Māori-led tourism and climate change impacts and adaptation: Perspectives from Westland Tai Poutini National Park, New Zealand

Abstract

There is growing evidence of the effects climate change will have on Aotearoa New Zealand, and many of these effects are already apparent in the country, with some regions more significantly affected than others. One particularly vulnerable region is Te Tai Poutini on the West Coast of the South Island. This paper outlines how selected Māori-led tourism businesses (MLTBs) and other tourism stakeholders are experiencing and adapting to the effects of climate change in the region. The research is based on qualitative semi-structured key informant interviews with Māori and non-Māori (n=13) involved in these businesses and in the wider tourism sector. Findings reveal that most informants acknowledge the climate change effects the region is experiencing, with consequences for their business and manuhiri [visitors]. The greatest risks identified include disruption to road networks and infrastructure and the continued retreat of the region's iconic glaciers. MLTBs are considering future adaptation options in light of key Māori values, including Kaitiakitanga [guardianship or stewardship], Manaakitanga [hospitality] and Whangaungatanga [relationships]. By providing an Indigenous cultural lens to the issue of climate change adaptation, this research can inform strategic discussions among tourism operators, managers and regional stakeholders about how adaptation can be planned to take account of Te Ao Māori perspectives.

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Introduction

Aotearoa New Zealand has significant natural assets, which provide the basis for a vibrant and economically influential tourism industry. Many of the country's most visited tourist destinations and activities are located in bio-physically dynamic areas, such as mountainous or coastal regions where sudden-onset natural hazard events (including earthquakes, tsunami, flooding and landslips) can impact on the environment and on infrastructure including roads, bridges and communication networks (Rosselló et al. 2020). This puts tourists at considerable risk. Regions differ in the extent and type of likely events. For example, the South Island's West Coast [Te Tai Poutini] is extremely prone to flooding (restricting access) and glacial retreat is having a negative effect on tourist experiences (Purdie et al. 2020; Wang and Zhou 2019). In particular, Fox Glacier [Te Moeka o Tuawe] and Franz Josef Glacier [Kā Roimata o Hine Hukatere] have retreated more than 700 metres since 2008 with many climate models indicating they will disappear by the end of this century (Wang and Zhou 2019). While glacier tourism, which is a mainstay of tourism offerings on the West Coast for generations, may be buoyed by 'last chance to see' appeal (Stewart et al. 2016) this can only be considered a short-term situation. Significant concerns are emerging about the future of the multimillion-dollar tourism industry in 'Glacier Country' (Westland District Council 2023). In 2022, Lisa Tumahai, Ngāi Tahu's leader [Te Kaiwhakahaere], described a visit to Franz Josef Glacier [Kā Roimata o Hine Hukatere]:

> *It came as something of a physical shock. A blow to the senses. To visit Kā Roimata o Hine Hukatere for the first time in eight years, was devastating. This mighty glacier, that sits among the ancestors, a taonga of our people, a presence once so physically commanding, is shrinking into oblivion. Kā Roimata o Hine Hukatere has been subdued, humiliated by the actions of humans, actions remote yet undeniable. To see this retreating giant is to understand impermanence, to understand the real and terrible results of industrialisation, of climate change.* (Tumahai 2022, p.2)

The glaciers are located in Westland Tai Poutini National Park, a UNESCO World Heritage site. Access to the area is limited to one road: SH6 via Hokitika in the north and from the south via Haast (Figure 1). The climate change effects facing this region are exacerbated by its isolated nature and small population (Purdie et al. 2020).

While the population of this region is small, it is a place of considerable significance to tāngata whenua. Early Māori settlements were located on the edges of Tai Poutini Westland's lagoons and lakes. The area has cultural significance to Ngāti (Kāti) Māhaki hapu of the wider Ngāi Tahu and Ngāti Mamoe iwi [tribe] of the Te Wai Pounamu South Island. This is due to its resources and intergenerational connections to tūpuna [ancestors] and te taiao [the environment] (Department of Conservation 2023a, 2023b; Te Rūnanga o Makaawhio 2023). Two hapu [groups, sub-tribes] of Ngāi Tahu iwi are based in this case study area. These are the Te Rūnanga o Makaawhio and Te Rūnaka o Kāti Waewae. Each rūnanga has a tribal boundary defined by law in Te Rūnanga o Ngāi Tahu (Declaration of Membership) Order 2001 (New Zealand Government 2001).

Māori are significantly involved in tourism in Te Tai Poutini Westland, most notably through Ngāi Tahu Tourism (NTT). Ngāi Tahu has over 80,000 tribal members and NTT is managed by Ngāi Tahu Holdings. In 2022, 54 of the 422 kaimahi [employees] of NTT were Ngāi Tahu members, making NTT the largest employer of Ngāi Tahu whānau [extended family] (Ngāi Tahu Tourism 2023). Māori values underpin the operations of NTT, as their website affirms, 'Tourism allows us to host manuhiri [visitors], reconnect with ngā awa [rivers], ngā maunga [mountains] and te moana [the sea], and provide lasting memories for our customers'.

NTT is one of the country's largest Māori-owned tourism businesses and operates a number of well-known tourist attractions and activities. On the West Coast, they operate Franz Josef Glacier Guides and Franz Josef Glacier Hot Pools (Ngāi Tahu Tourism 2023). NTT is committed to long-term investment in the tourism sector and acknowledges its crucial role in protecting the environment for future generations. While not all Māori-led tourism businesses on the West Coast are affiliated with the Ngāi Tahu tribe/iwi, they still play a role in promoting climate change adaptation practices through their inherent genealogy/whakapapa links to the environment.

Ngāi Tahu are cognisant of the risk that climate change poses to their takiwā [territory or region] and to their businesses, including those operated by NTT. In 2018, the iwi launched their climate change strategy (Te Rūnanga o Ngāi Tahu 2018), under which all Ngāi Tahu entities must operate. This strategy has 6 guiding values that help address the risks and opportunities arising from climate change (Arnt 2024; Tumahai 2024). These values are:

- Whanaungatanga (fostering and maintaining relationships in the iwi, community and organisation)
- Manaakitanga (paying respect to each other, to iwi members and to all others. expertise)
- Tohungatanga (expertise through pursuit of knowledge and ideas to strengthen the iwi and community)
- Kaitiakitanga (active stewardship to protect the people, environment, knowledge, culture, language and resources important to Ngāi Tahu for future generations)
- Tikanga (ensuring appropriate action in line with the values of Ngāi Tahu)
- Rangatiratanga (leading with integrity and ethical behaviour in all actions and decisions taken) (Te Rūnanga o Ngāi Tahu 1997).

This paper reports on a study that explored how Māori-led tourism businesses (MLTBs) are experiencing and adapting to the effects of climate change in Te Tai Poutini Westland and the wider West Coast area in Te Wai Pounamu the South Island of Aotearoa New Zealand. At the core of the research is the proposition that providing an indigenous cultural lens to the issue of climate change adaptation will inform strategic discussions of tourism operators, managers and regional stakeholders about how climate change adaptation can be planned in a way to take account of Te Ao Māori perspectives. With climate change projected to intensify hazard events in the region as they compound and cascade (Department of Conservation 2020; Steiger et al. 2022), there is a need for clear adaptation strategies for the tourism industry.

The paper begins with a brief literature review that provides the context for this study and summarises recent research assessing the effects of climate change on tourism. This includes mitigation and adaptation strategies being implemented in tourism businesses and destinations around the world. The role that indigenous values and indigenous-led businesses can have in this process is also presented. An overview of the study methods, including the methodological approach taken and data gathering and analysis processes is provided and findings are outlined. The paper concludes with a discussion of the implications of these findings and outlines directions for future research.

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Climate change and indigenous-led tourism

The effects of climate change on picturesque natural landscapes have the potential to be disastrous for the tourism sector. As Gössling and Scott (2024, p.1) stated, 'Climate change is no longer in the future, it is an evolving business and policy reality for tourism'. To date, the response of most tourism business managers in Aotearoa New Zealand has been reactive; coping spontaneously with natural hazard events rather than pro-actively planning for them and being confident in their resilience and ability to cope with any eventuality (Espiner and Becken 2014; Orchiston 2013). This has resulted in the constant need for repair and maintenance of infrastructure damaged by extreme weather events in tourism destinations (Becken 2013; Munshi et al. 2024; Lawrence et al. 2023).

Debates about the need for a tourism 'reset' have been a common theme in both the scholarly literature and the popular press (Carr 2020; loannides and Gyimóthy 2020; Sigala 2020). With the prospect of more severe and continuing extreme weather events, there is a demand for climate change adaptation measures in the tourism sector (e.g. Dube et al. 2022; Scott and Gössling 2022; Wolf et al. 2021:). However, as Becken et al. (2020, p.1603) demonstrated in their analysis of 101 policy documents representing 61 countries over 17 years, 'only 37 documents covered the tourism-climate nexus substantially, suggesting climate change has not yet become a priority for tourism policy makers'. This analysis found a 'lack of explicit tourism and climate change adaptation policies' (p.1603). In Aotearoa New Zealand, the country's first national adaptation plan was released in 2022. This plan acknowledges that climate change will impact on the tourism industry in various ways and also highlights the possibility of new tourism offerings (New Zealand Government 2022). The tourism industry is also looking to change, with Tourism Industry Aotearoa (2024, p.4) (TIA) 'Tourism 2050 – a Blueprint for Impact' strategy document released addressing climate change mitigation and adaptation options (see also The Aotearoa Circle 2023).

The scholarly literature increasingly suggests the need to learn from Indigenous perspectives as the tourism industry resets for a changing climate (e.g. Hutchison et al. 2021; Mbah et al. 2021; Vogel et al. 2022). Indigenous worldviews are frequently woven into climate change adaptation planning, acknowledging that Indigenous peoples' connections to the environment is entwined into their culture, way of life and values (e.g. Scheyvens et al. 2021; United Nations 2023). Many Māori view the world as most Indigenous cultures view the world—through a long-established cultural knowledge system that encompasses comprehension of everything visible and invisible existing in the world, from past to present (Hikuroa 2017). Māori-led tourism businesses offer an avenue to reconnect with cultural traditions, protect natural resources through a mātauranga Māori worldview and provide employment for whānau (Matunga et al. 2020). Literature indicates that MLTBs embed Māori values in their practices, which aims to protect and improve tourism offerings while remaining connected to whakapapa and respecting and protecting te taiao (Kenney et al. 2023; McIntosh 2004; Ringham et al. 2016; Salmond 2012). Having Māori values underpinning MLTB planning should guide climate change adaptation responses and other sustainable business practices (Harmsworth 2009) and, arguably, a greater recognition and inclusion of Māori cultural values within the tourism industry will benefit indigenous-led tourism and the tourism industry (Arnt 2024).

Methods

With the approval of Lincoln University Human Ethics Committee HEC2023-35, this research consisted of semi-structured interviews with 13 key informants. These included 7 informants recruited from 3 MLTBs and 6 informants recruited from the wider tourism sector of the region and Aotearoa New Zealand including iwi, local government and charitable trust representatives. Five of the 7 informants from MLTBs were Māori as were half the tourism stakeholders interviewed.

The majority of interviews were conducted face-to-face at an agreed location with online or phone interviews conducted when face-to-face interviews were not possible. Each interview varied in duration, taking from approximately 35 minutes to one hour. The interview guide spanned a range of themes including:

- background information on the participant's connection to the West Coast region, what they valued about the region, what they thought tourism offered the region, if and how Māori values informed day-to-day practices
- any climate change effects in the region that informants had witnessed and awareness of predicted future climate change affects
- effects of climate change on tourism businesses and the destination as a whole, including current and anticipated effects
- response of the tourism sector to climate change, including individual business and collaborative efforts.

Interviews were recorded with the key informant's consent and all participants agreed to interviews being recorded. Each recording was transcribed using Microsoft speech-to-text feature in Word. Each completed Word document was immediately proofread to stay close to the data and any misinterpreted speech-to-text was edited to reflect a precise transcription (Lofland 2006). This manual check ensured that every word spoken by the key informant was correct in the transcription.

All participant names and business names were replaced with a code for the purposes of confidentiality. Tourism-sector key informants were given an A beside their number and Māori-led tourism key informants were assigned a B, to ensure each type of informant could be distinguished during analysis. Data analysis was ongoing and iterative throughout the interview process, beginning during the first interview. Once each transcription was completed, a reflection of the data and key themes emerging were noted in field notes to inform later analysis and interviews with flexibility allowing for further investigation of emerging themes (Lofland 2006). Once all interviews were completed, initial index coding allowed the researcher to synthesise underlying ideas. Data coded similarly from across the interviews was grouped in a table to facilitate the reduction and conceptual refinement stages that followed the index coding (Deterding and Waters 2021). Following this, emerging themes were identified to help refine the final analysis. Some of the key findings are presented.

Findings

Key findings from this research are presented in 3 sections. First, informants' viewpoints regarding the Māori values supporting MLTB operations are discussed. This is followed by exploring informant perspectives on current and anticipated climate change effects facing the region and the adaptive responses of the MLTBs in Te Tai Poutini, including the way that these values inform climate change adaptation practices. The section concludes with a discussion of how the values of the MLTBs are driving climate change adaptation planning and actions.

Māori values underpinning MLTBs

The literature shows that Māori-led businesses commonly embrace multiple values for sustainable business practices (Harmsworth 2009, p.97). However, whakapapa [geneaology] is central to a Māori worldview and signifies interconnectedness in te ao [the world] (Salmond 2012; Kenney et al. 2023). In particular, all creation links to Māori through their tūpuna (Roberts 2013). The viewpoints of informants in this study supported the literature, revealing that this inherent connection to the environment through whakapapa guides daily and future business directions. Most informants talked about their personal connection to the whenua [land], which drives their business operation. This perspective was acknowledged by a MLTB owner:

> *We're not a money-making business; we're a family business…We definitely don't focus on trying to make money, which is probably why we don't have any money. Our conservation values are more important than our money values.*
> (#4B)

Kaimahi [employees] of these businesses tend to share the MLTB philosophies, as a MLTB manager said:

> *…we're lucky. The people that work within this business are so connected and passionate about the whenua. They have this strong connection [so] that everyone wants to play their part.*
> (#7B)

This perspective is supported by the observation of a non-Māori glacier guide working for a MLTB business:

> *[I] can see particular values coming out in the way that [new staff] get introduced to what this job is, and what the company is about, and that's not about making [money].*
> (#8B2)

The value of kaitiakitanga [stewardship] was mentioned regularly when discussing caring for the environment. A MLTB general manager explained how their business plans:

> *…need to not just answer the 'Oh, why can't we deliver our mahi [work] because of weather impacts?', but actually, what is our footprint on what we are doing, and what are we doing to reduce it?*
> (#10B)

A glacier guide agreed that 'having a business operating with a principle of kaitiakitanga as a foundation is very different, for example, than other businesses in town that have different priorities on paper'. Glacier guides talked about how their jobs include the act of showing manaakitanga [respectful hospitality] to guests, which also meant 'educat[ing] them about appropriate use of the land' (#8B1). A strategy advisor confirmed that 'the value of manaakitanga is embedded through Māori owned businesses; it's just part of what they do' (#9A). Manaakitanga helps build a sense of pride in te taiao and te whenua, which sets the scene for kaitiakitanga (Munshi et al. 2024; Moore 2022).

Whanaungatanga, or relationship building, is a value underpinning all the strategies of Ngāi Tahu, and this is apparent in its tourism operations and in the operations of other MLTBs. As a general manager explained:

> *We've got a strong relationship with Tourism New Zealand. We work with MBIE [Ministry of Business, Innovation & Employment]…. Local relationships, whanaungatanga, on the ground with DOC, emergency response and with sustainability groups is key because they know what is happening on the ground.*
> (#10B)

Practising whanaungatanga can also present a challenge. As a tourism business advisor noted, 'it takes time to get those relationships and again, you know, everywhere you go, there's good apples and there's bad apples' (#10B).

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Taking an intergenerational lens in planning meant these businesses put whānau [family], kaimahi [employees], manuhiri [visitors] and te taiao [the environment] rather than money at the forefront of everything they do. A Ngāi Tahu o Te Rūnanga kaimahi describes Te Ao Māori as:

> *Being a good ancestor, for our mokopuna, for their mokopuna… obviously those principles of stewardship/ kaitiakitanga and hospitality/manaakitanga are all woven through our climate change strategy.*
> (#9A)

In the words of the iwi: 'What is good for Ngāi Tahu is good for Aotearoa' (Te Rūnanga o Ngāi Tahu 2018, p.3). However, some informants saw tensions between the Māori values underpinning a tourism business and how they were actioned in day-to-day operations. A MLTB general manager wondered if the kaimahi on the ground always understood the values that drive their everyday actions, particularly related to sustainability actions. They added that they hoped these messages were flowing down, but did not think the business was 'quite there yet' (#9A).

Experiences of climate change in the current climate

Informants agreed that the effects of climate change were already being experienced in Aotearoa New Zealand, including on the West Coast, with one local tourism informant concluding:

> *I would almost say that there isn't a tourism business which isn't affected by climate change in the region already…. There will certainly be some that have been affected more than others.*
> *(#7B)*

This manager agreed that tourism businesses were affected by changing weather patterns, which were influencing 'the ability to operate' (#7B). Other informants discussed specific events, such as the 2019 storm that destroyed the Waiho Bridge in Franz Josef that created devastating consequences for local businesses (see Somerfield 2020). A MLTB manager who witnessed the bridge collapse recalled:

> *It was a surreal feeling. We stood down there and watched it happen. It was unbelievable. There was a lot of confusion at the time, a lot of questions and you do feel like you're the end of the road essentially, there is that real isolation. I had whānau just on the other side that I'm really close with. That was challenging, because you're so close, but you can't make that connection.*
> (#7B)

Most informants acknowledged that road closures and damage from extreme weather events had been occurring for some time but these events were intensifying and happening more frequently. As one informant said, 'we are getting more extreme weather events. We are going to get more roads getting washed out, and I think it is clearly linked with climate change' (#2A). They were able to identify particularly vulnerable parts of the road network due either to landslip risk or coastal inundation. Efforts were already underway to mitigate the latter with a sea wall built alongside the main highway in Bruce Bay.

Official predictions of climate change effects in the case study area are for increased frequencies of heavy rainfall, which in turn jeopardises vital infrastructure such as access to Te Tai Poutini via the road (Ministry for the Environment 2024; Te Tai o Poutini Plan 2024). There is already a level of apprehension among tourists visiting Te Tai Poutini region about the vulnerability of the infrastructure network during and after weather events (Cui et al. 2023). Informants made numerous references to visitor apprehension with statements such as 'people are avoiding coming here because of the big storms, and because of how long it takes for them to open the roads' (#4B), 'people are wary of being stuck on the coast' (#9A) and 'it totally affects [visitor] plans' (#12B). Not knowing when or if the roads will be reopened after each storm event makes it difficult to plan a trip to Te Tai Poutini.

The effects of climate change are affecting visitor experiences in other ways, particularly around accessing the region's glaciers on foot or by road. The Fox Glacier Valley access road has been washed out and rebuilt so frequently in recent years that the Department of Conservation made a decision in 2019 that the road would no longer be maintained (Department of Conservation 2020). A local department representative confirmed the issue saying:

> *…the last time that we put the Fox carpark back, a big flood wiped everything out, and it all got put back. That cost just a bit over a million dollars to do.*
> (#6A)

The department representative adding that to reinstate the road again in 2019 'was going to cost way more than that and that's why we pulled out of the Fox [Glacier]' (#6A). The representative felt there was a degree of denial among some locals about this future reality in the region:

> *If you wander out (to the river), you'll see them frantically building stop banks. There seems to be a high level of things staying as they are or were. There's not really a whole lot of acceptance I guess that things are changing necessarily, but I think people are kind of hoping that things don't change too much.*
> (#6A)

A local Westland District Council representative suggested that eventually 'neither of the glacier roads will be reinstated' due to the colossal cost, adding that the 'rivers are wanting to break out of channels where man-made channels have been made' (#1A). This was confirmed by

The Waiho Bridge collapsed in 2019 severing the only road access south of Franz Josef Glacier in the South Island.

Image: Waiho Bridge, (Photo by Abby Hamilton, 11 October 2023)

the department representative who said, 'if the road [to Franz Josef] goes again, we might not be putting it back, or it might be the last time we put it back, because it's really expensive'
(#1A).

Climate change effects on the glaciers was frequently discussed in interviews. Most informants had personally witnessed the 'massive retreat in the glaciers' (#4B). A MLTB manager and lifelong resident of Te Tai Poutini stated that it was 'the end of an era when you finally couldn't walk on the glacier in 2012' (#7B). A local Department of Conservation representative described their 20-year experience in the region and pointed out:

> *…anyone who has lived here, no matter how long, overall, the glaciers [Franz Josef and Fox] have been going backwards, so no one can say they didn't know. The glaciers aren't coming back anytime soon.*
> (#6A)

Informants acknowledged that the recession of the glaciers has created 'issues catering for people wanting to get close to the glaciers now' (#6A). In response to this, helicopters were used to access the glaciers (Strong et al. 2023) but even that was increasingly difficult, as a local department representative explained, 'it is an issue over summer for helis [helicopters] to find somewhere to land. They have to go higher and higher to find safe places' (#6A). The majority of informants had an opinion on the maladaptive practice of using helicopters to get visitors onto the glacier. With further retreat of the glaciers predicted (Anderson et al. 2021), continuing helicopter flights onto the glaciers is a controversial subject.

Most informants discussed the risk 'that people just stop coming because they can't see the glaciers anymore' (#2A). Ten years ago, Wilson et al. (2014, p.67) revealed that nearly half (45.6%) of all respondents in their study said they would 'definitely not' visit the region if there was a possibility that they would not see Franz Josef Glacier. A local Māori government representative suggested that there:

> *Needs to be foresight; not 'What do we do with what we've got now? or 'What do we do after? What does the West Coast or what does Franz Josef look like in 5 years' time?' … because otherwise you start packing up the bags now and retreat, retreat somewhere else and it will just become a ghost road.*
> (#1A)

Results highlight that many key informants referred to repercussions of extreme weather events including landslips and major damage to infrastructure as the major consequence of climate change experienced in the region.

The next section explores adaptation actions underway and, in particular, the role of Māori values in planning and decision-making.

Adaptation actions through a Te Ao Māori lens

Key informants indicated that being in a continual reactive state, responding to climate change in the region, particularly regarding road access and vulnerable road infrastructure, was now very much 'business as usual'. Informants recognised that delays to reopening main road networks had devastating local consequences and, unsurprisingly, hardening the transport network infrastructure was regarded as a top priority. But they also recognised as a challenge:

> *Building resilience is difficult in the region due to the key transport networks being quite limited, even though the infrastructure has such a role in bringing people to the place. If they're wiped out, it's devastating for tourism operators.*
> (#9A)

Other efforts towards adapting to climate changes were identified by the key informants. These included the need to identify the most obvious and immediate adaptation measures, diversify the tourism product, encourage a longer-length of stay and develop grassroots regenerative tourism opportunities (including pest control).

In line with the Tourism Industry Aotearoa (2024) Blueprint for the Future, informants saw an important first step in addressing these challenges was to reduce carbon emissions (see Fountain 2024). One MLTB general manager described this as a matter of 'identify[ing] the low-hanging fruit', which included:

> *…electrification of all vehicle fleets, solar infrastructure, set targets for tree plantings and waste and water reviews conducted in their businesses to gauge how to remove and reduce use.*
> (#10B)

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According to this informant, such actions would 'basically give your business a license to… [currently, in good conscience]… operate in the changing environment'. Such action aligns with the climate change strategy of Ngāi Tahu (Te Rūnanga o Ngāi Tahu 2018) and would be visible to the visitor:

> *[When] someone walks in … [they] can see at the very least that there are 5 initiatives right then and there, and we're actually doing what we're saying. At every touch point of the visitor's/manuhiri's experience, there needs to be something.*
> (#10B)

This informant also stressed that it needed to be a wider iwi effort, which builds whanauanatanga between businesses and connects beyond the region to the iwi to support each other's learning.

The issue of electrification of vehicles to move kaimahi and manuhiri around the region was a contentious topic for informants. They agreed on the need to find ways to reduce the carbon emissions resulting from tourism, but the region's isolation made this difficult. As an informant with a fully electric vehicle explained:

> *I cannot get to the West Coast from Queenstown/ Tāhuna. Not only are there permanent road closures, but the ability to electrify and drive electric vehicles does not exist. It's really bad and what ends up happening is if you do care about the environment and you're in an electric rental, you won't go to the West Coast.*
> (#10B)

Electrification plans are developing in a context of increasing reliance on helicopters for visitors to see the glaciers. As a local researcher debated:

> *…at what point do you say, 'Well, you know, we're emitting a huge amount of greenhouse emissions to get these people up to the glaciers' or 'We're having a physical impact on the park'.*
> (#2A)

One MLTB operating heli-hiking tours onto the glacier is planning to reduce the number of helicopter flights from 300 to 50 landings a day. They said 'we have an actual reduction plan with 3 key tiers to assess where we will be and where we are going' (#10B). Whether this is enough is open to question. It could be argued that short-term economic gain outweighs long-term climate change adaptation planning and that this strategy is an example of maladaptation (Schipper 2020).

The need to diversify tourism offerings in the region was discussed by most informants who felt that the area would continue to attract visitors due to the scenic beauty of the region. This supports other research (e.g. Strong et al. 2023). As one informant commented, 'there's not many places more beautiful than the West Coast' (#5A) and an MLTB owner suggested that there is an 'opportunity of being able to focus more on nature' (#4B). There was a sense that 'there is more diversity in what tourism businesses offer than 20 years ago' (#2A) and there had also been 'a conscious shift away from only promoting things that are glacier-oriented' (#2A). However, a local researcher acknowledged:

> *…it's a hard conversation to have, when … the whole area has been built around the glaciers…. All of a sudden, you're being told, well actually, possibly your business isn't going to viable for too much longer.*
> (#2A)

Name changes for the region was an important issue for some informants as the current label of 'Glacier Country' did not support the broader appeal of the region. Some informants felt that a change in name presented an opportunity to use the te reo Māori names of the region to recognise 'the place of Māori, the place of Ngāi Tahu' (#9A) in the region. Some informants also felt that the time was right to develop cultural attractions and activities to share Indigenous practices and to tell indigenous stories. A strategy adviser acknowledged that Māori culture is:

> *Increasingly recognised by domestic tourists and by international tourists. I think there's going to be a high level of interest in Māori-led tourism, because of the authenticity… Local MLTBs [have the] opportunity to share our stories, our culture, our way of living, our history, and what's important to us, and I think people want to hear those stories.*
> (#9A)

A Māori hospitality worker in Franz Josef township commented that they 'would like to see more Māori businesses' (#11B) in the area. There is evidence of diversification of tourism options, including indigenous tourism. The Pounamu Pathways experience in Māwhera Greymouth and the Te Kopikopiko o Te Waka installation at the Tohu Whenua cultural heritage site at Fox Glacier are examples of this. These cultural installations are expected to attract visitors and encourage longer stays in the region (Department of Conservation 2022; Glacier Country Tourism Group 2024; Pounamu Pathway Untamed Natural Wilderness 2023).

Most informants discussed opportunities to work together and build whanaungatanga [relationships] to encourage visitors to stay longer. The literature argues that longer-length-of-stay is a key criterion to address responsible travel issues in the tourism industry and supports the United Nations Sustainable Development Goals (e.g. Gössling et al. 2018). A Westland District Council representative suggested 'bringing together collective action' to pursue the opportunity to '[create] enough attraction for people to stay one or 2 nights', while working together on 'how to move forward to a world

without glaciers' (#1A). A Department of Conservation representative agreed:

> *If you can get tourists to see this area as more than just the glaciers, you can get people to stay longer, even if it's only 2 nights instead of one night. It's one night longer. There is definitely economic opportunity there, if people can grasp that and see that as an opportunity rather than as a problem.*
> (#6A)

This also aligns with authentic indigenous tourism experiences, as a MLTB general manager explained:

> *We know that we need a bigger window for visitors/ manuhiri to see the region because it's a great place to visit, and that inevitably means more in the economy. But it also means a more richness of knowledge about the area, and really getting behind the scenes to get to know the people, and the place that you're visiting, versus the quick in and out.*
> (#10B)

While recognising the cultural, environmental and economic value NTT brought to Te Tai Poutini, key informants also saw scope for grassroots regenerative tourism opportunities that are 'eco-tour conservation oriented, including hunting tours in terms of sharing pest management strategies and survival strategies in the bush' (#1A). This informant acknowledged that the region currently had too much focus 'on the big-ticket stuff' before suggesting:

> *NTT is not actually coming down to grassroots level and saying, 'Hey, let's start down here…how can we prop up our people?' because people might come to the little ventures and discover the big-ticket items.*
> (#1A)

Associated with the drive for regenerative tourism opportunities is a desire to find ways for tourists to restore the environment with tree planting and predator-control activities. Most MLTBs are already undertaking such actions as part of the Predator Free South Westland project that is in its fourth year of a 5-year plan (Predator Free South Westland 2024). Such projects require collaborative efforts to make change happen (Peters et al. 2015) and evidence suggests these collaborative relationships are in place. For example, a MLTB manager discussed how they are working with the agricultural sector to plant native trees on unused farmland, saying, 'by bringing the tourism industry and the agricultural industry together, collectively we can make some big changes' (#7B) to adapt to climate change. Their MLTB is also looking for a community site on which to plant trees and 'tell the story [of climate change adaptation, which] people can go and visit, and that's something very visual' (#7B). Kaimahi employees of this business are involved with the planting projects as team-building exercises or when their usual tasks are put on hold due to weather-related events. Other MLTBs were initiating tree-planting ventures. One MLTB owner outlined how:

> *…we're moving more into getting our clients to plant trees, getting involved in the trapping [of pests]. They're able to put money into places to offset their carbon and stuff like that.*
> (#4B)

The global pandemic intensified recognition of the importance of balance between human activity and te taiao (Carr 2020). A local Māori tourism kaimahi observed that during the lockdown 'Papatūānuku [earth mother] was breathing again. Mountains became visible, and animals were seen' (#12B). Another young local Māori remarked, 'Did you see how good the planet was when everyone was in the COVID-19 lockdown?… We need to take action now, because we're the problem' (#13B). The need for balance and the experience of border closures during COVID-19 meant some informants were opposed to tourism numbers rising too much, as a MLTB owner explained:

> *We don't need mass tourism. It was quite nice to have the tourism numbers knocked back again. It made a big difference for people's attitudes. People are a lot nicer to tourists now, so there's definitely a balance between enough tourists to survive and to keep people in communities like this going…especially when you've got community people that are very focused on saving it, and keeping the environment cared for.*
> (#4B)

Informants agreed that to date, Māori values have not been appropriately considered in regional or central government environmental planning. As an example, a Pākehā (European) scientist highlighted the tension between the concept of 'conservation estate' and Indigenous values, noting that:

> *…the idea of National Parks could be an anathema to Māori …because it's putting things in a box over there, and with these sort of cultural values enshrined in the National Parks Act which aren't Māori values.*
> (#2A)

Despite previous lack of recognition of Māori values within the government sector, some informants felt that this was changing in the environmental sphere. A local MLTB owner acknowledged that Māori values are 'definitely having influence in big decisions in parliament, which is good, and a lot of it is around protecting nature, and protecting the environment' (#4B). However, a strategy advisor pointed out barriers to implementation of a Māori worldview within government-led strategies, saying, 'It's one of those things where the 3-year parliamentary cycle is a real impediment to affecting intergenerational change'

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and argued for 'our own [iwi] driven climate strategies or climate policy responses' (#9A).

This research identified awareness of a Māori worldview, at least among some Māori informants. As a MLTB employee said:

> *I think it's because the way that you view [the environment] from a Māori point of view is, it's not really like the planet we need to look after, this is Papatūānuku [earth mother]. We've personified the way that we see all things, so when you put that mind-set into it it's like, man, would you throw rubbish onto Papatūānuku?... Respecting the planet like it is a human...It's quite an emotional connection I'd say...a spiritual connection...I feel like it's not only just a Māori worldview, it's indigenous, because man, there are so many cultures that have the exact same perspective, not just Māori.* (#13B)

Some non-Māori informants were unsure how to discuss Māori values but further elaboration showed that their values around environmental guardianship were closely aligned. A non-Māori informant articulated this perspective:

> *I know that my personal values align in many ways [with Māori values], but I'm also not tāngata whenua, let alone mana whenua. We talk about manaakitanga, kaitiakitanga and I think we all practice it, without necessarily having all of the language to articulate it.* (#8B2)

Most key informants used the words 'kaitiakitanga' and 'manaakitanga' to describe Māori values. As one non-Māori said:

> *I'm Tāngata Tiriti [Person of the Treaty (of Waitangi)] myself ... so I'm sort of coming in as an interloper... I'm not quite able to speak to the Te Ao Māori worldview, but I think that the guiding whakataukī [proverb] of te rūnunga is 'Mō tātou, ā, mō kā uri ā muri ake nei – for us and our children after us', and then obviously those principles of kaitiakitanga and manaakitanga.* (#9A)

Māori and non-Māori informants agreed that recognition and visibility of Māori values had significantly increased in the past 2 decades. One non-Māori recalled that there was no cultural experience when visiting the glaciers 20 years ago. There are a range of explanations of this shift, including the growth of NTT and a greater awareness and interest among Māori in their whakapapa [genealogy], which has also increased the interest of non-Māori, for example, 'They want to know about Māori history, they're interested. You've got a lot of them that want to talk te reo' (#11B). But there was another viewpoint expressed by a non-Māori informant on a conservation board:

> *There's a real fear out there of Pākehā losing control of conservation, and we just have to let go of that fear. We have to accept that actually, Māori ran this place pretty well for hundreds of years before we turned up, and we've just pretended that knowledge doesn't exist, and we've stuffed it up. There is a real fear there, right and from that fear comes, comes a backlash.* (#2A)

A young Māori working with their iwi's tourism businesses alluded to the change among Māori of their generation who are embracing their Māori worldview in the face of climate change:

> *I think the generation before me and the generation before that was obviously quite colonised, so my grandparents had, how do you say it, quite a colonised way of thinking about things and the environment and how to look after the planet pretty much. Whereas now, all of those [traditional Indigenous] teachings are starting to come back into the new generations, and with that is how to look after the planet. And yeah, and how we do that with a Māori point of view, an Indigenous point of view.* (#13B)

It is clear from the findings that informants acknowledge the consequences of climate change for Te Tai Poutini and the consequences for tourism businesses manifesting around disruption to road networks and infrastructure and to the retreat of the region's glaciers. Despite Māori values being insufficiently integrated into environmental planning at both the regional and central government levels in the past, the informants indicated that considering future adaptation options in light of key Māori values, including Kaitiakitanga [guardianship or stewardship], Manaakitanga [hospitality] and Whangaungatanga [relationships] is central to addressing these complex issues.

Conclusion

The findings of this research align with scholarly literature showing that a whakapapa-based intergenerational path to climate change adaptation and resilience exists within a Māori worldview (Kenney et al. 2023; Mason et al. 2021). The importance of striking a balance in climate change adaptation efforts for MLTBs in the region cannot be overstated. It is crucial to prioritise actions that promote sustainable tourism practices and enhance the environment rather than cause harm (Carr 2020). Achieving a balance between tourism development and environmental protection is essential for the long-term sustainability of MLTBs and socio-economic stability in the region (Lawson et al. 2021). By adopting practices that prioritise sustainability, regeneration, cultural integrity and environmental stewardship/kaitiakitanga, MLTBs can contribute to the preservation and enhancement of the region's natural and cultural heritage and support their

local communities while offering meaningful and authentic experiences to visitors/manuhiri. In the context of climate change adaptation, Māori values can guide MLTBs to implement practices that minimise environmental damage, promote community engagement and collaboration and foster long-term resilience to changing environmental conditions. By aligning business operations with these values, MLTBs can contribute to the preservation of cultural heritage and the protection of natural ecosystems.

As this research showed, embedding a Māori worldview within tourism operations in Te Tai Poutini is not without challenges. Similarly, challenges exist in integrating Indigenous perspectives into mainstream policy frameworks, including climate change policy (Johnson et al. 2022). To overcome these challenges, there is a need to advocate for inclusive approaches that recognise the diversity of Māori perspectives and worldviews, rather than applying a one-size-fits-all approach. As Cradock-Henry et al. (2021, p.1–5) suggest, 'industry-specific, locally based options and pathways to support adaptation are needed'. This means prioritising the voices and leadership of specific iwi as mana whenua. By empowering iwi and fostering genuine partnerships [whānaungatanga] between Indigenous communities and government agencies, it becomes possible to create culturally responsive and effective climate change strategies that reflect the values and aspirations of all stakeholders involved. By acknowledging Māori leadership in tourism development and climate change action, the government not only validates the contributions of Indigenous peoples but also signals a commitment to meaningful partnership and collaboration. This recognition can pave the way for inclusive and effective climate change policies and initiatives that draw on the strengths and insights of Māori communities.

References

Anderson B, Mackintosh A, Dadić R, Oerlemans J, Zammit C, Doughty A, Sood A and Mullan B (2021) 'Modelled response of debris-covered and lake-calving glaciers to climate change, Kā Tiritiri o te Moana/Southern Alps, New Zealand', *Global and Planetary Change,* 205:103593.

Arnt TAJ (2024) 'Asserting rangatiratanga and kaitiakitanga in response to colonialism, capitalism, and climate change: the case of Ngāi Tahu', Thesis/Dissertation, University of British Columbia website https://open.library.ubc.ca/soa/cIRcle/collections/ubctheses/24/items/1.0442048, accessed 4 February 2024.

Becken S, Whittlesea E, Loehr J and Scott D (2020) 'Tourism and climate change: Evaluating the extent of policy integration', *Journal of Sustainable Tourism,* 28(10):160–1624. https://doi.org/10.1080/09669582.2020.1745217

Becken S (2013) 'Developing a Framework for Assessing Resilience of Tourism Sub-Systems to Climatic Factors', *Annals of Tourism Research,* 43:506–528. https://doi.org/10.1016/j.annals.2013.06.002

Carr A (2020) 'COVID-19, indigenous peoples and tourism: a view from New Zealand', *Tourism Geographies,* 22(3):491–502. https://doi.org/10.1080/14616688.2020.1768433

Cradock-Henry NA, Diprose G and Frame B (2021) 'Towards local-parallel scenarios for climate change impacts, adaptation and vulnerability', *Climate Risk Management,* 34:100372.

Cui A, Fountain J and Espiner S (2023) 'Communicating natural hazard risks to Chinese visitors: a case study from New Zealand', *Frontiers in Sustainable Tourism,* 2, 1192124. http://dx.doi.org/10.1016/j.crm.2021.100372

Department of Conservation Te Papa Atawhai (2023a) Historic Westland Tai Poutini. Department of Conservation Te Papa Atawhai website www.doc.govt.nz/parks-and-recreation/places-to-go/west-coast/places/westland-tai-poutini-national-park/historic-westland-tai-poutini/, accessed 9 May 2023.

Department of Conservation Te Papa Atawhai (2023b) Westland Tai Poutini National Park - Getting There. Department of Conservation Te Papa Atawhai website www.doc.govt.nz/parks-and-recreation/places-to-go/west-coast/places/westland-tai-poutini-national-park/?tab-id=50578, accessed 8 May 2023.

Department of Conservation (9 December 2022) West Coast unveils spectacular new cultural heritage attraction. Department of Conservation Te Papa Atawhai website www.doc.govt.nz/news/media-releases/2022-media-releases/west-coast-unveils-spectacular-new-cultural-heritage-attraction/, accessed 9 January 2023.

Department of Conservation Te Papa Atawhai (2020) Department of Conservation climate change adaptation action plan Te Papa Atawhai he whakamahere hātepe urutau mō te huringa huarangi - 2020/2021 - 2024/2025. Department of Conservation Te Papa Atawhai website www.doc.govt.nz/our-work/climate-change-and-conservation/adapting-to-climate-change/, accessed 28 June 2024.

Deterding NM and Waters MC (2021) 'Flexible Coding of In-depth Interviews: A Twenty-first-century Approach', *Sociological Methods and Research,* 50(2):708–739. https://doi.org/10.1177/0049124118799377

Dube K, Nhamo G and Chikodzi D (2022) 'Climate change-induced droughts and tourism: Impacts and responses of Western Cape province, South Africa', *Journal of Outdoor Recreation and Tourism,* 39:100319. https://doi.org/10.1016/j.jort.2020.100319

 © 2025 Australian Institute for Disaster Resilience

Espiner S and Becken S (2014) 'Tourist towns on the edge: Conceptualising vulnerability and resilience in a protected area tourism system', *Journal of Sustainable Tourism,* 22(4):646–665. https://doi.org/10.1080/09669582.2013.855222

Fountain J (2024) 'Preparing for climate change risks in the destination management plans of Regional Tourism Organisations in Aotearoa New Zealand'. Paper presented at CAUTHE 2024: Diversity voices: Creating change in tourism, hospitality and events, 7–9 February, Hobart, Tasmania.

Glacier Country Tourism Group (2024) Walking and hiking Fox Glacier viewpoint / Te Kopikopiko o te Waka. Glacier Country website www.glaciercountry.co.nz/gct_walks/peak-view-lookout-fox-glacier/, accessed 12 February 2024.

Gössling S and Scott D (2024) 'Climate change and tourism geographies', *Tourism Geographies,* 1–11. https://doi.org/10.1080/14616688.2024.2332359

Gössling S, Scott D and Hall CM (2018) 'Global trends in length of stay: implications for destination management and climate change', *Journal of Sustainable Tourism,* 26(12):2087–2101. https://doi.org/10.1080/09669582.2018.1529771

Harmsworth G (2009) 'Sustainability and Māori business', in Frame R., Gordon R., Mortimer C eds *Hatched: the capacity for sustainable development,* Chapter 10:95–108.

Heard G (2019) *Waiho Bridge will take longer to reinstate than first thought – NZTA.* Stuff website www.stuff.co.nz/national/111673913/waiho-bridge-will-take-longer-to-reinstate-than-first-thought--nzta, accessed 26 April 2024.

Hikuroa D (2017) 'Mātauranga Māori—the ūkaipō of knowledge in New Zealand', *Journal of the Royal Society of New Zealand,* 47(1):5–10. https://doi.org/10.1080/03036758.2016.1252407

Hutchison B, Movono A and Scheyvens R (2021) 'Resetting tourism post-COVID-19: why Indigenous Peoples must be central to the conversation', *Tourism Recreation Research,* 46(2):261–275. https://doi.org/10.1080/02508281.2021.1905343

Ioannides D and Gyimóthy S (2020) 'The COVID-19 crisis as an opportunity for escaping the unsustainable global tourism path', *Tourism Geographies,* 22(3):624–632. https://doi.org/10.1080/14616688.2020.1763445

Johnson DE, Parsons M and Fisher K (2022) 'Indigenous climate change adaptation: New directions for emerging scholarship', *Environment and Planning E: Nature and Space,* 5(3):1541–1578. https://doi.org/10.1177/25148486211022450

Kenney C, Phibbs S, Meo-Sewabu L, Awatere S, McCarthy M, Kaiser L, Harmsworth G. Harcourt N, Taylor L. and Douglas N (2023) 'Indigenous approaches to disaster risk reduction, community sustainability and climate change resilience', in Eslamian, S., & Eslamian, F. (Eds.). *Disaster risk reduction for resilience: Climate change and disaster risk adaptation* (pp.37–59). Springer.

Lawrence J, Wreford A, Blackett P, Hall D, Woodward A, Awatere S, Fountain J, Costello MJ, Ausseil A-GE, Watt MS, Dean SM, Cradock-Henry NA, Zammit C and Milfont TL (2023) 'Climate change adaptation through an integrative lens in Aotearoa New Zealand', *Journal of the Royal Society of New Zealand,* 54(4). https://doi.org/10.1080/03036758.2023.2236033

Lawson G, Dean D. He Y and Huang X (2021) 'Motivations and satisfaction of New Zealand domestic tourists to inform landscape design in a nature-based setting', *Sustainability,* 13(22):12415. https://doi.org/10.3390/su132212415

Lofland J (2006) *Analyzing social settings: a guide to qualitative observation and analysis* (4th ed. ed.). Wadsworth/Thomson Learning.

Mason K, Lindberg K, Haenfling C, Schori A, Marsters H, Read D and Borman B (2021) 'Social vulnerability indicators for flooding in Aotearoa New Zealand', *International Journal of Environmental Research and Public Health,* 18(8):3952.

Matunga H, Matunga HP and Urlich S (2020) From exploitative to regenerative tourism: Tino Rangatiratanga and tourism in Aotearoa New Zealand.

Mbah M, Ajaps S and Molthan-Hill P (2021) 'A systematic review of the deployment of indigenous knowledge systems towards climate change adaptation in developing world contexts: implications for climate change education', *Sustainability,* 13(9):4811.

McIntosh AJ (2004) 'Tourists' appreciation of Maori culture in New Zealand', *Tourism Management,* 25(1):1–15. https://doi.org/10.1016/S0261-5177(03)00058-X

Ministry for the Environment (2024) Tourism scenarios. Ministry for the Environment website https://environment.govt.nz/what-you-can-do/climate-scenarios-toolkit/climate-scenarios-list/tourism-climate-change-scenarios/, accessed 14 May 2024.

Moore R (2022) *Whakaoranga taiao, whakaoranga tangata: The restorative, healing, and decolonising potential of environmental restoration.* Doctoral dissertation, The University of Waikato. https://hdl.handle.net/10289/15325

Munshi D, Kurian P, Morrison S, Kathlene L and Cretney R (2024) *Centring Culture in Public Engagement on Climate Change Adaptation: Re-shaping the Future of the NZ Tourism Sector.* NIWA-hosted NSCs: Deep South and Sustainable Seas National Science Challenges. https://doi.org/10.60919/niwa.26011159

New Zealand Government (2001) New Zealand Legislation Te Runanga o Ngai Tahu (Declaration of Membership) Order 2001. Parliamentary Counsel Office website www.legislation.govt.nz/regulation/public/2001/0200/latest/whole.html, accessed 14 December 2023.

New Zealand Government (2022) *Urutau, ka taurikura: Kia tū pakari a Aotearoa i ngā huringa āhuarangi Adapt and thrive: Building a climate-resilient New Zealand – New Zealand's First National Adaptation Plan.* Ministry of the Environment website https://environment.govt.nz/publications/aotearoa-new-zealands-first-national-adaptation-plan/, accessed 28 June 2024.

Ngāi Tahu Tourism (2023) Ngāi Tahu Tourism. Ngāi Tahu Tourism website www.ngaitahutourism.co.nz/, accessed 18 April 2023.

Orchiston C (2013) 'Tourism business preparedness, resilience and disaster planning in a region of high seismic risk: The case of the Southern Alps, New Zealand', *Current Issues in Tourism,* 16(5), 477–494. https://doi.org/10.1080/13683500.2012.741115

Peters MA, Hamilton D and Eames C (2015) 'Action on the ground: A review of community environmental groups' restoration objectives, activities and partnerships in New Zealand', *New Zealand Journal of Ecology,* 39(2):179–189.

Pounamu Pathway Untamed Natural Wilderness (2023) Welcome to Pounamu Pathway. Pounamu Pathway website www.pounamupathway.com/?gad_source=1, accessed 29 November 2023.

Predator Free South Westland (2024) Predator Free South Westland. Predator Free South Westland website https://predatorfreesouthwestland.nz/, accessed 9 February 2024.

Purdie H, Hutton JH. Stewart E and Espiner S (2020) 'Implications of a changing alpine environment for geotourism: A case study from Aoraki/Mount Cook, New Zealand', *Journal of Outdoor Recreation and Tourism,* 29:100235. https://doi.org/10.1016/j.jort.2019.100235

Ringham S, Simmonds N and Johnston L (2016) 'Māori tourism geographies: Values, morals and diverse economies', *MAI Journal,* 5(2):99–112. https://doi.org/10.20507/MAIJournal.2016.5.2.1

Roberts M (2013) 'Ways of seeing: Whakapapa', *Sites: A Journal of Social Anthropology and Cultural Studies,* 10(1):93–120. https://doi.org/10.11157/sites-vol10iss1id236

Rosselló J, Becken S and Santana-Gallego M (2020) 'The effects of natural disasters on international tourism: A global analysis', *Tourism Management,* 79:104080. https://doi.org/10.1016/j.tourman.2020.104080

Salmond A (2012) 'Back to the future: first encounters in Te Tai Rawhiti', *Journal of the Royal Society of New Zealand,* 42(2):69–77. https://doi.org/10.1080/03036758.2012.675576

Scheyvens R, Carr A. Movono A, Hughes E, Higgins-Desbiolles F and Mika JP (2021) 'Indigenous tourism and the sustainable development goals', *Annals of Tourism Research,* 90:103260. https://doi.org/10.1016/j.annals.2021.103260

Schipper ELF (2020) 'Maladaptation: when adaptation to climate change goes very wrong', *One Earth,* 3(4):409–414.

Scott D and 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.

Sigala M (2020) 'Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research', *Journal of Business Research,* 117:312–321. http://dx.doi.org/10.1016/j.jbusres.2020.06.015

Somerfield EG (2020) *Planning for visitor access: A case study of West Coast glacier country: A dissertation submitted in partial fulfilment of the requirements for the Degree of Master of Planning at Lincoln University.* Master of Planning, Lincoln University.

Stewart EJ, Wilson J, Espiner S, Purdie H. Lemieux C and Dawson J (2016) 'Implications of climate change for glacier tourism', *Tourism Geographies,* 18(4):377–398.

Steiger N, Darelius E, Kimura S, Patmore RD and Wåhlin AK (2022) 'The dynamics of a barotropic current impinging on an ice front', *Journal of Physical Oceanography,* 52(12):2957–2973.

Strong S, Stewart E, Espiner S and Hanly K (2023) 'The Tourism Adaptation Classification (TAC) framework: An application to New Zealand's Glacier country', *Frontiers in Human Dynamics,* 5. http://dx.doi.org/10.3389/fhumd.2023.1130918

Te Rūnanga o Makaawhio (2023) Nau mai, haere mai! Welcome to the official website of Te Rūnanga o Makaawhio. Te Rūnanga o Makaawhio website www.makaawhio.co.nz/, accessed 22 May 2023.

Te Rūnanga o Ngāi Tahu (1997) Ngāi Tahu Values. Te Rūnanga o Ngāi Tahu website https://ngaitahu.iwi.nz/assets/Documents/NgaiTahu-20251.pdf, accessed 22 July 2024.

Te Rūnanga o Ngāi Tahu (2018) *He Rautaki mō te Huringa o te Āhuarangi Climate Change Strategy.* https://ngaitahu.iwi.nz/wp-content/uploads/2018/11/Ngai-Tahu-Climate-Change-Strategy.pdf

The Aotearoa Circle (2023) Tourism Sector Climate Change Scenarios. The Aotearoa Circle website www.theaotearoacircle.nz/reports-resources/tourism-sector-climate-change-scenarios, accessed 28 June 2024.

Tourism Industry Aotearoa (2024) Tourism 2025 and Beyond. Tourism Industry Aotearoa website https://www.tia.org.nz/assets/Infograph/TIA-Tourism-2050-Blueprint-for-Impact-Report_v10_low-res.pdf, accessed 14 May 2024.

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Te Tai o Poutini Plan (2024) Proposed Te Tai o Poutini Plan. Te Tai o Poutini Plan website https://ttpp.nz/, accessed 28 February 2024.

Tumahai L (2022, July) *Ka Roimata o Hine Hukatere.* Te Rūnanga o Ngāi Tahu website https://ngaitahu.iwi.nz/our_stories/ka-roimata-o-hine-hukatere-tk90/, accessed 28 June 2024.

Tumahai L (2024) 'Climate Policy in Jacinda Ardern's New Zealand: A Ngāi Tahu Perspective', Chapter 7, *New Zealand's Foreign Policy under the Jacinda Ardern Government*, pp.139–157. https://doi.org/10.1142/9789811285165_0007

United Nations (2023) Department of Economic and Social Affairs Sustainable Development. The 17 Goals. United Nations website https://sdgs.un.org/goals, accessed 4 March 2024.

Vogel B, Yumagulova L, McBean G and Charles Norris KA (2022) 'Indigenous-led nature-based solutions for the climate crisis: Insights from Canada', *Sustainability,* 14(11):6725.

Wang S-J and Zhou L-Y (2019) 'Integrated impacts of climate change on glacier tourism', *Advances in Climate Change Research,* 10(2):71–79. https://doi.org/10.1016/j.accre.2019.06.006

Westland District Council (2023) Places to visit: Franz Josef Glacier. Westland District Council website www.westlanddc.govt.nz/recreation/places-to-visit/franz-josef-glacier/, accessed 22 May 2023.

Wol F, Filho WL, Singh P, Scherle N, Reiser D, Telesford J, Miljković IB, Havea PH, Li C, Surroop D and Kovaleva M (2021) 'Influences of Climate Change on Tourism Development in Small Pacific Island States', *Sustainability,* 13(8):4223. www.mdpi.com/2071-1050/13/8/4223

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