow to the river, but I cannot force it to drink* (I7).

Some participants said that the above-mentioned effects always had been there and thus were not new effects (I6, I8). However, most felt that beach erosion, coral bleaching, and changing weather patterns were caused by climate change. Beaches and corals are an important tourism asset for the Seychelles, and their impairment would therefore damage the tourist product. The local rain patterns once allowed tourists to choose the dry time

1 The interviews are numbered I1, I2 etc., and the observations O1, O2 (see Appendix A). Results from the online survey are marked with an 'S' (e.g., 2xS means that two respondents from the online survey mentioned this).

Figure 3: Beach Resort in the Seychelles

//en.wikipedia.org/wiki/Seychelles#/media/File:General_hotel.jpg

of the year to visit the islands. However, long periods of rain may now occur any time during the year – and spoil the visitors' experience - making it difficult to decide when to travel to the Seychelles.

Mitigation

The second interview topic involved how to best counteract the effects of climate change mentioned above. The interviewees mentioned several measures that could be taken to mitigate climate change, such as:

- Planting organic vegetable gardens (I1)
- Serving sustainable food (I2)
- Not changing bed sheets / towels every day (I1, I3, I4, I5, I13, I15, I17, O1)
- Solar panels for heating water (I1, I2, I3, I4, I6, I9, I13, I14, I15, I19, I20, 5xS)
- Reducing waste (I2, I4, I11, I17, I20)
- Reducing water consumption (I12, I17, I20, O1, 1xS)
- Reducing energy consumption (I2, I4, I13, I17, 1xS)
- Using recycled waste water for irrigation (I2, I17)
- Removing air conditioners (I3, I6, I12)
- Switching air conditioners off when leaving rooms (I13, I20)
- Using local products (I4, I5)
- Avoiding printed material (I4)
- Avoiding plastic (I4, I5, I9, I12)
- Feeding food waste to animals (I4, I12, I14, I19, O1)
- Installing photovoltaic systems (I9, I13, I16, I19, I20)
- Traditional wood construction (I12)
- No longer offering small toiletry items in rooms (I20)
- Implementing a Green Charter for guests and staff (1xS)
- Planting trees (1xS)
- Restoring coral reefs (1xS)

In terms of the measures listed above, several interviewees said that using solar panels to heat water may lead to conflicts with guests because, during the rainy season, the

water might only be lukewarm (I1, I2, I13 - conversely, solar panels were described elsewhere as being reliable I1, I2, I3, I6, I9, I19, 2xS). One respondent mentioned that beach flooding and the resulting beach erosion can be problematic because the flooded beach sand would then be moist instead of soft and powdery as guests expect (I15). Furthermore, they felt that infrastructure directly on the beach (e. g. restaurant) cannot be used any longer (I15). Measures against this already lead to increased costs, because damage caused by flooding needs to be repaired (I15, 1xS). Some also said that reducing the use of AC or fresh linen and towels sometimes leads to discussions with guests (I13, I17). Such discussions with guests can be deemed problematic due to the competition on the market.

In terms of tourists' contribution to mitigation, one participant described guests as being partly aware of what is needed to protect the environment (I4), but also partly not interested, because they had paid for everything (I1).

Sometimes sustainability measures were dismissed and reduced by interviewees to only mean factors related to the general cleanliness of the islands (I10, I19). Notwithsanding this, most interviewees favoured including renewable energy forms into the visitors' experience (I2, I3, I6, I10, I11, I13, I15, I17, I19, (8xS). However some did not agree with this, thinking that visitors would not care (I1, I15, I20).

The interviewees were predominantly very positive about a business model that would allow guests to invest in a photovoltaic (PV) system and then receive a voucher from the energy savings for their next visit (I2, I3, I8, I11, I14, I15, I19, I20, 6xS). They felt this would increase the use of renewable energy and customer loyalty at the same time. However, one interviewee from a luxurious hotel noted that there were few return visitors to the Seychelles anyway, since for most, the islands are a once in a lifetime destination. They therefore though the idea would not make any sense (I17, 1xS). For this reason, another interviewee suggested allowing visitors to use the voucher immediately, such as for a dinner (I19). Another respondent (from a guest houses) mentioned that they did indeed have return visitors and that the measure would make sense for them (I20). This appears to show that the type of accommodation might play a role in terms of return visitors and whether this type of measure might be effective.

Regarding the installation of PV systems, a major barrier might be the cost (I2, I3, I5, I10, I15, I17, 2xS), a lack of information about government grants for funding (I7, I11), problems in increasing PV electricity due to Public Utilities Corporation (PUC) regulations (e.g. batteries not allowed, limited amount of PV electricity that can be fed into the grid) (I9, I10, I18, I20) (see also PUC, 2022) as well as aesthetic concerns (I4, I15).

The Seychelles Sustainable Tourism Label (SSTL) was viewed critically because it is not internationally known and is not really felt to be an asset in marketing (I20).

In conclusion, classical mitigation measures, such as not changing linen and towels every day, installing solar panels, and reducing resources, were the most common responses offered by respondents. This does not come as a surprise since these measures contribute to cost savings. As soon as things get more complicated (e.g., PV systems), changes may lead to discussions with guests (e.g., air-conditioning). If the mitigation is not part of the core business (e. g. sustainability label, CO_2 offsetting), the motivation to invest in measures decreases.

Adaptation

The final interview section involved how the islands could adapt to climate change. The participants came up with various ideas, which are listed below.

In terms of adaptation strategies, many interviewees mentioned taking measures to protect against beach erosion (e.g., installing pillars made of wood, brick, or rocks), since visitors normally come for the beach (I2, I3, I4, I8, I9, I14, I15).

According to the interviewees, an ideal form of sustainable tourism on the Seychelles would comprise a focus on small guest houses (I1, I3, I5), prohibit the building of additional big hotels (I6), limits the number of tourists (I12, I13, I16), implement sustainability measures together with tourists, such as beach cleanings (I3, I5), protect local nature and culture (I7), not target the cheap mass market travel (I7, I9, I13), bring benefits

to the country, and increase the use of renewable energies (I5). One interviewee (I4) specifically mentioned Bird Island, another Denis Island (I19), as ideal forms of sustainable tourism.

The idea of 'coral adoption' programs for guests was very popular (I2, I3, I5, I20). Some felt projects like these make a guest feel better, because he or she has the impression of doing something tangible for the environment (I2, I15).

The interviewees were also asked if they would offer their guests a voluntary offset program for the CO_2 emissions of their flights. Most of them favoured the idea, although some had never heard of it before (I4, I6, I7, I11, I12, I13, I15, I19).

One interviewee (I7) mentioned the advantage of being a SIDS and thus having access to funding to counteract the effects of climate change (i.e via the EU or the Commonwealth).

Sometimes, regarding climate change, the focus was shifted to the younger generation (I4, I6):

> *We have to wait for the generation to come* (I6).

When it comes to adaptation measures, it is again the beach that has to be preserved as the major tourism asset for the accommodation business in the Seychelles. Some interviewees were also aware of the fact that islands are reaching their carrying capacity for tourists, especially on the island of La Digue. Offsetting the impact of the flight as the major contributor to CO_2 emissions for the trip was not considered to be part of an accommodation providers' core business of and was also a new concept to most of the respondents.

Discussion and Reflection

Accommodation providers on the Seychelles especially perceive the effects of climate change as they directly affect their business and / or are clearly visible. The effects on beaches and corals are of particular importance to them and they would particularly focus mitigation and adaptation measures on these. Another focus of mitigation and adaptation measures would be on activities that lead to cost savings, such as reducing the use of all kinds of resources. This is in line with Hess's (2023) findings stating that accommodation owners / managers only take action in a reactive way to reduce business risks.

It was interesting that some interviewees mentioned Bird Island and Denis Islands as sustainable / ideal tourism destinations within Seychelles. In reality, Bird Island exports all of its waste to Mahé, thus only shifting the problem. The island is predominantly powered by diesel generators and can only be reached by plane from within the Seychelles. The same applies to Denis Island. Both islands are high priced - one island - one resort - destinations that promote the typical postcard idyll on their websites. However, they use a lot of resources per guest, and, as private enterprises, their contribution to the Seychelles economy and society is minimal. On the islands themselves, they do a good job of preserving nature as an important asset for tourists. However, as a tourism product, these islands are actually drivers of climate change and far from being CO_2 neutral. Thus, in this instance, perception and reality are particularly divergent.

The majority of accommodation providers, of course, focus on their core business and not on the big picture of climate change. The general perception is that if they see the opportunity of a financial incentive or return on investment, cost savings or a legal regulation, or a competitive advantage, they will take measures. This is in line with the findings of Guden *et al*. (2021) who provided examples from Cyprus. However, in the interviews, it was apparent that respondents are aware of the effects of climate change are these effects may severely affect their business model in the future. Thus, in this case, mitigation and adaptation measures are not driven by accommodation offers or tourism demand, but predominantly by the attempt to keep the tourism product attractive.

Although a trend during the pandemic, digital nomads, retirees or other long term stay schemes (Foley *et al*., 2022) cannot compensate for the value creation of the tourism industry in the Seychelles. However, it is a concept worth considering that can help diversify the economy and reduce CO_2 emissions.

One feature of the accommodation providers' perception of climate change was their belief that it is really not their responsibility to solve the problem. Solutions are the responsibility of the younger generations; or solutions should focus on creating tourism island paradises, such as Bird Island or Denis Island (which export their problems - such as waste).

Reflecting on the findings, the Seychelles government should be asked why it is necessary to continue increasing the number of tourists, when the Seychelles already have to import workers to handle the current number of tourists? Additionally, questions regarding the carrying capacity of some islands (e. g. La Digue) should be raised.

The government should also be called upon to develop and communicate a comprehensive climate change strategy and to provide resources and incentives for tourism stakeholders to carry out mitigating and adaptive measures.

The worldwide energy crisis has led to higher transportation costs. If and how this affects tourism and CO_2 emissions in the Seychelles in the long run remains to be seen.

Conclusion

In terms of the first research question, it can be said that hotel managers' and owners' perceptions of climate change in the Seychelles are clearly focused on the direct relevance for their business, i.e., damages to beaches and corals or changes in weather (hotter, unpredictable rain) i.e factors that are directly affecting the tourism experience in a negative way. As to the second research question, they can, of course, contribute to mitigating and adapting to climate change, which they do by focusing on reducing costs and preserving tourism assets like beaches and corals. In this regard this paper confirms the findings from other island studies conducted by the likes of Hess (2023), Foley *et al*. (2022) and Pathak *et al*. (2021).

Since the majority of tourists are not ready to pay the full price for their trips in terms of CO_2 neutrality in a voluntarily way, by purchasing carbon offsets, global scale initiatives and regulations will be needed to tackle this problem. In the case of SIDS like the Seychelles, this raises questions of climate justice and ethics, since the Seychelles hardly contribute to global CO_2 emissions, but suffer considerably from their effects (Lai *et al*., 2022). Therefore, this is not an issue which a small island destination can solve by itself (Wolf *et al*., 2022).

Acknowledgements

The author would like to thank the two anonymous journal reviewers for helpful comments. The research was funded by Hochschule Konstanz, Germany. The author would also like to thank Andreas Heller (Hochschule Konstanz, Germany) and Lisa Rehn for English proof reading.

Conflict of Interest Declaration

No conflict of interest is perceived.

References

Amelung, B., Nicholls, S. & Viner, D. (2007) *Journal of Travel Research*, 45 (3), 285-296.

Antequera, P.D., Pacheco, J.D., Díez, A.L. & Herrera, C.B. (2021) Tourism, Transport and Climate Change: The Carbon Footprint of International Air Traffic on Islands. *Sustainability*, 13 (4), 1795.

Arabadzhyan, A., Figini, P. García, C., Gonzales, M.M., Lam-González, Y.E. & León, J.L. (2021) Climate change, coastal tourism, and impact chains – a literature review. *Current Issues in Tourism*, 24 (16), 2233-2268.

Attzs, M. (2009) Preparing for a rainy day. Climate change and sustainable tourism in Carribbean small island developing states. *Worldwide Hospitality and Tourism Themes*, 1 (3), 231-251.

Belle, N. & Bramwell, B. (2005) Climate Change and Small Island Tourism: Policy Maker and Industry Perspectives in Barbados. *Journal of Travel Research*, 44, 32-41.

Benoit, D. (2021) The Seychelles: A historical perspective. URL: https://www.researchgate.net/publication/358536787_The_Seychelles_A_historical_perspective [accessed 08/07/22]

Bangwayo-Skeete, P.F. & Skeete, R.W. (2021) Modelling tourism resilience in small island states: a tale of two countries. *Tourism Geographies*, 23 (3), 436-457.

Campling, L. & Rosalie, M. (2006) Sustaining Social Development in a Small Island State? The case of Seychelles. *Sustainable Development*, 14, 115-125.

Cevik, S. & Ghazanchyan, M. (2020) *Perfect Storm: Climate Change and Tourism*. IMF Working Paper.

Christ, H.J., White, R., Hood, L., Vianna, G.M.S., & Zeller, D. (2020) A Baseline for the Blue Economy: Catch and Effort History in the Republic of Seychelles' Domestic Fisheries. *Frontiers in Marine Science,* 7(269), 1-13.

Clayton, A. (2009) Climate change and tourism: the implications for the Caribbean. *World Hospitality and Tourism Themes*, 1 (3), 212-230.

Clifton, J., Etienne, M., Barnes, D.K., Barnes, R.S., Suggett, D.J., & Smith, D.J. (2012) Marine conservation policy in Seychelles: Current constraints and prospects for improvement. *Marine Policy*, 36(3), 823-831.

De Miguel Molina B., de Miguel Molina, M., & Rumiche-Sosa, M.E. (2014) Luxury sustainable tourism in Small Island Developing States surrounded by coral reefs. *Ocean & Costal Management*, 98, 86-94.

De Bruijn, E. & Dieperink, C. (2022) A Framework for Assessing Climate Adaption Governance on the Caribbean Island of Curacao. *Sustainability*, 14, 15092.

Dogley, D. (2010) A Government's Perspective on Safeguarding Biodiversity: The Seychelles Experience. *Biotropica*, 42 (5), 572-575.

Dogru, T., Marchio, E.A., Bulut, U. & Suess, C. (2019) Climate change: Vulnerability and resilience of tourism and the entire economy. *Tourism Management*, 72, 293-305.

Doumenge, J.P. (1987) *Les îles Seychelles*. Annales de Géographie, 96(533), 78-102.

Enander, F., & Hasselberg, M. (2016) The Seychelles Sustainable Tourism Label. *Department of Social and Economic Geography*, Uppsala University.

Etongo, D. (2022) Mainstreaming Climate Adaptation into Sectorial Policies in Seychelles. URL: https://assets.researchsquare.com/files/rs-1319648/v1/94543363-cae3-4aee-9d56-5f010fe65f51.pdf?c=1644258574 [accessed 08/07/2022]

Foley, A.M., Moncada, S., Mycoo, M., Nunn, P. Tandrayen-Ragoobur, V. & Evans, C. (2022) Small Island Developing States in a post-pandemic world: challenges and opportunities for climate action. *WIREs Climate Change*, 13, e769

Fotiou, S., Buhalis, D., & Vereczi, G. (2002) Sustainable development of ecotourism in small islands developing states (SIDS) and other small islands. *Tourism and Hospitality Research*, 4 (1), 79-88.

Gay, J.-C. (2004) Tourisme, Politique et Environnement aux Seychelles. *Revue Tiers Monde*, 45 (178), 319-339.

Gendron, S., & Kristoferson, L. (1983) Islands in Search of Energy: Development of Renewables and Other Options on the Seychelles. *Ambio*, 12 (6), 338-340.

Giampiccoli, A., Mtapuri, O., & Nauright, J. (2021) Tourism development in the Seychelles: a proposal for a unique community-based tourism alternative. *Journal of Tourism and Cultural Change,* 19 (4), 444-457.

Gössling, S., Borgström Hansson, C., Hörstmeier, O., & Saggel, S. (2002) Ecological footprint analysis as a tool to assess tourism sustainability. *Ecological Economics*, 43 (2-3), 199-211.

Gössling, S. & Schumacher, K.P. (2010) Implementing carbon neutral destination policies: issues from the Seychelles. *Journal of Sustainable Tourism*, 18 (3), 377-391.

Gössling, S. & Scott, D. (2018) The decarbonisation impasse: global tourism leaders' views on climate change mitigation. *Journal of Sustainable Tourism*, 26 (12), 2071-2086.

Guden, N., Girgen, M.U., Saner, T. & Yesilpinar, E. (2021) Barriers to sustainable tourism for small hotels in small island developing states and some suggested remedies. *Worldwide Hospitality and Tourism Themes,* 13 (4), 510-521.

Haldane, E., MacDonald, L., Kressin, N., Furlitte, Z. Kinay, P. Guild, R. & Wang, X. (2023) Sustainable Tourism in the Face of Climate Change: An Overview of Prince Edward Island. *Sustainability*, 15, 4463.

Hampton, M.P., & Jeyacheya, J. (2013) *Tourism and Inclusive Growth in Small Island Developing States.* Commonwealth Secretariat.

Hall, C.M., Scott, D. & Gössling, S. (2013) The Primacy of Climate Change for Sustainable International Tourism. *Sustainable Development*, 21, 112-121.

Hernández-Delgado, E.A. (2015) The emerging threats of climate change on tropical coastal ecosystem services, public health, local economies and livelihood sustainability of small islands: Cumulative impacts and synergies. *Marine Pollution Bulletin*, 101, 5-28.

Hess, J.S. (2023) Private sector climate change adaption of accommodation suppliers in the small island of Koh Tao, Thailand. *Asian Geographer*, 40 (1), 81-98.

Huebner, A. (2012) Public perception of destination vulnerability to climate change and implications for long-haul travel decisions to small island states. *Journal of Sustainable Tourism*, 20 (7), 939-951.

Jones, A., & Zarb, J.C. (2021) Island Sustainability-Predicted Impacts of Climate Change on the Tourism Sector in Malta: Recent Experience and Anecdotes from a Small Island. *International Journal of Island Research*, 2(1), Article 5.

Johnston, W. & Cooper, A. (2022) Small island and climate change: analysis of adaptation policy in the Cayman Islands. *Regional Environmental Change*, 22 (45), https://doi.org/10.1007/s10113-022-01887-2

Khan, A., & Amelie, V. (2015) Assessing climate change readiness in Seychelles: implications for ecosystem-based adaptation mainstreaming and marine spatial planning. *Regional Environmental Change,* 15(4), 721–733. https://doi.org/10.1007/s10113-014-0662-4

Kelman, I. (2021) Critiques of island sustainability in tourism. *Tourism Geography*, 23 (3), 397-414.

Klint, L.M., Wong, E., Jiang, M., Delacy, T., Harrison, D. & Dominey-Howes, D. (2012) Climate change adaption in the Pacific Island tourism sector: analysing the policy environment in Vanuatu. *Current Issues in Tourism*, 15 (3), 247-274.

Kothari, U., & Wilkinson, R. (2010) Colonial Imaginaries and Postcolonial Transformations: Exiles, Bases, Beaches. *Third World Quarterly*, 31 (8), 1395-1412.

Lacher, K. (2015) The island community of Chenega. Earthquake, tsunami, oil spill … What's next? *Global Environment* 8 (1): 38–60. https://doi.org/10.3197/ge.2015.080103.

Lai, M., Robinson, S., Salas, E. Thao, W. & Shrob, A. (2022) Climate justice for small island developing states: identifying appropriate international financing mechanisms for loss and damage. *Climate Policy*, 22 (9), 1213-1224.

Leal Filho, W., Krishnapillai, M., Sidsaph, H., Nagy, G.J., Luetz, J.M., Dyer, J., Otoara Ha'apio, M., Havea, P.H., Raj, K., Singh, P. *et al*. (2021) Climate Change Adaptation on Small Island States: An Assessment of Limits and Constraints. *J. Mar. Sci. Eng.*, 9, 602.

Lopez-Dicastillo, O. & Belintxon, M. (2014) The challenges of participant observation of cultural encounters within an ethnographic study. *Procedia – Social and Behavioral Sciences*, 132, 522-526.

Magnan, A.K., Colombier, M., Billé, R., Joos, F., Hoegh-Guldberg, O., Pörtner, H.-O., Waisman, H., Spencer, T. & Gattuso, J.-T. (2016) Implications of the Paris agreement for the ocean. *Nature Climate change,* 6(8), 732–735. https://doi.org/10.1038/nclimate3038.

McCarthy, J.J., Canziani, O.F., Leary, N.A., Dokken, D.J. & White, K.S. (2001) *Climate Change 2001: Impacts, Adaptation, and Vulnerability.* IPCC report. Chapt. 17: Small Island States, 845-875.

Merriam, S.B. & Tisdell, E.J. (2015) *Qualitative Research: A Guide to Design and Implementation.* San Francisco: Jossey-Bass.

Ministry of Agriculture, Climate Chance and Environment, Republic of Seychelles (2012) *Seychelles Sustainable Development Strategy (SSDS) 2012-2020*. URLs: http://www.meecc.gov.sc/wp-content/uploads/2017/04/Seychelles-Sustainable-Development-Strategy-Volume-1.pdf & http://www.meecc.gov.sc/wp-content/uploads/2017/04/Seychelles-Sustinable-Development-Strategy-Volume-2.pdf [both accessed 29/06/22].

Ministry of Agriculture, Climate Chance and Environment, Republic of Seychelles (2020) *Seychelles' National Climate Change Policy: 'Making Seychelles Climate Resilient'.* Seychelles.

Ministry of Agriculture, Climate Chance and Environment, Republic of Seychelles (2000) *Environment Management Plan of Seychelles 2000-2010.* Seychelles.

Ministry of Tourism (2022) *Seychelles Sustainable Tourism Label (SSTL)* URL: https://www.sstl.sc/ [accessed 08/07/2022]

Mishra, H.G., Pandita, S., Bhat, A.A., Mishra, R.K., & Sharma, S. (2022) Tourism and carbon emission: a bibliometric review of the last three decades: 1990-2021. *Tourism Review*, 77(2), 636-658.

Mitropoulou, A., & Spilanis, I. (2020) From Insularity to Islandness: The use of place branding to achieve sustainable island tourism. *International Journal of Islands Research*, 1(1), Article 5.

Moore, A. (2010) Climate Changing Small Islands: Considering Social Sciences and the Production of Island Vulnerability and Opportunity. *Environment and Society*, 1, 116-131.

Mycoo, M. (2014) Sustainable tourism, climate change and sea level rise adaption policies in Barbados. *Natural Resources Forum*, 38, 47-57.

Nurse, L.A., McLean, R.F., Agard, J., Briguglio, L.P., Duvat-Magnan, V., Pelesikoti, N., Tompkins, E., & Webb, A. (2014) Small islands. In Barros, V.R., Field, C.B., Dokken, D.J., Mastrandrea, M.D., Mach, K.J., Bilir, T.E., Chatterjee, M., Ebi, K.L., Estrada, Y.O., Genova, R.C., Girma, B., Kissel, E.S., Levy, A.N., MacCracken, S., Mastrandrea, P.R., & White, L.L. (eds.), *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, 1613-1654.

Njoroge, J.M. (2015) Climate Change and Tourism Adaption: Literature Review. *Tourism and Hospitality Management*, 21 (1), 95-108.

Pang, S.F.H., McKercher, B. & Prideaux, B. (2013) Climate Change and Tourism: An Overview. Asia *Pacific Journal of Tourism Research*, 18 (1-2), 4-20.

Pathak, A., van Beynen P.E., Akiwumi, F.A. & Lindeman, K.C. (2021) Climate adaption within the tourism sector of a small island developing state: A case study from the coastal accommodations subsector in the Bahamas. *Business Strategy and Development*, 4 (3), 313-325.

Payet, R., & Agricole, W. (2006) Climate Change in the Seychelles: Implications for Water and Coral Reefs. *Ambio*, 35(4), 182-189.

Pedapalli, S.C.K., Gupta, B. & Mahajan, P. (2022) Climate change and tourism: a paradigm for enhancing tourism resilience in SIDS. *Worldwide Hospitality and Tourism Themes*, 14 (5), 431-440.

Perch-Nielsen, S.L. (2010) The vulnerability of beach tourism to climate change – an index approach. *Climatic Change*, 100, 579-606.

Persaud, I. (2015) My Place: Seychelles. *Teaching Geography*, 40 (2), 80-81.

Philpot, D., Gray, T.S. & Stead, S.M. (2015) Seychelles, a vulnerable or resilient SIDS? A local perspective. *Island Studies Journal*, 10 (1), 31-48.

Podhorodecka, K. (2018) The economic significance of the tourism sector in Seychelles in the wake of global economic crisis. *Ekonomiczne Problemy Turystyki,* 43(3), 29-40.

Public Utilities Corporation (2022) *Renewable Energy*. URL: https://www.puc.sc/renewable-energy-3/ [accessed 26/07/22]

Purvis, M.T. (2015) Seychelles Blue Economy Strategy. *Island Studies: Indian Ocean*, 3, 14-19.

Ratter, B.M.W. *Geography of Small Islands: Outposts of Globalisation*, Springer International Publishing AG: 2018.

Rothstein, B., & Nuhiu, D. (2021) Control Energy Via Luxury Hotels: An investigation of the electricity consumption in luxury hotels in order to evaluate their potential to provide balancing energy, using Seychelles as an example. *Seychelles Research Journal*, *3*(2), 107-129.

Rothstein, B., & Wernsdörfer, T. (2020) Climate protection in Seychelles through tourism: the advantages of a small-sized destination: Results of a tourist survey conducted by students from the University of Seychelles. *Seychelles Research Journal*, *2*(2), 121-139.

Sager, M., & Sundberg, G. (2020) *'Stop stealing our beaches'. A comparative study on how Mauritius and the Seychelles are affected by and deal with climate change and tourism.* Bachelor Thesis. Jönköping University.

Schmidt, L. (2015) *Klima, Raum und Zeit im Wandel. Eine ethnographische Untersuchung von Adaptionen und Konflikten auf der westfriesischen Insel Ameland*. München: Oekonom.

Schutter, M.S., Hicks, C.C., Phelps, J., & Waterton, C. (2021) The blue economy as a boundary object for hegemony across scales. *Marine Policy,* 132, 104673.

Scott, D. & Gössling, S. (2022) A review of research into tourism and climate change – Launching the annals of tourism research curated collection on tourism and climate change. *Annals of Tourism Research*, 95, 103409

Scott, D., Gössling, S. & Hall, M.C. (2012) International tourism and climate change. WIREs Clim Change, 3 (3), 213-232.

Scott, D., Hall, C.M., Gössling, S. (2019) Global tourism vulnerability to climate change. *Annals of Tourism Research,* 77, 49-61.

Shareef, R., Hoti, S., & McAleer, M. (2008) *The Economics of Small Island Tourism. International Demand and Country Risk Analysis.* Edward Elgar Publishing.

Seetanah, B. & Fauzel, S. (2019) Investigating the impact of climate change on the tourism sector: evidence from a sample of island economies. *Tourism Review*, 74 (2), 194-203.

Soomauroo, Z.; Blechinger, P. & Creutzig, F. (2020) Unique Opportunities of Island States to Transition to a Low-Carbon Mobility System. *Sustainability*, 12, 1435.

SSTF, Valsen, & BERI (2019) *Seychelles' Willingness to Pay Survey. Final Report.* URL: https://seyccat.org/wp-content/uploads/2019/11/WTP-SURVEY-REPORT-FINAL_26.11.2019.pdf [accessed 14/07/22].

Susanto, J., Zheng, X., Liu, Y. & Wang, C. (2020) The impacts of climate variables and climate-related extreme events on island country's tourism: Evidence from Indonesia. *Journal of Cleaner Production*, 276, 124204

Thomas, A., Baptiste, A., Martyr-Koller, R., Pringle, R., Rhiney, K. (2020) Climate Change and Small Island Developing States. *Annual Review of Environment and Resources*, 45, 1-7.

Van der Veeken, S., Calgaro, E., Klingt, L.M., Law, A., Jiang, M., de Lacy, T. & Dominey-Howes, D. (2016) Tourism destinations' vulnerability to climate change: Nature-based tourism in Vava'u, the Kingdom of Tonga. *Tourism and Hospitality Research*, 16 (1), 50-71.

Van Vreden, J., Wignan, M., Kruze, A., Dyhr-Mikkelsen, K., & Lindboe, H.H. (2010) *Proposal for Energy Policy of the Republic of Seychelles, 2010-2030.* URL: http://www.meecc.gov.sc/wp-content/uploads/2017/04/Proposal-for-the-Seychelles-energy-policy-2010-2030_final.pdf [accessed 29/06/22].

Vorlaufer, K. (1991) Die Seychellen: Tourismus als Entwicklungsoption für einen insularen Kleinstaat. *Afrika Spectrum*, 26 (2), 221-255.

Weaver, D. (2011) Can sustainable tourism survive climate change? Journal of Sustainable Tourism, 19 (1), 5-15.

Weir, B. (2017) Climate change and tourism – Are we forgetting lessons from the past? *Journal of Hospitality and Tourism Management*, 32, 108-114.

Wernsdörfer, T. (2019) *Verknüpfung von CO2-Kompensationsprojekten mit Reisedestinationen. Analyse der Bereitschaft von freiwilligen CO2-Kompensationszahlungen von Touristen bei Verknüpfung der Kompensationsprojekte mit den Reisedestinationen.* Bachelor Thesis. Julius-Maximilians-Universität Würzburg.

Wolf, F., Moncada, S., Surroop, D., Shah, K.U., Raghoo, P., Scherle, N., Reiser, D., Telesford, J.N., Roberts, S., Havea, P.H., Naidu, R. & Nguen, L. (2022) Small island developing states, tourism and climate change, *Journal of Sustainable Tourism*, https://www.tandfonline.com/doi/full/10.1080/09669582.2022.2112203

Wong, E., & Jiang, M., Link, L.M., Dominey-Holmes, D. & DeLacy, T. (2013) Evaluation of policy environment for climate change adaption in tourism. *Tourism and Hospitality Research*, 13 (4), 201-225.

Yu, G., Schwartz, Z. & Walsh, J.E. (2009) A weather-resolving index for assessing the impact of climate change on tourism related climate resources. *Climatic Change*, 95, 551–573.

Appendix

List of Interviews

Feb 12, 2019, Guest house owner, female, Mahé

Feb 13, 2019, Hotel manager, male, Mahé

Feb 13, 2019, Guest house owner, female, Mahé

Feb 14, 2019, Hotel manager, male, Mahé

Feb 15, 2019, Hotel manager, female, Mahé

Feb 18, 2019, Hotel manager, male, Island resort

Feb 19, 2019, Ministry of Tourism, female

Feb 21, 2019, Guest house manager, female, La Digue

Mar 1, 2019, Director guest house, male, Praslin

Feb 22, 2019, Guest house manager, male, La Digue

Feb 25, 2019, Hotel manager, female, La Digue

Feb 26, 2019, Guest house owner, female, La Digue

Feb 27. 2019, Hotel owner, female, Praslin

Mar 1, 2019, Guest house owner, female, Praslin

Mar 1, 2019, Hotel manager, male, Praslin

Mar 1, 2019, Hotel association, female, Praslin

Mar 11, 2019, Hotel manager, male, Mahé

Mar 6, 2019, Renewable energy company, male, Mahé

Mar 3, 2019, Hotel manager, female, Mahé

Mar 8, 2019, Guest house owner, female, Mahé

Participant Observation

17.2.19, Bird Island

2.3.19, Praslin