Pristine, popular... imperilled?

The environmental consequences of projected tourism growth

December 2019

Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata

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Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata
PO Box 10-241, Wellington 6143
Aotearoa New Zealand

T 64 4 471 1669
F 64 4 495 8350
E pce@pce.parliament.nz
W pce.parliament.nz

December 2019

ISBN
978-0-947517-18-2 (print)
978-0-947517-19-9 (electronic)

Photography
Hokitika Gorge, sydneydawg2006, Flickr; Tongariro Crossing, Andrea Schaffer, Flickr; Palo Alto Airport, Paul Downey, Flickr.
Chapter header fern images by Rob Suisted, www.naturespic.co.nz.

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Acknowledgements

The Parliamentary Commissioner for the Environment is indebted to a number of people who assisted him in bringing this report to completion. Special thanks are due to Lena MacCarthy who led the project, supported by Dr Carl Walrond, Dr Ed Hearnshaw, Shaun Killerby, Dr Robert Dykes, Leana Barriball, Andrew McCarthy and Sally Garden.

The Commissioner is also particularly grateful to the following organisations for their time and assistance during the preparation of this report:

- Air New Zealand
- Auckland Council
- Auckland International Airport Limited
- Auckland Tourism, Events and Economic Development
- Christchurch International Airport Limited
- Department of Conservation
- Environment Canterbury Regional Council
- Environment Southland
- Federated Mountain Clubs
- Forest & Bird
- Frankton Community Association
- Fresh Info
- Independent Māori Statutory Board
- InterCity Group (NZ) Ltd
- Kapiti Island Nature Tours
- Lake Wanaka Tourism
- Lightning Lab
- Mackenzie District Council
- Maritime New Zealand
- Ministry for Primary Industries
- Ministry for the Environment
- Ministry of Business, Innovation and Employment
- Ministry of Transport
- New Zealand Conservation Authority
- New Zealand Cruise Association
- New Zealand Fish & Game Council
- New Zealand Māori Tourism
- Ngāi Tahu Tourism
- Ngāi Tai ki Tāmaki
- Ngāti Tūwharetoa
- Ngāti Whātua Ōrākei Whai Rawa Ltd
- Northland Regional Council
- Queenstown Airport
- Queenstown Lakes District Council
- Regional Tourism New Zealand
- Rotorua Economic Development
- Ruapehu District Council
- Sense Partners
- SkyCity Entertainment Group Limited
- Stats NZ
- Tangata whenua o Ohinemutu
- Taupō District Council
- Te Puni Kōkiri
- Tekapo Community Board
- thinkstep ANZ
- Tourism Export Council of New Zealand
- Tourism Holdings Limited
- Tourism Industry Aotearoa
- Tourism New Zealand
- Twizel Community Board
- University of Otago
- Venture Southland
- Victoria University Wellington
- West Coast Tourism
- Westland District Council.

Finally, the Commissioner wishes to thank the following individuals for their expertise in reviewing earlier drafts of the report:

- Professor Jim McAloon
- Dave Bamford
- Professor Susanne Becken
- Shamubeel Eaqub
- Professor James Higham
- Te Rau Kupenga
- Dr Jeffrey McNeill.

Contents

Asplenium bulbiferum, mouku

Overview

In the mid-1980s, I was one of many young New Zealanders fighting to halt the logging of primaeval, native forests. It was the culmination of a crescendo of environmental alarm that had been gathering since the 1960s. New Zealanders became aware that some of the last great stands of bush outside of our national parks could disappear within their lifetimes to be replaced with ever more marginal pasture.

Nowhere seemed more marginal than the forests south of the Cook River in South Westland. For many people in South Westland, the ongoing extraction of native timber was the only means of economic survival. Being told to stop by a bunch of young (and not so young) people from the other end of the country was a declaration of war. But we had a silver bullet. Tourism. In calling for a permanent halt to all logging we knew jobs would be lost. But tourism would create new ones. Why not leave these magnificent virgin forests intact to be enjoyed by future generations – and make coffee for the visitors instead?

Thirty years has passed and there are many more tourists making their way down State Highway 6 into what became a World Heritage Site in 1990. Towns like Fox and Franz are cameos of the way in which tourism has become a plug-in replacement industry in many parts of New Zealand. We are selling an encounter with a stunning physical environment and a raft of services to our visitors. And the quality of the coffee has never been better.

The industry's success is always measured in numbers. They are impressive. In the year that Te Wāhipounamu – South West New Zealand World Heritage Area was declared, 976,000 international visitors came to New Zealand. In 2018 the tally surpassed 3.8 million. Everything has grown – the hotels, the cafes, the gateway city airports, the car rental firms and the pressure of people. These pressures are particularly evident at popular destinations.

I have conducted this inquiry to understand what ongoing tourist growth could mean for the environment. In deriving an increasingly significant fraction of national income from tourism, New Zealand is reaping its share of a global phenomenon: an increasing propensity to travel. That applies domestically as well as internationally.

And herein lies the conundrum. So much of what New Zealand has to offer centres around an absence of people, starting with a flora and fauna that had not encountered humans until 800 years ago. A sense of remoteness and isolation, both physically and in time, lies at the heart of how so many special places are experienced. Many of our visitors come from places where it is almost impossible to escape the pressure of population. They arrive in a country with a low population density and can, without great effort, rapidly leave the pressure of people behind.

As the weight of population and environmental destruction gathers pace at a global level, New Zealand offers fortunate travellers the chance to visit and experience some of the last vestiges of a fast-vanishing world. New Zealanders themselves – often as a result of their own overseas travels – have started to sense that experiences they have taken for granted at home are much rarer and much more at risk than they had realised.

In selling access to these experiences, tourism risks becoming an extractive industry in its own right. An inexorable growth in numbers risks an irreversible decline in both environmental quality and human experience of it. That could run the risk of 'killing the goose that lays the golden egg'.

New Zealanders have become familiar with images of sites like Milford or the Tongariro Crossing besieged by visitors. Is this the fate of a succession of fresh destinations as policies of visitor dispersal are promoted as a way of easing pressure on the most popular sites? Or do we instead pursue 'value' rather than 'volume'? This is a common response from those who are uneasy about the pressure of numbers but reluctant to place at risk the increase in national income that is associated with growth.

Tourism is a relatively low-wage industry. Aiming for tourism value to grow faster than volume is a sound strategy. However, despite the Government's efforts over the last decade, tourism spending per visitor has actually remained roughly constant. Further, the Government's own tourism projections to 2025 indicate the opposite trend – once visitor spend figures are adjusted for inflation, value per visitor is projected to fall. So in fact, the aspiration falls well short of reality.

But even if a value-driven strategy were to succeed, an inquiry such as this, focused on the *environmental* consequences of growth, would run immediately into another, more intractable problem. What is the footprint of that value-led growth? Even if we could arrest the number of people visiting us and, instead, grow their per capita expenditure, would the environmental (and social) impacts be any better?

Tourists with more spending power are likely to be people with the capacity to consume more energy, generate more waste and require infrastructure that makes heavier claims on land and water. If we are swapping freedom campers making sorties on foot into our wilderness for wealthy travellers inspecting shrinking glaciers from helicopters, haven't we just exchanged one sort of environmental footprint for another?

This of course exposes a more fundamental issue that makes tourism such a fascinating and tricky activity to examine. Very simply, can it be easily distinguished from the society that hosts it? In the first place, many of the claims tourists make on resources – like water or wastewater services – are identical to those residents make. And while we tend to focus on overseas tourists, the lion's share of tourist activity involves New Zealanders taking a break. On any given day in January, New Zealand is busily welcoming 10,000 international tourists into the country.[1] But there will be many, many more New Zealanders adopting the role of a tourist on that same day.

Of course, the environment doesn't distinguish between these tourists or the population at large. It is the overall footprint of human resource extraction, use and waste generation that ultimately matters. And on this basis, the incremental footprint of tourists of any description will depend on the infrastructure available in particular places. Some wastewater systems may be well placed to carry the marginal claims of a transient, tourist population. Others may already be under strain regardless.

So are we simply dealing with some particularly visible symptoms of a systemic problem about our capacity to handle the claims people make on our environment regardless of how they come to be there? Our views about arrivals are complex. Permanent inward migration is something we worry about when it places pressures on housing and infrastructure (but whose absence we lament in downturns when a net gain becomes a net loss). But the same worries about immigration pressures can sit side by side with a desire to welcome more and more temporary 'migrants' called international tourists. Equally, the arrival of New Zealanders building or buying up holiday baches with an eye to some income on the side can raise another round of emotions.

It is in the interests of some industry players to emphasise one end of the telescope: that tourism is indistinguishably part of the fabric of our society and there is little or no need for special solutions. For others, tourism imposes very particular pressures, and carefully calibrated solutions are needed if these pressures are not to intensify.

No one should pretend that there is anything 'easy' about teasing this apart. Most responses by government, industry and communities resort to a narrative about sustainability that leaves everybody feeling good about being responsible without necessarily pressing too hard on the difficult issues. Many aspirational words have been written that seek to identify a mutually reinforcing dynamic of economic, social and environmental regeneration.

In one respect this is a hopeful sign. Because the tourism industry knows that it is, to a greater or lesser extent, trading on New Zealand's environment, it can't ignore the integrity of that environment. That is more than can be said for many industries. On the other hand, there are grounds for scepticism. It is a narrative that invokes a kind of 'best of all worlds' thinking – one where we can have more growth, more jobs and better environmental outcomes. The evidence to support it is lacking. And in its absence, we have no way of measuring the trade-offs we may be making.

[1] Derived from international travel and migration statistics, Stats NZ.

If we were serious about the environmental impact of the tourism industry, we would be wanting to know much more than we do today, such as collecting information about how tourists travel around, the sites they visit, the things they consume and the waste they generate. Some of this information we have, but it often lacks detail (e.g. international visitor itineraries), granularity (e.g. national totals rather than regional patterns) or is not collected at all (e.g. domestic tourist patterns).

We didn't get to where we are today overnight. The phenomenon of crowded sites, crowded skies and crowded parking lots is the result of more than a century's worth of promotional taxpayer subsidy. What will another three decades of more of the same mean?

Twenty years ago, one of my predecessors, Dr Morgan Williams, issued a report entitled *Management of the environmental effects associated with the tourism sector*. I deliberately didn't read it until we had completed our own research to avoid approaching the topic with preconceptions. When I finally came to do so, I was struck by how little has changed. Numbers have grown, compensatory investments have been made and some genuinely impressive initiatives have been taken by some players. But the essential challenges remain clearly recognisable, although now on a much-enlarged scale. Despite many soothing words about sustainability over the two intervening decades, we haven't significantly shifted from an extractive path dependency.

This investigation was not undertaken to generate more soothing words. But neither was it undertaken to be unhelpful. Tourism, with one important caveat that I shall come to, is here to stay and part of the way we live. Whether you are turning out excellent coffee at the ends of the earth, handling jet-lagged travellers in the middle of the night in Auckland or seeking a return from your bach through Airbnb, you are part of an industry from which we all benefit. So the question is how we can continue to do so but on terms that we are happy with and terms we can justify to future generations.

Who 'we' are, raises an important point. The overwhelming majority of New Zealanders would surely agree that the terms of our hospitality (manaakitanga) and responsibility for looking after our tourist destinations (kaitiakitanga) are ones the wider community, not just the industry, should determine.

For Māori, where whakapapa is defined in terms of the land, and where the wellbeing of people is inextricably linked to the wellbeing of the environment and land, the sites that are central to New Zealand tourism are inseparable from Māori as kaitiaki and mana whenua. In determining how we would wish our stewardship to be judged by future generations, we should in my view have particular regard for those whose connection with the land can be measured in generations spanning eight centuries or more. It is part of what makes Aotearoa the special place that it is.

Providing a realistic prognosis of where we may end up must start with a compelling and accurate account of where we are today. Rather than rush to a slew of policy recommendations, I have tried in this report to gather as much evidence as I can to answer the question: what might be the environmental consequences of projected growth in tourism? Obviously those consequences will

depend on policy settings. This report tries to answer that question by projecting forward the existing suite of policies – many of which are judged likely to fall short.

A second report next year will propose some of the policies we will need to be prepared to debate if we wish to avoid the incremental and irreversible harm that business as usual could hold in store for us. I have deliberately split the task into two phases so that I can gain further benefit from the large number of actors and interest groups who have already been generous with their time. I can be most helpful if I am confident that any proposals I make are rooted in an analysis of the problem that enjoys a good measure of consensus.

The structure of the report can be easily described, and each chapter begins with a summary of its key points. After **a brief introductory chapter** that skirmishes with the vexed issue of who constitutes a tourist, **chapter two recounts the history of tourism** in Aotearoa New Zealand from the very earliest days. This is a long chapter – many readers will be tempted to skip it, and you can. But I recommend it because the sector we see today is built on the choices previous generations have made, and draws on assumptions from the past that persist to this day. History doesn't repeat itself, but it would be rash to insist we have nothing to learn from it.

The remainder of the report is arranged around six environmental impacts:

- visitor density and loss of natural quiet
- water quality degradation
- solid waste generation and management
- infrastructure development and landscape modification
- biodiversity loss and biosecurity risk
- greenhouse gas emissions.

These are augmented by discussion of tourism and the interests of mana whenua and the way in which New Zealand's tourism offering is perceived.

Chapter three seeks to recount, as well as patchy evidence allows, **the dimensions of the industry and its environmental impacts.**

Chapter four then describes **the existing policy framework** designed to support sustainability, and attempts an assessment of the extent to which the policy tools currently being deployed are achieving their ends. Most are judged to be deficient.

Chapter five then looks forward and asks **what today's deficiencies could mean for the environment** a generation from now. My conclusion that, if the current policy framework were to stay the same, the industry – and New Zealand as a whole – could confront a range of social, cultural and environmental impacts we might regret.

Chapter six raises some **significant risks that environmental disruptions or feedbacks could hold** for the industry. In the same way that growing tourism can have an impact on the environment, the environment could also have an impact on tourism's growth. I referred earlier to a caveat that must attach to any judgements that 'tourism is here to stay'. That caveat is climate change – in all its aspects, but

most acutely, in the future of long-distance air travel. This is an existential issue for the industry globally but particularly so for a destination as far flung as New Zealand.

Unlike almost any other sector, tourism faces an emissions challenge with long-haul travel for which there is no solution on the horizon. Domestic emissions may well be manageable but at the global level there have to be serious doubts about whether tourism in its current shape and form can continue if we are to have a chance of heading off the worst consequences of climate change.

The seriousness of the challenge is widely appreciated. Those in the industry who can do something about it are responding, often impressively, in part because it is something their customers are increasingly attuned to. But all of us live with the contradiction of relying on a means of transport that is predicted to be one of the biggest contributors to using up whatever remaining atmospheric budget of carbon we can afford to emit. On this environmental score alone, I have encountered a measure of fatalism that leaves people with little to say. Yet it has real consequences for some of the large, long-lived investment decisions that projected tourist growth will rely on.

A brief final chapter explains why I have not rushed to quick conclusions but propose, rather, to deliver a follow-up report that will discuss some policy options that deserve debate rather than simply adopting a business-as-usual approach.

For many readers, there will be nothing particularly new in this report. The fact that there is a strong continuity between Dr Morgan Williams' inquiry and my own underlines the fact that while the environmental consequences of growth may seem obvious enough, doing something about them will take more than some strategy documents.

Once I have had an opportunity to gauge feedback from this report, I will be in a position to develop some policy proposals that might have a chance of making the direction of travel a more sustainable one. If they prove to be more contentious than the *problématique* outlined in this report, that will simply be evidence that it is easier to park issues in the too-hard basket than it is to tackle them head on. It may well be that issues stay in the too-hard basket because they are, literally, too hard. But it wouldn't hurt to at least examine them and know why we parked them there. That, I hope, will be the contribution of part two of this investigation.

Simon Upton

Parliamentary Commissioner for the Environment

Asplenium flaccidum, makawe

Tirohanga whānui

I waenganui o ngā tekau tau 1980, ko au tētahi o ngā rangatahi o Aotearoa e whawhai ana ki te whakamutu i te topenga o ngā ngahere nō neherā, taketake ake. Koinei te tūhonotanga o te hāparangi o te pūoho taiao e whakaemi ana mai i ngā tekau tau o 1960. Ka mōhio ngā tāngata o Aotearoa ka ngaro pea ētahi o ngā uru rākau whakahirahira e toe ana i waho atu o ngā papa rēhia ā-motu me te whakakapi ki ētahi atu tarutaru kararehe hauarea.

Kāore he wāhi i tua atu i ngā ngahere i te tonga o Weheka i te pito tonga o Te Tai Poutini mō te hauarea. Mō te tokomaha o ngā tāngata i te pito tonga o Te Tai Poutini, kotahi anake te whakarauora ōhanga ko te unuhanga o te rākau taketake. He whakaputanga pakanga te tohutohu mai a te hunga rangatahi (me ētahi pakeke ake) mai i tērā atu pito o te whenua. Engari he matā hiriwa tā mātou. Tāpoi. I a mātou e karanga ana kia whakaotia rawatia te tope rākau i mōhio mātou ka ngaro ētahi tūranga mahi. Engari ka auahatia anōtia ētahi atu e te tāpoi. Me waiho pea ēnei ngahere urutapu whakahirahira hei wāhi pārekareka mā ngā whakatipuranga e heke mai nei – me te whakarite kawhe mā ngā manuhiri kē?

Kua hipa te toru tekau tau, ā, he tokomaha ake ngā tāpoi e haere ana mā State Highway 6 ki te wāhi i whakatūturutia hei Tauwāhi Tuku Iho Ā-Ao i te tau 1990. Hei tauira ngā tāone pērā i a Fox me Franz o te āhua o te tāpoi hei ahumahi whakakapi whakapuru i ngā takiwā maha o Aotearoa. E hoko ana tātou i te tūtakitanga ki te taiao ā-tinana whakamīharo me te whānui o ngā ratonga ki ā tātou manuhiri. Kāore anō kia pērā rawa te kounga o te kawhe.

Ka inea te angitu o te ahumahi ki ngā nama. He mea whakamīharo aua nama. I te tau i whakaputaina te Tauwāhi Tuku Iho Ā-Ao o Te Tonga o Te Taipoutini o Aotearoa, e 976,000 ngā manuhiri nō tāwāhi i haere mai ki Aotearoa. Neke atu i te 3.8 miriona te tatau i te tau 2018. Kua whanake ngā mea katoa - ngā hōtera, ngā whare kawhe, ngā taunga rererangi tāonenui tomokanga, ngā kamupene rēti motokā me te pēhanga o ngā tāngata. Ka rangona ēnei pēhanga ki ngā wāhi haere hira.

Kua whakahaere au i tēnei rangahau ki te mārama ka pēhea te pānga o te te whanake tāpoi ki te taiao. Nā te mea e piki ake ana te hautau o te whiwhinga pūtea ā-motu nō te tāpoi, e whai wāhi ana a Aotearoa ki te āhuatanga ā-ao: he hiahia e tipu ana ki te hāereere. Pērā hoki ā-motu, ā-ao hoki.

Ka puta mai i konei te urupounamu. Ko te nuinga o ngā tāpaetanga o Aotearoa e puta mai ana i te kore tangata, e tīmata ana ki ngā tipu me ngāi kīrehe kāore i pāngia e te tangata i mua i te 800 tau i mua. Ko te āhua o te pāmamao me te mōriroriro, ā-tinana, ā-wā hoki, e noho pū ana ki te wheako o ngā wāhi motuhake. He tokomaha ā tātou manuhiri e haere mai ana i ngā wāhi kāore e taea te puta mai i te pēhanga o te taupori. Ka tae mai ki te whenua e iti ana te kiato taupori, ā, ka taea, me te whakapau kaha iti, te waiho i te pēhanga tāngata ki muri.

Ina tere haere te whakamōtītanga ā-taupori, ā-taiao hoki huri noa i te ao, e whakarato ana a Aotearoa ki ngā tāpoi waimārie te aheinga ki te toro mai me te whai wheako ki ētahi toenga o te ao e tere memeha ana. Kua tīmata ngā tāngata o Aotearoa – i te nuinga o te wā hei otinga o ā rātou haerenga ki tāwāhi – ki te whakaaro ko ngā wheako i pōhēhē rātou he mea hanga noa, he uaua ake te kite, ā, he tūraru nui ake kāore i mohiotia e rātou.

Ki te hoko ēnei wheako, he tūraru anō ina huri te ahumahi tāpoi hei ahumahi whakaunu. He tūraru mēnā e piki tonu ake ai te tokomaha o ngā tāngata ā ka heke iho te kounga taiao me te wheako tangata me te kore āhei kia whakapai ake. Ka pā mai te tūraru 'whakamate i te kuihi e pao ana i te huamanu kōura'.

Kua waia ngā tāngata o Aotearoa ki ngā whakaahua o ngā wāhi pērā i a Piopiotahi, i te Whakawhitinga o Tongariro rānei, e muimuia ana e ngā manuhiri. Koinei rānei te whakamutunga o ngā wāhi haere hou i te taunakitanga o ngā kaupapa here o te korara manuhiri hei ara whakaea pēhanga ki ngā wāhi hira? Ka whai rānei tātou i te 'uara', kaua ko te 'tokomaha'? Ka riterite te rangona o tēnei urupare i a rātou e āwangawanga ana ki te pēhanga o te tokomaha engari kāore e hiahia ana kia raruhia te pikinga o te whiwhinga pūtea ā-motu e puta mai ai i te whakawhanaketanga.

He āhua iti te utu o ngā kaimahi ki te ahumahi tāpoi. He rautaki pai te whāinga kia piki ake te uara tāpoi kaua ko te rahinga. Heoi anō, ahakoa te whakapau kaha o te Kāwanatanga i te tekau tau kua pahure ake nei, kua āhua ōrite te utu a tēnā manuhiri, a tēnā manuhiri. Waihoki, e ai ki ngā marohi tāpoi a te kāwanatanga he tauaro te haere - ina whakaritea ngā whika utu manuhiri mō te tāmi ahumoni, ka marohitia te hinga o te uara a tēnā manuhiri, a tēnā manuhiri. Nā reira, kāore e tata te whāinga ki te whakatīnanatanga.

Ahakoa i angitu te rautaki whai-uara, he rangahau pēnei, e arotahi ana ki ngā tukunga iho *taiao* o te whakawhanake, ka tutuki wawe ki tētahi tūraru pūmau. He aha te tapuwae o taua whakawhanake whai-uara? Ahakoa ka taea e tātou te whakarite i te tokomaha o ngā tāngata e toro mai ana, ā, ka whakapiki i tō rātou whakapau moni ā-rau, ka pai ake rānei ngā whakaaweawe taiao (pāpori hoki)?

Kāore e kore ko ngā tāpoi whai pūtea he tangata e kaha whakapau pūngao, whakaputa para me te hiahia ki te pūnahahanga e tāmi ai i te whenua me te wai. Mēnā e whakawhitiwhiti ana tātou i ngā kaihopuni wātea e hīkoi ana mā raro ki te koraha ki ngā tāngata hāereere whai pūtea e tiro ana ki ngā awa kōpaka mā runga toparere, kua whakawhitiwhiti i tētahi momo tapuwae taiao mō tētahi atu?

Ka huraina tētahi take nunui e manawarū ana, e uaua ana hoki te tiro ki te mahi tāpoi. Me pēnei noa, ka taea te waitohu i te tāpoi ki te hapori tautoko? I te tuatahi, ko ētahi o ngā hiahia o ngā tāpoi ki ngā rauemi - pērā i te wai, i ngā ratonga parawai rānei - he ōrite ki ō ngā kainoho. Ā, i a tātou e arotahi ana ki ngā tāpoi nō tāwāhi, ko te wāhi nui o te mahi tāpoi e puta mai ai i ngā tāngata o Aotearoa e whakatā ana. I tētahi rā i te Kohitātea, e kaha whakatau ana a Aotearoa i ngā tāpoi 10,000 nō tāwāhi ki te whenua.[1] Engari he tokomaha ake ngā tāngata o Aotearoa e mahi ana hei tāpoi i taua rā tonu.

Kāore e kore, kāore te taiao e waitohu i waenganui i ēnei tāpoi me te taupori whānui. Ko te tapuwae nui o te unuhanga rauemi, whakamahi me te whakaputa para a ngā tāngata te mea nui. Ki te pēnei te whakaaro, ko te tapuwae tāpiri a ngā tāpoi, ahakoa ko wai rātou, ka whirinaki ki te pūnahahanga e wātea ana ki ētahi wāhi. E pai ana mā ētahi pūnaha parawai te kawe i ngā hiahia hauarea o te taupori tāpoi rangitahi. E whakawhēnanaua kētia ana ētahi.

Nā reira e whakahaere ana tātou i ngā tohumate o tētahi tūraru pūnaha mō tō tātou āheinga ki te kawe i ngā hiahia o ngā tāngata ki tō tātou taiao ahakoa he aha te huarahi i tae mai ai rātou? He whīwhiwhi ō tātou whakaaro mō ngā tāngata e tae mai ana. Ko te manene uru pūmai mai tētahi mea e āwangawangatia ana e tātou mēnā he pēhanga ki te kāinga noho me te pūnahahanga (engari ka tangihia e tātou i ngā pāheketanga e huri ai te raumata whiwhi ki te raumata ngaro.) Engari ko ngā āwangawanga mō ngā pēhanga manene e noho tahi ana me te hiahia ki te whakatau i te tokomaha noa atu o ngā 'manene' taupua kua tapaina he tāpoi nō tāwāhi. Waihoki, ko te taenga mai o ngā tāngata o Aotearoa e hanga ana, e hoko ana rānei, i ngā kāinga hararei mō te whiwhinga pūtea ki te taha e whakaputa mai ana i ētahi atu kare ā-roto.

He painga ki ētahi o ngā kaimahi ahumahi ki te whakanui i tētahi wāhanga o te karu whātata: ko te tāpoi he mea nō te āhuatanga o tō tātou hapori, ā, kāore he take, he take iti rānei, mō ngā whakatika motuhake. Mō ētahi, he pēhanga ake tō te tāpoi, ā, e hiahiatia ana ngā whakatika kua āta whakaritea kia kaua ēnei pēhanga e piki ake.

Me kaua tētahi e whakataruna he mea 'ngāwari' te whakawehe i tēnei. Ko te nuinga o ngā urupare a te kāwanatanga, te ahumahi me ngā hapori e whai ana i te kōrero mō te toitū e noho koa ana te katoa mō te noho haepapa me te kore āta whakaaro ki ngā take uaua. He maha ngā kupu wawata kua tuhia e rapu ana ki te tautuhi i te taineke awhi atu, awhi mai, o te whakaora ā-ōhanga, ā-pāpori, ā-taiao hoki.

He āhua pai tēnei hei tohu wawata. Nā te mea, e mōhio ana te ahumahi tāpoi, kāore e taea te hokohoko i runga i te taiao o Aotearoa, ki te kore e whakaarohia te pono o taua taiao. He nui ake tēnā i tō ētahi atu ahumahi. Engari, he take kia rangirua te whakaaro. He kōrero e whakaatu ana i te whakaaro 'ngā painga o ngā ao katoa' - tētahi ao e maha ake ana te whakawhanake, ngā mahi me ngā putanga taiao pai ake. Ko te taunaki hei tautoko e ngaro ana. I te kore o te taunaki, kāore e taea e tātou te ine i ngā whakatau rerekē e whakarite ana tātou.

[1] I tangohia mai i ngā tatauranga hāereere ā-ao me ngā manene, Stats NZ.

Mēnā e tūturu ana tātou mō te whakaaweawe taiao o te ahumahi tāpoi, e hiahia ana ki te mōhio ake tātou i tō ēnei rā, pērā i te kohikohi mōhiohio mā te aha ngā tāpoi e hāereere, ngā wāhi e toro atu rātou, ngā mea e whakapau ana ratou me te para e whakaputa ana rātou. Kei a mātou ētahi o ēnei mōhiohio, engari e ngaro ana ngā tai pitopito (arā, ngā haerenga manuhiri nō tāwāhi), te whāititanga (arā, te huinga ā-motu, kaua ko ngā tauira ā-rohe) kāore rānei e kohikohia ana (arā, ngā tauira tāpoi ā-motu).

Kāore mātou i tae ki konei i te pō kotahi. Ko te āhuatanga o ngā wāhi opeti, ngā rangi opeti, me ngā tūnga motokā opeti he hua nō te pūtea tāpiri a te kaiutu tāke tautoko mō neke atu i te kotahi rautau. Ka pēhea mēnā e toru tekau tau anō e ōrite ana?

E rua tekau tau i mua, i tuku tētahi o te hunga tōmua, Dr Morgan Williams, i te pūrongo e tapaina ana *Management of the environmental effects associated with the tourism sector*. I whakatau au kia kaua e pānuitia i mua i te whakaoti i tō tātou rangahau kia kaua e uru ki te kaupapa me ngā whakaaro tōmua. I te wā ka pānuitia, ko te tino kitenga he paku te rerekētanga. Kua nui ake ngā nama, kua tukuna ētahi whakangao utu paremata, ā, ko ētahi whakamahere hira tūturu kua mahia e ētahi kaimahi. Engari ko ngā wero waiwai e āta kitea ana, engari he nui rawa ake te rahi i tēnei wā. Ahakoa ngā kupu whakamāmā mō te toitū i ngā tekau tau i waenganui, kāore tātou i tino neke i te whakawhirinaki ara whakaunu.

Kāore tēnei rangahau i tīmata ki te whakaputa i ngā kupu whakamāmā. Engari kāore hoki i tīmata hei whakakino. Ko te tāpoi, me tētahi whakatūpato ka kōrerotia ākuanei, kei konei, ā, he wāhanga nō tō tātou tauoranga. Ahakoa e whakaputa ana koe i te kawhe kounga ki ngā tōpito o te ao, e āwhina ana i ngā kai hāereere i waenganui i Tāmaki, e rapu ana rānei i te pūtea i tō whare mā Airbnb, nō te ahumahi koe e whai hua ana tātou katoa. Nā, ko te pātai me pēhea tātou e mahi pēnei ana engari i runga i ngā herenga e pai ana ki a tātou, e taea ana te whakamārama ki ngā whakatipuranga e heke mai nei hoki.

He kaupapa nui tō te whakamarama ko wai ‘tatou’. Ko te tino nuinga o ngā tāngata o Aotearoa e whakaae ana ko ngā herenga o tō tātou taurima (manaakitanga) me te noho haepapa ki te tiaki i ō tātou wāhi haere tāpoi (kaitiakitanga) mā te hapori whānui e whakatau, kaua mā te ahumahi anake.

Mō ngāi Māori, e tautuhia ana te whakapapa mā te whenua, ā, ko te hauora tāngata e tūhonotia ki te hauora o te taiao me te whenua, ko ngā wāhi matua o te tāpoi o Aotearoa, kāore e taea te whakawehe i a ngāi Māori hei kaitiaki, hei mana whenua hoki. Ina whakarite ana me pēhea tō tātou tiaki e whakatauria e ngā whakatipuranga e heke mai nei, me āta whakaaro tātou ki a rātou kua tūhono ki te whenua mō ngā whakatipuranga e kapi ana i ngā rautau e waru, neke atu rānei. Koinei tētahi take e motuhake ana a Aotearoa.

Ko te tuku i te waitohunga e tae atu tātou ki hea me tīmata ki te kōrero whakahau, tika hoki, kei hea tātou i tēnei rā. Kei oma tātou ki te maha noa atu o ngā tūtohunga kaupapa here, kua whakamātau au i roto i tēnei pūrongo ki te kohi i te nui o te taunaki e āhei ana au ki te whakautu i te pātai: he aha ngā tukunga iho o te whakawhanake e marohitia ana i roto i te tāpoi? Kāore e kore ko aua tukunga

iho ka whakawhirinaki ki ngā whakaritenga kaupapa here. E whakamātau ana tēnei pūrongo ki te whakautu i taua pātai mā te marohi ki anamata te huinga kaupapa here ināianei - ko ētahi e tino whakaarohia kāore e tutuki.

Ka marohi te pūrongo tuarua hei tērā tau i ētahi o ngā kaupapa here me whakareri tātou ki te taupatupatu mēnā e hiahia ana tātou kite karo i te kino tāpiri e kore e taea e whakatika e puta mai ai i te mahi ōrite. Kua whakatau au kia whakawehe te mahi ki ngā wāhanga e rua kia whai painga au i te tokomaha o ngā kaimahi me ngā rōpū whaitake kua tino oha i tō rātou wā. Ka tino āwhina au mēnā e pono ana au ko ngā marohi e tuku ana au e noho pūmau ana ki te tātari i te tūraru e āhua whakaaetia ana e te nuinga.

He ngāwari te whakaatu i te anga o tēnei pūrongo, ā, ka tīmata ia upoko ki te whakarāpopototanga o ngā kaupapa matua. A muri ake i te **upoko whakataki iti** e whawhai ai ki te take uaua ko wai te tāpoi, ka kōrerotia e **upoko tuarua te hītori o te tāpoi** ki Aotearoa mai i ngā rā tīmatanga. He roa rawa tēnei upoko - he tokomaha ngā kaipānui e hiahia ana ki te kapi, ā, ka taea e koe. Engari ka tūtohu au i taua upoko nā te mea ko te rāngai e kite ana tātou i tēnei rā i hangaia ki ngā kōwhiringa a ngā whakatipuranga o mua, ā, e whai ana i te pēneitanga nō mua e tū tonu ana i tēnei rā.

Ko te toenga o te pūrongo i whakaritea mā ngā whakaaweawe taiao e ono:

- te kiato manuhiri me te ngaro mārire taiao
- te whakakino kounga wai
- te whakaputa para totoka
- whakawhanake pūnahahanga me te raweke horanuku
- te ngaro kanorau koiora me te tūraru haumaru koiora
- ko ngā putanga haurehu kati mahana.

Ka tautokohia ēnei e te kōrero mō te tāpoi me ngā whai pānga mana whenua me te whakaaro e pā ana ki te tāpoi o Aotearoa.

Ka kōrerotia anō e te **upoko tuatoru**, ki te āhua e taea ana e te taunaki pūreirei, **te rahinga o te ahumahi me ana whakaaweawe taiao**.

Kātahi ka whakaatu te **upoko tuawhā** i te **anga kaupapa here ināianei** i hoahoatia ki te tautoko i te toitū, ā, ka whakamātau ki te aromatawai i te whānuitanga o te tutukitanga o ngā taputapu kaupapa here e whakamahia ana. Ko te nuinga e whakaarohia ana he ngoikore.

Kātahi ka tiro whakamua te **upoko tuarima** me te pātai **he aha te tikanga o ngā ngoikoretanga ināianei mō te taiao** hei te whakatipuranga e heke mai nei. Ko taku whakataunga, mēnā e ōrite tonu ana te anga kaupapa here ināianei, ka anganui ana pea te ahumahi – me Aotearoa whānui – i te whānuitanga o ngā whakaaweawe pāpori, ahurea, taiao hoki e whakapāha ai tātou.

Ka whakarewatia e te **upoko tuaono ngā tūraru nui e puta mai ai i ngā whakatōhenehene, i ngā urupare rānei** mō te ahumahi. Ka whakaaweawetia te taiao e te whakapiki tāpoi, ka whakaaweawetia pea te whakapiki tāpoi e te taiao. I kōrerotia kētia e au te whakatūpato me tāpiri ki ngā whakataunga 'ko te tāpoi ka noho ki konei mō ake tonu atu'. Ko taua whakatūpato ko te panoni āhuarangi - ki ngā āhuatanga katoa, engari ko te tino kaupapa ko te anamata o te hāereere waka rererangi tawhiti. He take tauoranga tēnei mō te ahumahi ā-ao engari he tino take mō te wāhi haere tawhiti pērā i Aotearoa nei.

Kāore i pērā ki tētahi atu rāngai, he wero putanga tō te tāpoi i roto i te hāereere tawhiti, ā, kāore he whakatika e kitea ana i tēnei wā. Ka taea te whakahaere o ngā putanga ā-motu engari ā-ao he rangirua rawa mēnā ko te āhua o te tāpoi i tēnei wā e haere tonu ai mēnā e hiahia ana tātou ki te aukati i ngā tukunga iho kino rawa o te panoni āhuarangi.

I māramatia whānuitia te uauatanga o te wero. E whakahoki ana aua tāngata i roto i te ahumahi e āhei ana, he whakamīharo i ētahi wā, ko tētahi take i pērā ai nā te mea he mea nui ki ā rātou kiritaki. Engari he ōrite mō tātou katoa te uauatanga o te whakawhirinaki ki te momo haere e matapaetia ana hei kaiwhakapau nui rawa i te toenga o te pūtea kohauhau o te waro e taea ana e tātou te whakaputa. Ki tēnei kaupapa taiao anake, kua tūtaki au ki te whakaaro, ka ahatia me te noho ngū o aua tāngata. Engari he tino tukunga iho mō ētahi o ngā whakataunga whakangao karioi e whakawhirinakiti ai te whakawhanake tāpoi e matapaetia ana.

He upoko whakamutunga iti e whakamārama ana te take kāore au i oma ki ngā whakataunga engari e marohi ana ki te tuku i te pūrongo whai muri e kōrero ana i ētahi o ngā kōwhiringa kaupapa here me taupatupatu, kaua ko te ara mahi ōrite.

Mō ētahi kaipānui, kāore he mea tino hou i roto i tēnei pūrongo. Nā te mea he ōritetanga i waenganui i te rangahau a Dr Morgan Williams me tāku, e whakakaha ana i te mea, ahakoa e mārama ana ngā tukunga iho taiao o te whakawhanake, ko te tutukitanga me whai i tētahi mea i tua atu i ngā tuhinga rautaki.

Ina whai wāhi au ki te whakaaro ki te urupare mō tēnei pūrongo, kua reri au ki te whakawhanake i ētahi marohi kaupapa here e āhei ana te whakamahi i te ahunga hāereere kia toitū ake. Mēnā he tino whakawehewehe ake i tō te pātai rangahau i whakaatuhia ki tēnei pūrongo, he taunaki tēnā he ngāwari ake te whakatū i ngā take ki te kete uaua rawa i te rutu whakamua. Tērā pea, ka noho ngā take ki te kete uaua rawa nā te mea, e tūturu ana he uaua rawa. Engari, kāore he raru mēnā ka tirohia me te mōhio he aha i whakatūngia ki reira. Koinā, e wawata ana au, te tāpaetanga o te wāhanga tuarua o tēnei rangahautanga.

Simon Upton

Te Kaitiaki Taiao a Te Whare Pāremata

1

Pteridium esculentum, rahurahu

Tourism — difficulties with definitions

Chapter summary

- Tourism has a wide range of environmental, social, cultural and economic effects throughout society.
- To capture all the effects of tourism, a broad definition is preferable.
- Economic effects tend to be beneficial in the short term, while environmental and socio-cultural effects tend to become apparent in the longer term and may be both interactive and cumulative.
- Tourism in Aotearoa New Zealand is principally dependent on the quality of the environment.
- Tourism places pressure on the environment in a range of ways, from site-specific biophysical effects through to global effects such as greenhouse gas emissions.
- A selection of environmental pressures is discussed throughout the report to cover the spectrum of local, national and global scales, as well as to account for environmental pressures placed on multiple environmental domains.
- These pressures have consequences for the way all New Zealanders enjoy their environment.
- They also have consequences for Māori as kaitiaki of places that are an inseparable part of the identity of iwi and hapū.

This is a report about the environmental consequences of the projected growth of the tourism sector. That sounds straightforward, but it is surprisingly hard to define a tourist and just as hard again to isolate the environmental pressures they impose. This chapter describes the scope of tourism, the broad range of positive and negative effects flowing from tourism, and the selection of environmental pressures to be considered in subsequent analysis and discussion.

Who is a tourist?

Defining who is a tourist and what is tourism has been a continual focus of attention for those involved in the study and management of the tourism sector. Typically, the definition of a tourist is made up of three components: movement, duration and purpose. These components are largely based on the desire of governments to quantify tourist movements and associated tourism activities for statistical and economic purposes.[1]

Figure 1.1 illustrates the relationships between definitions of a 'visitor' and its subsets, 'tourist' and 'excursionist'. Essentially, a tourist is a domestic or international visitor who is staying overnight away from their usual place of residence. This generic definition can be further divided into subgroups based on their purpose for travel (such as business, visiting friends and family, or leisure) or their focus of travel (such as education, adventure, or special interest). Any combination of these different groups may be true for an individual or may change throughout the time they are travelling.

[1] The most widely used definition for a tourist and tourism comes from the United Nations World Tourism Organization (UNWTO). The UNWTO definitions are the basis for international reporting and are the foundation of New Zealand's tourism satellite account. They are used by most reporting organisations (such as the Organisation for Economic Co-operation and Development (OECD) and the Ministry of Business, Innovation and Employment (MBIE)) for the sake of commonality. Definitions used in this report broadly align with the UNWTO definitions to ensure consistency when reporting on data and trends. For more information, see United Nations Department of Economic and Social Affairs (2010, pp.9–22).

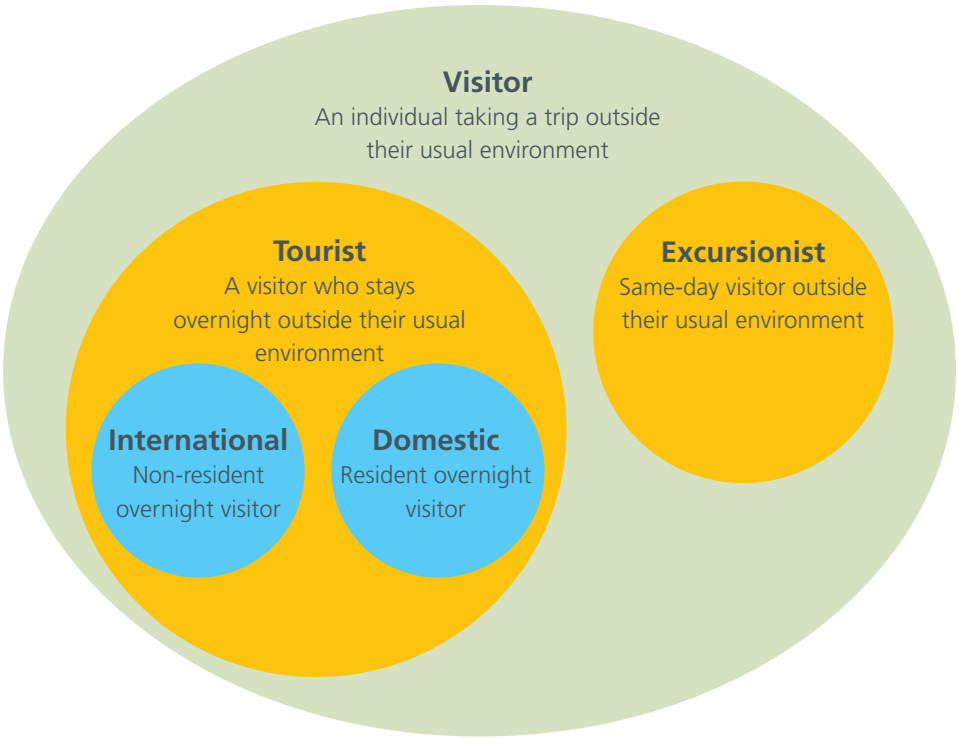

Figure 1.1: Conceptual diagram of visitors, tourists and excursionists. At the highest level, any person travelling outside their usual environment is considered a visitor.[2] Visitors can then be sub-divided based on the time they spend away (tourist vs excursionist) and by their origin (international vs domestic).[3]

Defining a tourist as someone who is an overnight visitor outside their normal residential environment spreads the definitional net far wider than most people would imagine (figure 1.2). It is a definition that includes overnight travel ranging from vacationers on cruise ships to New Zealanders accompanying a child to specialist medical care in another city.

[2] The usual environment of an individual is the geographic area (though not necessarily a contiguous one) within which an individual conducts their regular life routines. In New Zealand a person is considered to be 'outside one's usual environment' by either travelling by a scheduled flight or inter-island ferry, travelling more than 40 km (one way) outside of a person's typical movement patterns, or travel as an international tourist (Stats NZ, 2018).

[3] This visual representation of visitors and tourists is adapted from definitions described in United Nations Department of Economic and Social Affairs (2010, pp.9–22).

Source: Peter Kurdulija, Flickr

Figure 1.2: When thinking of being a tourist, the natural inclination is to think of people on holiday in 'tourist' locations such as Queenstown.

The meaning and usefulness of such a broad definition quickly starts to erode. Common use of the word 'tourist' is associated with people taking a holiday away from home. But vacation tourism is only a subset (albeit a large one) of the travelling population. For instance, many people travel around the country for seasonal work, some living in motor caravans. More than 80,000 New Zealanders belong to the New Zealand Motor Caravan Association (these being a mix of vacationers and workers).[4]

Because governments have, almost from the outset, wanted to promote Aotearoa New Zealand as a tourist destination to people abroad, our statistical systems have been designed to capture information about them. As a result, we know much more about non-resident visitors than domestic ones.

Almost 3.9 million international visitors came to New Zealand in 2018, of which 52 per cent came on holiday. On the broad definition provided above, we have a much less clear idea of how many domestic visitors holidayed in New Zealand in the same year, for the simple reason that they crossed no border where the start of their holiday could be recorded.

We can get a better idea of the relative scale of domestic and international tourism by analysing expenditure. For the year ended March 2018, of the total tourist expenditure of $39.1 billion, $23 billion was contributed by domestic visitors and $16.2 billion by international tourists.[5] While international tourism may be New Zealand's biggest single earner of foreign revenue, about 60 per cent of annual tourist expenditure is from domestic tourism; that is, from New Zealanders travelling around their own country.

Needless to say, tourists are less interested in how they are categorised than are businesses and researchers.[6] Neither is the distinction between international and

[4] Imlach, 2018.

[5] Stats NZ, 2018.

[6] To quote the Tourism Industry Association: "Two vehicles stop at a service station for fuel. Two parties check in to a hotel. Two tables are occupied in a restaurant. In real terms, in many situations domestic and international tourism are indivisible: they are entwined and mutually dependent, throughout the industry. International and domestic tourism are the same, and yet not the same." TIA, 2014, p.10)

domestic tourists particularly useful when considering environmental impacts. To the whenua (land) where a manuhiri (visitor) comes from is largely unimportant. They are there, bringing with them a footprint of effects.[7] In this sense the effects of a tourist are those of any extra person present; they are simply a temporary resident rather than a permanent resident.[8]

As a result, to capture all the effects of tourism throughout the economy, society and the environment, a broad definition of tourism is preferable. Throughout the report the words 'tourist' and 'visitor' are largely used interchangeably except where referring to a specific segment of visitors.

What are the effects of tourism?

There have long been concerns about the effects of growth in tourist numbers. Most commonly, these are trained on overseas visitors. For example, as early as 1874, the localised impact of tourism growth on Lake Rotomahana and the Pink and White Terraces, Ō-tū-kapua-rangi and Te Tarata, raised concerns about the vandalism of geological features by European visitors, litter and user conflicts (visitors seeking access when locals did not want nesting waterfowl to be disturbed), as well as concern about social impacts and the commodification of local culture.[9]

After World War II, commercial jet travel reduced travel times and boosted international tourist numbers. This led to parliamentary debate about what this might mean for road safety, nightlife and the erosion of social values.[10]

If tourism effectively embraces anyone travelling a distance to stay away from home for a while, however, then understanding the effects of tourists separately from those of the resident population becomes problematic. They use the same roads, water and wastewater infrastructure as residents, so trying to manage and provide policy direction and management for tourism is inherently difficult.

Even where the purpose of travel can be identified as being related to holidaying, the effects of tourism are cumulative and compounding. Domestic and international visitors add to the use of services and infrastructure by local residents, often travelling and staying at the same peak time (such as summer holidays at the beach, or winter holidays in the mountains).

Central and local government agencies are often ill-equipped to tease out and consider the tourism-specific consequences of wider policy issues. For example, tourist use of roads forms just a subset of transport policy, while the management of water quality responds to a wide array of health and environmental concerns quite aside from the value placed on recreational use of water by visitors.

When the number of annual international visitors exceeded one million in 1990, a target of three million by 2000 was proposed. This raised renewed concern about the environmental consequences of tourism growth – concerns largely dismissed by

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[7] There will be some behavioural differences between tourist categories that may affect their footprint at a site. However, at broad-level categories (e.g. international and domestic) there is arguably just as much intra-variability.

[8] There are, however, differences between tangata whenua (hosts, local people) and manuhiri in terms of who has rangatiratanga (the right to exercise authority) and who should respect that authority.

[9] Anon., 1874, p.2; House of Representatives, 1874, pp.4–5; Te Awekotuku, 1981.

[10] Alsop et al., 2018.

Parliament's Commerce Select Committee. One of my predecessors consequently undertook an investigation, producing a voluminous list of potential positive and negative effects of tourism (table 1.1).

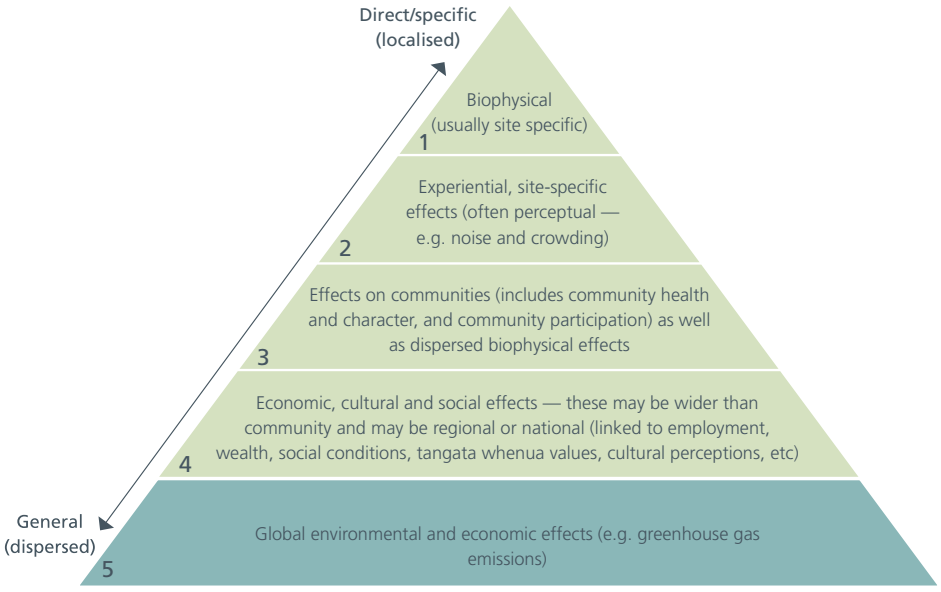
Table 1.1: Potential effects, positive and negative, of tourism.[11]

Economic	
Positive effects	**Examples**
Employment	Jobs created (directly and indirectly)
Regeneration	Economic diversification, creativity
Regional growth	Jobs and money into remote areas
Property values	Increasing property values
Negative effects	**Examples**
Changed land use	Displacement of people
Dependence	Possibly more foreign ownership
Infrastructure strain	Pressure on roads, sewerage
Built environment	
Positive effects	**Examples**
Development	Beautification, new infrastructure
Protection	Revenue to protect heritage sites
Changed character	New motels
Negative effects	**Examples**
Visual impacts	Loss of urban amenity
Crowding	Crowding at peak times
Traffic	Increased congestion
Noise	Unacceptable traffic noise
Displacement	Reduced local satisfaction
Changed character	Casinos
Social	
Positive effects	**Examples**
Opportunities	New recreational opportunities
Awareness	Increased appreciation of assets
Esteem and morale	Celebration of local uniqueness
Negative effects	**Examples**
Transient population	Many people just passing through
Low paid work	Many seasonal or low paid jobs
Social disruption	Crowding, displacement, intrusion
User conflict	Sense of loss of ownership, control

[11] Adapted from PCE (1997, pp.14–20)

Cultural	
Positive effects	**Examples**
Awareness	Growing cultural awareness
Protection	Maintenance of cultural activities
Negative effects	**Examples**
Commodification	Trivialisation, debasement of culture
Insensitivity	Inappropriate use of stories, images
User conflict	Conflicts over area/site management
Desecration	Pollution, desecration of sacred sites
Amenity	
Positive effects	**Examples**
Convenience	New buildings and infrastructure
Negative effects	**Examples**
Waste	Litter, human waste at campsites
Noise	Unacceptable noise from aircraft
Crowding	Crowding in very popular areas
User conflict	Conflicts given different goals
Development	Increased pressure to develop
Displacement	Exclusion of locals from places
Changed character	Loss of natural character
Visual impacts	Loss of scenic amenity
Loss of wilderness	Modification, loss of solitude
Ecological	
Positive effects	**Examples**
Species conservation	Tourist interest in iconic species
Negative effects	**Examples**
Wildlife disruption	Disruption to animal behaviours
Hunting/collecting	Pressure on fisheries, shellfish
Species introductions	Release of exotic pests/weeds
Vegetation damage	Trampling of vegetation
Loss of habitat	Displacement of wildlife
Physical	
Positive effects	**Examples**
Protection	Revenue for site protection
Negative effects	**Examples**
Construction	Excavation, dredging
Soil erosion	Soil loss from construction
Soil contamination	Waste, spread of pests/weeds
Freshwater pollution	Sewage, spread of waterweed
Marine pollution	Waste, spread of pests/weeds
Air pollution	Particulates, gas emissions
Geological damage	Damage to caves/geological features
Resource pressures	Pressure on finite local resources

Two decades on, all of these effects, both positive and negative, can still be identified. The same report provided a useful schematic representation of the way tourism has effects at many scales (figure 1.3) making it truly systemic.[12]



Source: adapted from PCE (1997, p.14)

Figure 1.3: Gradation of the effects associated with tourism. Categories 1–4 identify tourism's site-specific to national-level effects as noted in the Parliamentary Commissioner for the Environment's 1997 report. Category 5 has been added to highlight the global effects that tourism can have, which were missing from the original.

At the apex there is the effect of crowds on iconic sites, such as damage to the ecological functioning of a popular glow-worm cave, or pollution from vessels in a pristine and remote fiord. In 1997, the base was couched in national-level effects, but today, we would probably add a fifth layer to reflect the truly *global* interconnectedness of environmental challenges and industries like tourism. The key point is that identifying the environmental pressures from tourism requires attention across all these layers.

It must also be noted that effects have both a spatial and a temporal dimension. Economic effects tend to be beneficial in the short term, while physical and socio-cultural effects tend to become apparent in the longer term and may be both interactive and cumulative. Furthermore, some environmental effects are more significant than others. Factors determining significance include characteristics of the place where the effect occurs, visitor numbers and frequency of visits, and the reversibility of the effects.[13]

[12] PCE, 1997, p.13.
[13] PCE, 1997, p.28.

What is the focus of this report?

This report focuses on the environmental and cultural pressures of tourism – past, present, and future – in Aotearoa New Zealand.

Key environmental pressures were selected for analysis based on past literature (e.g. greenhouse gas emissions) and interviews undertaken during this investigation (e.g. visitor density and loss of natural quiet).[14]

Pressures on the environment from tourism activity include:

- visitor density and loss of natural quiet
- water quality degradation
- solid waste generation and management
- infrastructure development and landscape modification
- biodiversity loss and biosecurity risk
- greenhouse gas emissions.[15]

This list of environmental pressures has been selected to cover the spectrum of local, national and global scales. That said, pressures will cross boundaries, with effects from global and national pressures felt more in particular areas and at specific times.

These pressures have consequences for the way all New Zealanders enjoy their environment. They have particular consequences for Māori as kaitiaki (guardians) of places that are an inseparable part of the identity of iwi and hapū. Moreover, tourism can interfere, directly and indirectly, with resources and wāhi tapu (places that are sacred).

These pressures have also been selected to be broad enough to account for environmental pressures placed on multiple environmental domains. For example, the threat of a biosecurity incursion is just as relevant to terrestrial ecosystems as it is to marine. Other environmental pressures are discussed where they either occur together with another pressure (e.g. air pollution and greenhouse gas emissions) or are relevant to a specific locale (e.g. tourist interaction with wildlife).

[14] For example, see reviews by PCE (1997), Gössling (2002) and Gössling and Peeters (2015).

[15] A 2019 Travel Foundation report, entitled *Destinations at risk: The invisible burden of tourism*, focused on an almost identical set of pressures, selected due to degree of impact. They noted that these operational externalities are typically unaccounted for in tourism costs (Wood et al., 2019).

Tourism – on whose terms?

The traditional tourism paradigm has been to focus on destination promotion (marketing), visitor arrivals (where people are travelling from and to), visitor expenditure (at place) and visitor satisfaction. In recent years, there have been calls to focus on the actual places and people that underlie the marketing and statistics – what might be called 'conscious tourism'.[16]

This involves a shift from destination marketing to destination management: planning to adequately care for the total population at a place (permanent and temporary). This also involves being aware of host attitudes as much as visitor satisfaction. One does not want to invite people to visit an area, only to find that the place is ill-prepared to receive the guests, or the hosts are ambivalent or even hostile towards their visitors.

As the number of tourists rises and their dispersal to new destinations increases, questions can be legitimately asked about on whose terms these visitors are coming. For many New Zealanders, the answer will be 'our terms'. For Māori, manaakitanga (hospitality), kaitiakitanga (guardianship) and tino rangatiratanga (autonomy and self-determination) provide a more nuanced framework, where Māori exercise rights and special interests in determining how tourism operates within their tribal boundaries and nationally. For a country that sells the quality of its natural environment as a key offering, the terms on which visitors come here must be in line with Te Tiriti o Waitangi (the Treaty of Waitangi) and reflect the environmental values, and spirit of kaitiakitanga, of its residents.

The tourism sector in New Zealand is wholly dependent on the quality of the environment we offer to the world. If the way we manage tourism leads to a progressive decline in the quality of that environment, it will undermine the reputation and performance of the tourism sector. As such, promoting the natural environment can be a two-edged sword.

We need to know who our visitors are and understand the environmental and cultural pressures they may impose. That information can then enable us to mitigate and address the worst environmental pressures that a business-as-usual trajectory for tourism would otherwise entail.

[16] Pollock, 2015.

2

Blechnum fluviatile, kiwikiwi

Tourism development in Aotearoa New Zealand

Chapter summary

- Tourism is as old as Aotearoa, with Māori practising tourism before European settlers arrived.
- The New Zealand Government has from the outset been heavily involved in the development of tourism, both as a steward and as an actor. However, since the 1990s it has progressively had a more hands-off approach to management, although international visitor numbers have increased rapidly.
- Because of the interventions of the Government, Māori have been displaced, limiting their ability to practise tikanga such as manaakitanga, kaitiakitanga and tino rangatiratanga.
- Through Treaty partnership and settlement of historical claims, Māori involvement in tourism has increased over time.
- Several tourism sector strategies have been developed since 2000. However, their focus has largely been on sector growth, with only superficial mention being made of community and environment.
- Environmental pressures from tourism growth were investigated and reported on almost 20 years ago. These pressures stem in part from the legacy of developments to grow tourism and from a continuing concentration of visitors in a small number of iconic sites throughout New Zealand.

This chapter describes how tourism has shaped Aotearoa New Zealand to date, considering the development of this country's tourism industry from the nation's beginning.

Tourism's development in New Zealand covers four periods. The first period, covering the period to 1880, shows that tourism is as old as the nation (figure 2.1). The second period, through to the 1980s, was one in which successive governments took a very active role in encouraging international tourism, environmental change and scenery protection.

During the 1980s, the Government dispensed with the ownership and operational roles that had dominated its promotion of New Zealand as an international destination. However, even with a more 'hands-off' approach to destination management, the Government has continued to intervene heavily to promote an industry that is widely seen as being a source of income and jobs for the wider community.

Indeed, a common theme of tourism's development in New Zealand has been the close facilitative and often financial role that central government has played in promoting this country as a destination. Sustained, if irregular, government support has played a large part in Aotearoa New Zealand becoming the destination it is today. As the country moves to head off some of the compounding environmental consequences of rising visitor numbers, the case for that ongoing support will inevitably be the subject of ongoing scrutiny.

Source: New Zealand Department of Tourist and Health Resorts by authority W A G Skinner, Government Printer, Wellington. [1930s]. Ref: Eph-E-TOURISM-1930s-01. Alexander Turnbull Library, Wellington, New Zealand

Figure 2.1: Vintage New Zealand tourism poster.

Tourism is not new

Domestic tourism and tikanga

Māori have been moving between areas since they arrived in Aotearoa, and European explorers travelled the country extensively through the nineteenth century, often with Māori guides, identifying natural attractions. However, prior to 1880, visitor numbers in any one place were generally low and managed with strict regard for tikanga (lore, protocols, values). Travel was frequent, and it brought an obligation between visitor and host to act in accordance with that tikanga.

Although some practices have evolved over the years, most tikanga remain unchanged. Tangata whenua (hosts, people of the land) and manuhiri (visitors) continue to uphold values of generosity and reciprocity, based on respect for people and their whakapapa (genealogy, connections). In te ao Māori (the Māori worldview), whakapapa extends to the natural environment and specific places, as well as to other people, past and present.

Manaakitanga is a reciprocal practice that demonstrates people's mana (prestige and authority) and capacity to look after and enhance the mana of others. During pōwhiri (welcome ceremonies), tangata whenua display manaakitanga by putting on a hākari (feast) for their manuhiri and providing hospitality such as accommodation (figure 2.2).

The hākari (as well as performing an important role in the spiritual process of pōwhiri) is a demonstration of the quality and quantity of the resources available to tangata whenua. In the past, the mana of tangata whenua was thus heavily reliant on the resources of their rohe (district). Manuhiri reciprocate manaakitanga by providing tangata whenua with a koha (gift or contribution). In the past, koha often consisted of special resources or products unique to the tribe or tribal region of the manuhiri. In present times, koha usually takes the form of a monetary contribution.

Source: Wikimedia Commons

Figure 2.2: A Feast at Mata-ta, on the East Coast, 1847, by George French Angas.

Underpinning manaakitanga are the concepts of kaitiakitanga and tino rangatiratanga, which link manaakitanga to the land. Tangata whenua, through their whakapapa to specific rohe, are kaitiaki of their land and have mana whenua (tino rangatiratanga to make decisions over that land). If someone travels into another rohe, they are expected to adhere to the local tikanga.

In Rotorua, different hapū have mana whenua over certain areas. As a geothermal rohe, most manuhiri Māori would not visit without taking a plunge in Te Kopura: a special bath known for its healing powers.[1] Later, settlers and Pākehā visitors were also welcomed and services were provided in exchange for koha, such as alcohol, tobacco and other gifts. "No one ever seems to have visited Ohinemutu without commenting on the enjoyment experienced by bathing in the warm waters of Ruapeka Bay together with apparently, the bulk of the local population."[2]

Once Māori converted to the money system, a small and probably underestimated cost was then set.[3] In this way, Te Arawa (the iwi grouping living in the Bay of Plenty) began to receive payment for tourism.

[1] Te Awekotuku, 1981, p.122.
[2] Stafford, 1977, pp.11–12.
[3] Te Awekotuku, 1981.

Early international tourism

International tourism was developing as early as the 1840s. Waiwera Hot Springs Hotel was established in 1848 north of Auckland, and Te-ō-tū-kapua-rangi and Te Tarata – the Pink and White Terraces (figure 2.3) – were by then being recognised as a potential tourist destination. As one of the largest silica sinter deposits on the planet, foreigners visited the terraces while being hosted by local Māori.

By the early 1850s, the influx of Pākehā visiting and settling in Aotearoa New Zealand increased pressure to free more land. Iwi started to move against the Government, who were displacing them from their lands and waters. Land wars ensued in the late 1860s, which impacted on the tourism trade.

British royal visits in 1869 and 1870 aimed to show foreign audiences that New Zealand was a safe and attractive place to visit. A 50-mile road was constructed by 1,500 Māori from Maketū to Tarawera to convey Prince Alfred to the terraces.[4] There he signed his autograph on one of the silica terraces. This started a trend of visitors defacing the terraces, signing their names, taking away geological samples and leaving rubbish.[5]

Source: Te Papa

Figure 2.3: The Terraces, 1885, by Charles Blomfield.

[4] TNZ, 2001, p.10.

[5] Anon., 1874, p.2; House of Representatives, 1874, pp.4–5.

Turning 'wastelands' into tourist attractions

In 1872, the United States of America proclaimed Yellowstone National Park. Such parks provided a number of benefits for young colonies, drawing international visitors and showcasing a country's natural wonders and scenery. There was the bonus of outdoor adventure to reach them, and possible interaction with indigenous peoples, marketed as 'noble savages' as opposed to the rightful kaitiaki and mana whenua of those lands. These parks also provided a potential source of revenue from what were otherwise regarded as 'wastelands': remote, mountainous, undeveloped or desert lands, from which few goods could be economically extracted.[6]

Tourism, rather than nature conservation *per se*, similarly spurred the development of national parks and reserves in New Zealand. The Government argued this would protect an area from uncoordinated private development, prevent further vandalism and standardise the fees charged for access, transport, guiding and accommodation.[7] However, this nationalisation also meant that the state would obtain a good share of future revenue from tourist development, some of which was then going to local Māori.

Loss of tino rangatiratanga

In areas where tourism was growing, the traditional Māori way of living was breaking down. While many Māori saw the potential of trading with Pākehā and took advantage of the growing visitor population, an increasing reliance on payments from tourists compounded other impacts of colonisation (like health and social issues), contributing to their assimilation into the Pākehā world (and loss of culture).

When the state took the lead in the development of tourism around 1880, Māori culture was packaged and marketed as an exotic 'other'. Advertising portrayed a shallow representation that included a 'model pā', 'native villages', concert groups, people in traditional clothing and 'exotic young maidens'.[8,9] Colonisation led to a loss of control by Māori over the marketing of these images, which presented a skewed image of Māori people and Aotearoa New Zealand to tourists. Some of these images formed the basis of harmful, one-dimensional stereotypes of Māori, which continue to inform problematic attitudes and behaviours, domestically and internationally.

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[6] Hall, 2002; Harper and White, 2012.

[7] House of Representatives, 1874.

[8] Stafford Group et al., 2001; Bremner and Wikitera, 2016.

[9] The construction of the 'model pā' involved the destruction of the original foundations of the historic pā of Te Rotowhio (McClure, 2004, p.45). For more information, see Schultz (2014, pp.132–136) and Streeter (2016, pp.9–13).

As the Government further intervened in the tourism industry, tourism revenue previously going to Māori was diverted to the Crown. This was in part due to government acquisition of Māori land and because government investment in infrastructure and tourism was re-directed away from areas over which Māori had control.[10] For example, Māori-run accommodation and services at Ōhinemutu and Whakarewarewa were outcompeted by the Government's initiative to create the new township of Rotorua.[11]

The Crown also obtained a purchasing monopoly under the Thermal-Springs Districts Act 1881. This meant that:

> "Maori could no longer charge for access to thermal areas. By the 1890s few of the major springs remained in Maori hands. With respect to the tourist industry, at least, the correspondence between [Māori] land loss and declining economic opportunities seem clear."[12]

The Government acquired what they deemed to be 'wastelands', despite these being areas where iwi were living or periodically settling. For example, Tongariro National Park was created when an agreement was established (1887) between the Crown and Ngāti Tūwharetoa. The Crown acted as though the land was being gifted by Ngāti Tūwharetoa "as a special 'playground' for the people",[13] however, this was not the intent of the agreement.[14] Local Māori were instead proposing to partner with government to regulate access and prevent European visitors climbing the peaks without permission, desecrating the heads of their ancestral mountains and the burial grounds of their ancestors.[15]

During the 1890s the Government began to enable the development of tourist routes such as the Whanganui River. Te Āti Haunui-a-Pāpārangi, who lived along the banks of the Whanganui, had about 140 pā and whare along the river.[16] The scenery and river transport protection provisions of the Wanganui River Trust Act 1891 effectively drove people from their land, unable to exercise customary fishing practices. One of the longest litigation cases in New Zealand's legal history resulted.[17]

The Crown later established Te Urewera National Park (1954) without consulting the local Tūhoe people. Despite Ngāi Tūhoe being promised this land as a native reserve in 1896, the Crown did not recognise Tūhoe as having any special interest in the land or its governance. Tūhoe were consequently unable to practise their customs in their lands and waterways, including kaitiakitanga and sustainable resource use, due to park policies.[18]

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[10] Te Awekotuku, 1981.

[11] Boast, 2008.

[12] Boast, 2008, p.268.

[13] House of Representatives, 1895, p.v.

[14] The Waitangi Tribunal has recently resolved that the actual intent was tuku: covenant protection of sacred, ancestral mountains through proposed co-management (Waitangi Tribunal, 2013a).

[15] The explorer James Kerry-Nicholls wrote: "This mountain [Tongariro], as before pointed out, is strictly *tapu*, and I was aware that all the persuasive diplomacy in the world would not secure me permission to ascend it, I therefore had to accomplish this task unbeknown to the Maoris having settlements in its vicinity" (Kerry-Nicholl, 1884, p.133; Waitangi Tribunal, 2013a, p.87).

[16] Waitangi Tribunal, 2015, p.xiii.

[17] Te Awa Tupua (Whanganui River Claims Settlement) Act 2017.

[18] Tūhoe Claims Settlement Act 2014, s 9(37). Te Urewera National Park was disestablished in 2014.

A century of state-led tourism development

The world's first government tourism department

By 1880, the colonial government was looking for ways to boost the tourism industry in response to new steamship technology providing faster and more frequent travel links to New Zealand, as well as seeking to lift the country out of the Long Depression.[19]

The ensuing 50 years would see the start of national tourism promotion, large-scale acquisition of scenic land, the building of rail and roads to tourist destinations, building health resorts in geothermal areas and hotels in remote scenic areas, and the deliberate transformation of landscapes and ecosystems to suit foreign fishers and hunters.

The Government began to decisively build the tourism industry through the Thermal-Springs Districts Act 1881, which gave the state the pre-emptive right over geothermal protection and development in areas where this was "advantageous to the colony".[20] The Government then surveyed a special township at Rotorua, specifically designed to be an international hot-springs spa resort – the gateway to a proposed national park at Lake Rotomahana (figure 2.4).

The destruction of the Pink and White Terraces during the 1886 eruption of Mount Tarawera saw plans changed. The Government immediately proclaimed that New Zealand's national park would now be Tongariro, with the chosen railway route to connect the cities of Auckland and Wellington running directly beside this park, providing easy access for visitors.

Through the 1890s, the Government began to acquire or build hotels at other iconic locations, invest in constructing bush tracks at Milford Sound, and became the first nation to use pictorial postage stamps for national tourist promotions.[21]

Then in January 1901, the world's first government tourist department was established by the Minister of Railways, Joseph Ward – initially established as the Tourist Branch of the New Zealand Railways Department – to coordinate and increase patronage of the country's new railways, steamers and state-owned hotels.[22]

It became a separate department a month later. Over the next decade, it acquired a host of functions: running tourist hotels, assisting with the selection and acquisition of new reserves (acquired under the Scenery Preservation Act 1903), administering the township of Rotorua, developing tourist attractions like a model pā at Whakarewarewa, encouraging game hunting and fishing, promoting the country internationally, and operating booking bureaux for visitors wanting to travel to, through and from New Zealand.[23]

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[19] A global economic depression had begun in 1873. It was known as the Great Depression until the experience of the early 1930s.

[20] Thermal-Springs Districts Act 1881, preamble. Immediately after the Act was passed, over 620,000 acres of land around Rotorua and Taupō were proclaimed Thermal-Springs Districts (Boast, 1991; Bennion, 1991).

[21] Up until this time British and British colonial stamps generally portrayed Queen Victoria. The postmaster-general, an Australian named Joseph Ward, had noted how pictorial stamps had been used to mark the Australian centennial in 1888. Ward sought public input on New Zealand scenes, plants and animals to portray on a pictorial set issued in 1898.

[22] TNZ, 2001.

[23] Centennial Branch, 1940.

Source: Rotorua Museum Photographic Collection

Figure 2.4: Main Bath House building, Government Gardens, Rotorua c1910.

Opposition to financial and environmental costs

The Government's active promotion of, and investment in, tourism was accompanied by a growing debate about costs and impacts. For example, while some Members of Parliament supported the idea of government expenditure for a tourist road between Mount Cook and Milford Sound via Queenstown, others stated that such roads could ruin the very features that people came to see, and others felt it would be better to limit the expenditure to publicity.[24]

Growth in tourist numbers was not as fast as initially hoped, and in 1912 the incoming Government found that expenditure on tourism far exceeded any revenue it earned.[25] Attempts were made to reduce costs, but by 1927 expenditure was still double the revenue.[26] The Government responded to criticism with a statement that the department was never intended to make a profit; rather, it was for development, thus fulfilling its functions.[27]

[24] Parliament, 1891, pp.399–409.

[25] Throughout this period, the Liberal Party Government provided an annual account of tourist revenue but did not publish annual expenditure on tourism development. When the Reform Party came to power in 1912 it was found that state tourism expenditure was generally considerably more than annual state tourism earnings (House of Representatives, 1913a; 1913b; 1913c).

[26] The Government gave up management of Rotorua Township, given fixed lease arrangements but rising costs. Poor returns from the Hermitage Hotel at Mount Cook also led to the Government leasing the hotel to the Mount Cook Motor Company (House of Representatives, 1922; 1924; 1927).

[27] William Nosworthy, the Minister of Tourist and Health Resorts, wrote, "The Tourist Department was never intended to be a directly profit-earning institution, but was established with a view to development of the tourist resorts, and as a help to the Railways, Customs, hotels, and other businesses, and it is fair to maintain that it has fulfilled, and is fulfilling, these functions" (House of Representatives, 1927, p.2).

In the interest of attracting wealthy foreign hunters and fishers, the Tourist Department encouraged the release of deer into the mountain-lands and possums into forests. These animals would in due course have a devastating impact on indigenous plants and animals. Additionally, more rivers and streams were stocked with trout and salmon for fishing, the introductions of which significantly reduced or even eliminated indigenous fish populations.[28]

In July 1905, local Māori from Taupō and Tongariro petitioned Parliament to prevent trout being introduced into Lake Rotoaira. Trout were known to reduce native species such as kōaro, which were an invaluable food resource. The petitioners received assurance that trout would not be released and the lake would forever be a haven for indigenous fish. The next year, however, trout were introduced into the lake.[29]

In the 1920s, Pākehā began to protest about the environmental effects of tourism and road building on landscapes. There were calls for the Tourist Department to end landscape transformation in Tongariro National Park and provide better protection of indigenous plants and animals.[30] At the same time, the Tourist Department was thwarting attempts to eradicate possums.[31]

In the mid-1920s a proposed road through kauri forest in Northland was opposed on the basis that the increasingly rare sections of virgin kauri forest should be kept intact. The nation's largest kauri had already been lost to fire. People were also concerned that a road would enable the intrusion of pests, weeds, rubbish, fire, loggers and tourists into the heart of the forest. Nevertheless, the highway was approved. Completed in 1929, it passed near a tree named Tāne Mahuta, which would later become a national monument to the lost forest giants.[32]

International tourist numbers were not increasing rapidly, partly due to New Zealand's distance from overseas markets, but also due to globally significant events, such as World War I, the Great Depression and World War II. Consequently, the focus for governments shifted to providing healthy outdoor recreation opportunities for domestic holidaymakers: each region should have at least one area of natural parkland nearby for sport, recreation and attracting tourists from outside the region.

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[28] Druett, 1983. For example, it was not until the creation of the Tourist Department that any real attempt was made to import and release chamois. The manager's motivation was to "improve New Zealand's claim to being a sportsman's paradise, to 'induce the world traveller to include New Zealand in his itinerary'" (Druett, 1983, p.81).

[29] Waitangi Tribunal, 2013b, pp.977, 1030.

[30] Parts of the Tongariro National Park had been being converted into heath land for the hunting of grouse and pheasants by visitors (Cooper, 1982, p.8).

[31] The new Wildlife Branch of the Department of Internal Affairs was now seeking to eradicate possums. However, the Tourist Department did not want these prized game animals to be completely "exterminated", and successfully sought a closed season in 1932. Catches increased from 45,000 (1931) to 179,000 (1933) (House of Representatives, 1929; 1934).

[32] Liz, 2013.

From 1930 on, the Tourist Department was gradually reoriented, with less investment in hotel and activity development, and more of a focus on national marketing and transport.[33] This period saw the first Labour governments treat rail, aviation, bus and ferry transport as essential services to be provided by the state.[34]

Protecting lands through popular parks

Over the next 50 years, the establishment of scenic reserves and additional national parks came to be seen as a way to protect treasured lands and waterways from development. The National Parks Act 1952 provided for the declaration and management of areas for both nature preservation and recreational enjoyment. A network of national parks was established around the country.[35] The Forests Act 1949 was also amended to provide for a network of multiple-use forest parks around the country.[36] Ranger services were consequently provided by both the Department of Lands and Survey and the New Zealand Forest Service.

In the 1960s environmentalism was on the rise. John Salmon's book *Heritage destroyed: The crisis in scenery preservation in New Zealand* (1960) raised public consciousness about the effect of large-scale government hydro-electric and forestry developments on the natural wonders of the land. He described these developments as "State sponsored vandalism".[37]

Salmon's book was published on the eve of the filling of Lake Ohakuri, which drowned the bulk of the Ōrākei Kōrako thermal area. At the same time, the Government was proposing to raise the level of Lake Manapōuri to power an aluminium smelter. This would have drowned the lake's islands (reserved in the 1880s) and the forested shores within Fiordland National Park. Public efforts through the 1960s and 1970s to prevent or mitigate the impacts of this development helped catalyse the environmental movement in New Zealand.[38] Parks and nature-based tourism started to emerge as a relatively benign alternative to extractive industries like mining and forestry.

Emerging awareness of tourism's impacts

Since the 1970s, there has been a growing awareness of tourism's environmental and cultural effects, the latter particularly through the work of the Waitangi Tribunal, which was established in 1975 to investigate breaches of Te Tiriti o Waitangi – the Treaty of Waitangi.[39]

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[33] In 1954 the Department of Tourist and Health Resorts was renamed the Tourist and Publicity Department. The management of the state's ten hotels was taken over by the Tourist Hotel Corporation (THC) in 1956, so that the department focused solely on tourist publicity, travel services and bookings, and policy advice (TNZ, 2001, p.9).

[34] A national coach service, called Tiki Tours, was established in 1946, initially to transport tourists between the state-owned hotels (Tolerton, 2010).

[35] Where an area did not have a relatively unmodified area close by that could become a national park, marketable areas of scenic and historic coastal reserves were created: the Hauraki Gulf Maritime Park (1967), the Marlborough Sounds Maritime Park (1973) and the Bay of Islands Maritime & Historic Park (1978).

[36] There was lobbying for the Tararua Ranges to become the national park for the Wellington region, but the State Forest Service wanted to continue logging in the area. This led to the creation of the Tararua Forest Park (1954), where management provided for both logging and recreational enjoyment.

[37] Salmon, 1960, p.47.

[38] Knight, 2018, pp.23–33.

[39] For example, Waitangi Tribunal investigations on Te Urewera, Tongariro National Park and the Whanganui River.

An example of how awareness of the environmental impacts of tourism emerged is the case of Waitomo. For a time in 1979–80, the famous glow-worm grotto went dark for several months. The caves were suffering from graffiti and vandalism, tourists could still purchase souvenir rock specimens in the government-run gift shop, and crowding was damaging the atmosphere and ecosystems within the caves. A scientific investigation in the early 1980s found that the glow-worm shutdown was due to atmospheric modifications caused by a new door at the cave entrance. Careful, scientific management ensued from that time.[40]

This was one of several warning signs that the increasing popularity of sites could degrade the very assets that attract people in the first place. Rotorua in the 1970s provided a further example when it was noted that many of its geysers and mud pools were becoming less active and even disappearing. Research suggested that the draw-off of geothermal fluid by businesses and residents alike was the cause.

In 1987, the Government ordered the closure of all bores within a 1.5 kilometre radius of the iconic Pōhutu Geyser in Whakarewarewa Thermal Reserve, and the closure of all government department bores in Rotorua city. Over the intervening 35 years, hydrothermal activity has gradually started to increase, but many of the more spectacular geysers of old remain extinct due to sub-surface changes.[41]

The Rotorua experience highlights an important aspect of the environmental impacts of tourism: they are often compounding and cumulative, not caused by tourists alone, but rather the collective development and use of areas by hosts (permanent residents) and visitors (domestic and international temporary residents) combined. Environmental stresses can build up over lengthy periods of time.

During the late 1990s, there was public outcry over the effects of new high-speed passenger ferries travelling between Wellington and Picton through the Marlborough Sounds. The high-speed craft were introduced in 1994–95 with little prior understanding of the significant effects of wave energy on the coastal environment. The waves resulted in beach, shoreline and seabed damage and change. Calls by the community and iwi for management responses were swift, and after some litigation a bylaw was introduced to reduce speed through the sounds.[42] In this instance, the environmental effects were fairly instantaneous, but again they could not be attributed exclusively to tourists as some of the passengers were locals and commuters.

[40] Pavlovich, 2003.

[41] Scott and Cody, 2000; Scott et al., 2016.

[42] Parnell et al., 2007.

Administrative reforms and volume growth

Environmental management reforms

For a century, up until the late 1980s, the Government was the principal manager of tourism in New Zealand. At the start of the 1980s the Tourist and Publicity Department was providing tourism marketing and policy advice, the Tourist Hotel Corporation (THC) operated a network of hotels, and state-owned transport services included Air New Zealand and the Railways Corporation (which ran rail, inter-island ferries and long-distance buses). Additionally, the Department of Lands and Survey managed parks and reserves and had rangers providing site interpretation and recreation management, the New Zealand Forest Service provided forest parks and forest rangers, and the Wildlife Service provided wildlife rangers.[43]

This significant government presence in the tourism industry meant that there were multiple 'levers' available at the time for regulating tourist flows and impacts. However, one lever that was neglected was investment. Limited investment in key locations by successive governments restricted competition and potential economic surpluses. For example, there was little tourist development at Waitomo other than a THC hotel, cafe and gift shop. As one commentator has noted,

> "the bureaucratic and hierarchical administrative practices of the governing agent focused on a narrowly defined agenda of revenue acquisition, which excluded environmental protection, reinvestment and local contributions. As the indigenous Maori people [at Waitomo] had earlier been displaced from involvement in the tourism industry through the confiscation of their lands, now too the local community were separated from participation through the external sourcing of employment and supply inputs."[44]

From the mid-1980s, a gale of market liberalisation swept the economy. Environmental management was reformed in tandem. The commercial and conservation arms of government departments were separated in the interests of clearer mandates and transparent decision making, and to avoid duplication of services.[45]

In 1987, the Department of Conservation (DOC) was established to administer the majority of protected and recreational lands that had been acquired by the state over the preceding century, and to bring together all of the ranger services – DOC simultaneously providing conservation and visitor management services.[46] The lands overseen by DOC comprised one third of the country's area.[47] As commercial indigenous forest extraction was halted on former forest parks, the main source of revenue from conservation lands beyond annual budgetary allocations would be concessions for activities such as tourism services and filming.[48]

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[43] McBean, 1992.

[44] Pavlovich, 2003, p.209.

[45] Palmer, 2013.

[46] In addition to DOC lands, there are many small reserves administered by local territorial authorities. There were also some large high-country estates, leased from the Crown. Under a process called tenure review, ownership of these estates has been renegotiated, with some parts becoming freehold and some becoming conservation land.

[47] Under section 4 of the Conservation Act 1987, which is administered by DOC, the principles of the Treaty of Waitangi must be given effect to. Although the Treaty principles are not clearly defined, they need to be interpreted in relation to the Act in question (PCE, 2002).

[48] DOC, 2018.

Local government and resource management reform was also being undertaken at this time. During the 1970s and 1980s, the government began providing environmental impact assessments of new tourism developments.[49] Under the Resource Management Act 1991, responsibility for assessing environmental effects was placed largely with local government. While resource management under the Act has proved to be effective at assessing the site-specific and foreseeable effects of new developments, it has been less so in dealing with cumulative and non-site-specific effects.[50]

Selling state assets

Central government began divesting ownership and direct control of assets in the late 1980s. The sale of state assets to private commercial operators injected greater competition and allowed greater responsiveness to market forces. Air New Zealand was privatised in 1989, although the Government took up a majority shareholding again in 2001 after the company got into financial difficulties.[51]

The Government substantially reduced its involvement in the tourist industry. In 1991, the state's THC assets were sold to private interests. The Department of Tourism and Publicity was split into a marketing group and a policy group. The New Zealand Tourism Board Act 1991 established the new marketing group (trading as Tourism New Zealand (TNZ) since 1999) and in 1994, the policy group became the Ministry of Commerce's Tourism Policy Group.[52,53]

By pulling out of being an active tourism operator, the Government gave away many of the structures and 'levers' with which it had previously been able to regulate and influence tourist activity and behaviour.[54] Additionally, when disestablishing the Government's tourism departments in the early 1990s, "restructuring happened so fast no one ensured there was another agency to pick up responsibility for domestic tourism",[55] despite the fact that in many regions, domestic tourists provide the bulk of numbers, expenditure and potential impacts.

Tourist numbers start to soar

Despite the Government exiting the marketplace as an active tourist operator, it continued to shape the tourism industry's development through the new entities it established. In the early 1980s, half a million international tourists were visiting New Zealand annually. By 1990 there were almost one million arrivals. It was

[49] Examples include THC developments at Mt Cook (1974), Remarkables ski field (1976), Wellington Airport runway extension (1976), Waikawa Marina (1977) and recreational fishing in the proposed Poor Knights Island Marine Reserve (1979).

[50] Brown et al., 2016.

[51] Wilson, 2010.

[52] Specifically, the New Zealand Tourism Board was set the task to "ensure that New Zealand is so marketed as a visitor destination as to maximise long-term benefits to New Zealand" (New Zealand Tourism Board Act 1991, s 6). This has resulted in a relatively narrow focus of marketing New Zealand internationally to ensure growth of the tourism sector largely through increasing international visitor arrivals.

[53] This group is now located in the Ministry of Business Innovation and Employment (MBIE).

[54] A number of Regional Tourism Organisations had been established in the 1980s, linked to local territorial authorities (district and city councils) and supported by central government. Their task was regional destination promotion, stimulating domestic travel. Limited resources have, however, limited their influence in tourism management (Zahra, 2006; Zahra and Pocock, 2007).

[55] Kaye, 1994, cited in Zahra and Pocock, 2007.

estimated then that international tourism contributed $2.3 billion per year to the economy, and domestic tourism another $3.8 billion.[56]

From the outset, one of the main goals of TNZ was to attract three million international visitors per annum by the year 2000. This was later revised to include other metrics, such as targets of $9 billion in foreign exchange earnings from tourism and 180,000 full-time equivalent jobs by 2000.[57]

Private enterprise was now increasingly providing adrenalin-filled activities such as jet-boating, heli-skiing, white-water and black-water rafting, and bungy jumping (figure 2.5). The government's role became primarily one of supporting tourism through overseas marketing via TNZ.

Source: Phil McIver

Figure 2.5: In the late twentieth century, adrenalin-filled activities such as bungy jumping started to play a part in New Zealand's tourism offering.

[56] PCE, 1997.

[57] New Zealand Tourism Board, 1993, p.6; PCE, 1997, p.153.

Inquiries about tourism's environmental effects

Given the drive for rapidly increasing tourist numbers from 1990, a Parliamentary Inquiry was conducted on whether the projected volume growth was compatible with conservation and public access issues.

Parliament's Commerce Select Committee resolved in 1994 that there were no insurmountable issues. However, it did recommend a formal framework for consultation between the Tourism Policy Group, TNZ and DOC. The groups had informal, officer-level communication, but formal consultation quickly lapsed.[58]

One of my predecessors as Parliamentary Commissioner for the Environment, Dr Morgan Williams, subsequently completed a comprehensive investigation into the management of the environmental effects of tourism, and identified a number of recurring themes.[59] He noted that "the management of environmental effects in the tourism sector is more difficult because New Zealand's strategic approach to tourism has been primarily focused on maximising the benefits from increased international visitor numbers", without properly considering the management of impacts.[60]

Echoing earlier DOC work, his report noted a recognisable increase in pressure on 'icon' attractions such as the Waitomo Caves and Milford Sound, concluding that the pressure at these sites was so great that it "cannot be sustained even in the medium term without major attention being given to reducing the adverse visitor effects."[61]

The report ultimately recommended that growth needed to be more actively and strategically managed.[62] Yet today, 20 years on, many of the findings remain just as relevant – and unresolved. Many strategies have been developed by government and industry since then, but these have focused on growth.[63] A notable absence from agencies involved in the *New Zealand-Aotearoa Government Tourism Strategy*, for example, is the Ministry for the Environment.[64]

Continuing tourism growth and environmental effects

A combination of marketing campaigns, continued deregulation within New Zealand, increased tourism offerings and an improving global economic climate led to international visitor arrivals increasing steadily throughout the 1990s – reaching 1.6 million by 1999 (figure 2.6). In particular, an expanding middle class in several Asian countries saw a new influx of tourists whose trends in leisure consumption were similar to those in mature markets such as the United Kingdom and United States.[65] Visitor numbers then fluctuated in response to external events, most notably the Asian financial crisis in 1997–98, which triggered a slight decrease in total arrivals.[66]

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[58] PCE, 1997, p.45.

[59] PCE, 1997, p.204.

[60] PCE, 1997, pp.126–127.

[61] PCE, 1997, p.125.

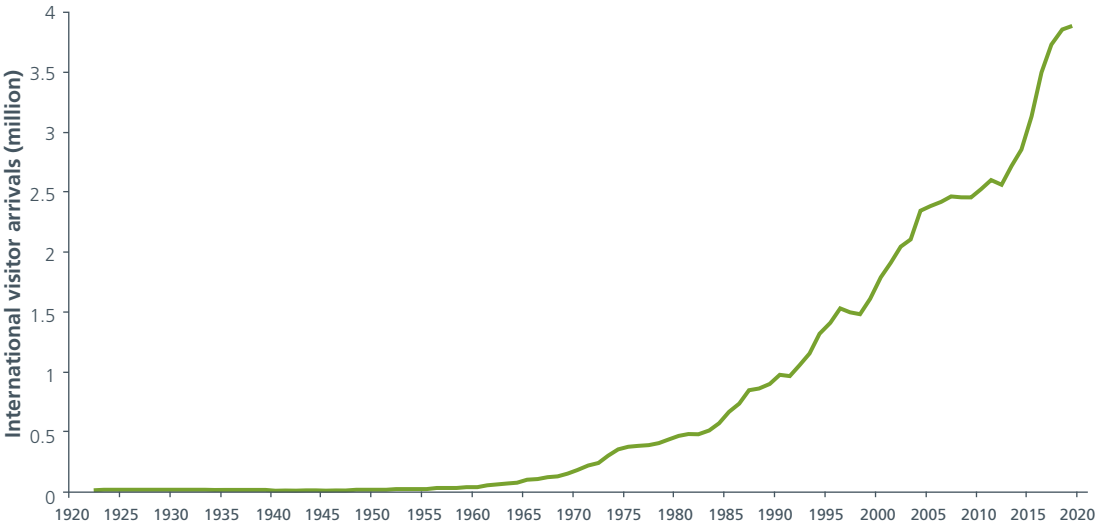
[62] PCE, 1997.

[63] White, 2019.

[64] MBIE and DOC, 2019.

[65] Ateljevic and Doorne, 2002, p.659.

[66] The biggest effects were from Asian tourist markets. For example, Japanese and Chinese visitor arrivals decreased by 5% and 6.5% respectively. However, the greatest drop occurred in the Korean market, which decreased by 84% between 1997 and 1998 (Higham et al., 2019).



Source: International travel and migration data, Stats NZ

Figure 2.6: Growth of international arrivals to New Zealand 1920 to 2018. The box indicates the era of tourism growth strategies.

By the end of the 1990s, tourism industry growth had highlighted its potential as a significant ongoing contributor to the economy. There was, however, growing dissatisfaction within the industry regarding international marketing efforts, with each market having its own budget, campaign and messaging.

It was the industry that pressed for a single cohesive brand that had a distinctly New Zealand voice.[67] The result was the '100% Pure New Zealand' global marketing campaign launched by TNZ in 1999 (box 2.1). For many, the advent of this campaign represented a decisive step change in the growth of tourism in Aotearoa New Zealand and was part of the driving force behind the rapid growth in international visitor arrivals since 2000.[68]

[67] TNZ, 2009.

[68] TNZ, 2009. Growth slowed following the 2008 global financial crisis but grew rapidly again from 2014.

Box 2.1: 100% Pure New Zealand

At the core of the 100% Pure New Zealand campaign is the depiction of Aotearoa New Zealand's landscape. This was guided by market research that showed that landscape and adventure were important factors for international visitors considering New Zealand as a destination.[69] When viewed through a historical lens, the 100% Pure New Zealand campaign could be argued to be a continuation of the "traditional scenic wonderland myth", reimagined.[70,71]

People and culture were also important, and the campaign has been adapted at times to capitalise on opportune marketing possibilities (for example, '100% Middle-earth' to take advantage of tourism associated with films like *The Lord of the Rings*).[72] Film tourism has had the effect of shifting tourism to new areas previously off the tourist trails, such as the rural countryside of Hinuera (Hobbiton).

Since its inception, there have been critiques of the 100% Pure New Zealand campaign as selling a fictitious version of the country's environment and culture, and of fostering expectations of a pristine environment. The counter to this argument is that the 100% Pure brand is a "marketing strategy ... not an environmental standard".[73] People struggle, however, to make this distinction.

Recently, there has been a publicised shift in the marketing of New Zealand globally, with more emphasis on people and culture, rather than just places.[74]

The use of natural (largely scenic) imagery to market New Zealand to the world in this way was nothing new. However, the combination of marketing campaigns and visitor growth resulted in an increase in the number of tourists who expected to experience breath-taking nature, remote wilderness and abundant wildlife.[75]

Perhaps unsurprisingly, this saw a continued concentration on historically popular tourist destinations such as Milford Sound. The result was increased pressure on the environment at popular iconic locations, many of which were the same ones that had been marketed to visitors 100 years prior.[76]

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[69] TNZ, 2009, p.12.

[70] Bell, 1996, cited in Ateljevic and Doorne, 2002, p.661.

[71] For example, the wider strategy of establishing offices throughout the globe in key markets (such as Singapore, Tokyo, Los Angeles and London) is reminiscent of trade commissioners and tourist offices of the early twentieth century.

[72] Other adaptations include: 100% pure relaxation, 100% pure welcome, 100% pure adrenalin and 100% pure you. For more examples, see the TNZ website (https://www.tourismnewzealand.com/about/what-we-do/campaign-and-activity/).

[73] Davis, 2018.

[74] Bradley, 2018.

[75] Chamberlain, 1992, cited in Higham et al., 2019.

[76] PCE, 1997, p.110.

This led to a realisation that tourist numbers should be dispersed over space and time. A desire on the part of visitors for greater freedom of movement than coach tours and package holidays allowed also saw a growing move to rented motorhomes or even cheap used vans for the duration of a visit (an option called 'freedom camping').

The number of freedom campers grew rapidly from 2000.[77] However, each of the country's local authorities, plus DOC, had its own rules for managing these campers.

This led to the enactment of the Freedom Camping Act 2011, passed ahead of an expected influx of budget tourists for the Rugby World Cup 2011. Nevertheless, the continuing growth in freedom campers since then has provoked concern about rubbish, human waste, pollution of waterways and fire risk.

Contemporaneously, DOC was moving from supply-side management to destination management. In 2010, conservation lands supplied 330 camp grounds, 950 huts, 2,200 kilometres of road and 13,700 kilometres of walking tracks.[78] From 1993, some tracks had been designated Great Walks for marketing purposes, but also to manage crowding in huts via a booking system.[79] A Visitor Asset Management Programme was introduced in 1995, defining priority areas for investment.[80] From 2010, areas were designated as icons, gateways, locally treasured places, or backcountry for management purposes. Facilities and services in these zones would be managed differently according to safety needs and visitor expectations.[81]

International visitor growth slowed briefly during the global financial crisis of 2008. To counter the downturn, the Government once again came to the rescue, providing a foundation for new growth by financing the building of cycle-ways around the country. In 2009 a $50 million National Cycleway Fund was created, with another $30 million of co-funding received to help with construction. In 2016 the Government invested a further $25 million over four years to help improve and maintain the Cycle Trail.[82]

In 2008 a new national Walking Access Commission was also established to maintain and enhance public access to the countryside.[83] 2011 saw the opening of the Te Araroa Trail, a 3,000 kilometre route from one end of the country to the other, 60 per cent of which crosses DOC-administered land. The Government provided funding to support the development of this walkway.[84]

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[77] When announcing new freedom camping laws in 2011, the Government stated that between 2000 and 2010, numbers had doubled to 110,000 international visitors and over 40,000 New Zealanders (Smith, 2011). The International Visitor Survey suggests, however, that only about 55,000 international visitors were freedom camping in 2010, though numbers grew to 123,000 (3.4% of international visitors) in 2018 (MBIE, 2019a).

[78] Sutton, 2010.

[79] DOC, 2007a.

[80] Booth, 2006, p.12.

[81] DOC, 2011.

[82] MBIE, 2019c.

[83] From 1976 to 1989 there had been a New Zealand Walkways Commission helping develop a network of walking routes across both public and private land the length of the country, encouraging exploration of lesser known places by both domestic and international visitors.

[84] Carter, 2007.

The creation of cycle-ways to complement the walking track network capitalised on a growing interest in mountain-biking and e-biking around the country. It also encouraged dispersal of tourists through many regions. Some of these cycle-ways have since been designated Great Rides, complementing the growing network of Great Walks.[85]

At the other extreme from freedom camping, biking and walking, there has been a dramatic increase in cruise ship visits. In the 1990s, there were only a few visits per year. By 2019, there were over 40 ships visiting New Zealand, making over 140 different cruises with over 750 port visits. The size of the ships has been increasing, with larger ships now carrying over 3,000 passengers and 1,500 crew.[86]

The growth of the cruise industry led to a PCE investigation report in 2003, where the principal concerns were discharge of waste to water, spread of marine weeds and pests and maritime accidents. It was concluded that there were no significant environmental impacts at the time of that report, due to the low frequency of ship visits. However, there was room for improvement in monitoring and management, there were risks in sensitive environments like the fiords and there was increasing risk as the frequency of visits increased.[87]

With the increasing size of cruise ships, there are growing concerns about fossil-fuel use, carbon emissions, air pollution while in port, movement of pests and weeds (such as *Undaria* seaweed) around the coast, illegal discharges of waste and the potential environmental impacts of accidents at sea.

Concern about accidents at sea is not academic. In 2017, the operators of the small French luxury cruise liner *L'Austral* were fined $100,000 for endangerment of human life and entering a 300-metre prohibited zone around Snares Island, a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. While there, they hit an uncharted rock, resulting in a number of hull penetrations and slightly bending two keel plates.[88] No pollution was reported, but instead of returning to port for repairs and preventing further endangerment to passengers and the sea, the liner continued its cruise to the Auckland Islands.[89] One month later, the same vessel hit a stony bank near the shoreline of Milford Sound, though again with only superficial damage.[90]

[85] For example, the Heaphy Track can be mountain-biked between May and November.

[86] Norman and Douglas, 2019.

[87] PCE, 2003.

[88] Strict rules apply to all known visitors to the area. There is a limit on how many visitors are allowed per season, all parties must have a permit, and they must be accompanied by a DOC representative (DOC, 2006a, p.38).

[89] Maritime New Zealand and DOC, 2018; Transport Accident Investigation Commission, 2018a.

[90] *Stuff*, 2018a; Transport Accident Investigation Commission, 2018b.

Tourism growth strategies

Multiple tourism strategies

By the late 1990s, central government involvement in guiding and facilitating tourism took a fresh turn, leading successive governments throughout the early 2000s to produce strategies for the tourism sector.

The *New Zealand Tourism Strategy 2010*, released in 2001, laid out a foundation for the future and the mechanisms needed to get there. The strategy added little that was not already known or being worked on. Its key principles – sustainability, yield, Māori participation and public/private commitment – were echoed in subsequent iterations. The three key themes were:

- economic success (through increasing visitor spend, for example)[91]
- the role of government (by supporting Regional Tourism Organisations so that local values are aligned)[92]
- sustainability – couched in terms of ensuring the ongoing ability of the tourism sector to use the environment in a way that secures the best return from its use.[93]

Following a review in 2007, an updated version with an outlook to 2015 was published. Comparison with the earlier version reveals little change. However, there was an acknowledgement that sustainability is about more than economic sustainability. It recognised that protecting and enhancing the environment requires a nationwide approach, but that the tourism sector can show leadership by implementing sustainable initiatives such as transport, energy use, waste reduction and management and conservation areas.[94] Such leadership was later demonstrated through the Government's increased focus on destination management planning, as well as the development of the International Visitor Conservation and Tourism Levy.

To achieve the identified strategies, there was extensive reference to the need for a sectoral embrace of tikanga of kaitiakitanga and manaakitanga.[95] On the one hand, this could be seen as an attempt to truly embrace tikanga Māori in tourism. One critic, however, has described the references to tikanga in strategic documents as an appropriation of terminology that "undermines the very cultural system to which cultural values such as mana-ā-kī(tanga), belong."[96]

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[91] For example, "increasing yield requires emphasis to be placed on both growing visitor numbers and spend per visitor. A 1% increase in spend by all visitors generates the same economic result (a $1 billion dollar increase in revenue) as a 12% growth in visitor numbers. This highlights the importance of strategies that increase visitor spend rather than focusing solely on growing visitor numbers" (Tourism Strategy Group, 2001, p.ii).

[92] Zahra, 2006.

[93] Tourism Strategy Group, 2001, pp.i–v.

[94] Ministry of Tourism, 2007, p.18.

[95] Ministry of Tourism, 2007, pp.5, 10.

[96] Martin, 2010, p.137.

Upholding Māori rights and customs

A new demand for Māori economic and social independence in the 1980s led to a Maori Tourism Task Force report that aimed to help shift representation of Māori by national tourism organisations to representation and control of Māori tourism by Māori.[97] In particular, the report noted that:

> "It has been of deep concern to the Maori that the Maori image has been used as a marketing tool in the promotion of the tourist industry for over a hundred years. Maori are also critical of the way they are stereotyped into guides, entertainers, carvers, and as components of the natural scenery. This has been without consultation and with little commercial benefit to the Maori people."[98]

The Maori Tourism Task Force report summarised barriers and opportunities that tourism presents for Māori and highlighted that the sector could be a mechanism to create employment and better use existing assets under Māori control. However, the potential for the sector to facilitate improvements was not as straightforward as it appeared. By the 1980s, much of the ownership and control of financial and physical assets were dominated by large corporations and lay beyond the reach of Māori.[99]

However, the task force did lead to the development of some new Māori tourism initiatives, such as a highly successful hapū-operated whale-watching venture at Kaikōura (see box 2.2). With such entrepreneurship came a desire to better reflect Māori culture and values in tourism, build a genuine Māori dimension in the tourism sector, provide job opportunities for the next generation and improve "management and monitoring techniques to protect the natural environment from pollution and from exponentially increasing numbers of visitors."[100]

In 2001, Māori Regional Tourism Organisations were created, and in 2004 a national Māori tourism body was founded. Supported by Te Puni Kōkiri, the New Zealand Māori Tourism Council built relationships with other national tourism bodies and supports local Māori tourism businesses.[101]

Part of a recent drive in the development of new enterprises is the significant increase in Māori investment in tourism following Treaty settlements.[102] Investment has ranged from small-scale enterprises, such as those offering specific Māori experiences, through to larger-scale tourism organisations, such as investments by Ngāi Tahu in the Shotover Jet and Tainui in the Novotel in Hamilton.[103] Despite this, significant barriers still exist for a number of whānau, hapū and iwi as the availability of capital and lending opportunities is often limited by organisational and land-based asset ownership structures.

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[97] Amoamo, 2008, p.134.
[98] Maori Tourism Task Force, 1987, p.25.
[99] Maori Tourism Task Force, 1987, p.24.
[100] Poharama et al., 1998, p.40.
[101] Te Puni Kōkiri, 2006.
[102] Pearce, 2001, p.80.
[103] Pearce, 2001, p.80.

Box 2.2: Two Māori tourism successes

Waitomo caves

The Waitomo caves were explored by the local Ngāti Maniapoto chief Tane Tinorau Opataia and Englishman Fred Mace (1887), and by 1889 were open to tourists. The caves proved a popular destination and visitors were charged a small fee to be taken on a tour. The glow-worm cave was "forcibly nationalised" in 1906 under the Scenery Preservation Act.[104] In 1990, 20 hectares was returned to the descendants of the original owners – including the caves, the THC hotel land and $1 million in compensation. Waitomo Down Under, a cave-tubing enterprise started in 1992, was able to use these lands as a base for operations and employ cave guides from respective hapū.[105] Management of the caves is now shared between the two hapū, Ruapuha and Uekaha (of Ngāti Maniapoto iwi), and DOC, with many staff employed at the caves today descending from chief Tane Tinorau and his wife Whariki Huti.[106]

Whale Watch Kaikōura

In 1988, Te Rūnanga o Kaikōura set up a company called Kaikoura Tours Limited (now called Whale Watch Kaikōura) for the main purpose of employing Māori people in Kaikōura (figure 2.7). At that time, 90 per cent of the Māori community in Kaikōura were unemployed.[107]

The successful, growing business led to economic improvement, and in 1990 it won the first of many awards. In the 1990s, the community saw tourism as a huge opportunity not only for employment (in the enterprise and craft shop, and indirectly through accommodation and restaurants) but also education, and the opportunity to "reverse the negative trends of the last century and return Kaikoura to its earlier economic importance."[108] Many perceived Whale Watch Kaikōura to be a demonstration of iwi sovereignty, while also being an iwi-owned and operated, multi-million dollar business.

[104] Pavlovich, 2003, p.208.
[105] Pavlovich, 2003, pp.211–212.
[106] Discover Waitomo, 2019.
[107] Harmsworth, 2005.
[108] Poharama et al., 1998, p.18.

Source: threefishsleeping, Flickr

Figure 2.7: Successful Māori tourism businesses have been developed throughout the country. Whale watching in Kaikōura is one such example.

A 2001 report on the barriers and opportunities for Māori in tourism stated that just over 90 per cent of inbound operators sold tour packages that contained a "Māori tourism product".[109] However, the quality of the product was deemed too low. This was due in part to the perceived lack of new and vibrant products, but also because the product being sold – especially by non-Māori businesses – continued to provide only a superficial experience between Māori and visitors. Promotional material also continued to depict Māori culture too narrowly.[110]

The last few decades have seen a concerted effort by the government to acknowledge failures in observing the Treaty of Waitangi and provide cultural redress. The Crown has an explicit policy that no large tracts of conservation land be given back to Māori as part of the Treaty settlement process. However, it has been prepared to offer an acknowledgement of association, the right to representation on conservation boards and closer consultation on management plans.[111]

Under the Ngāi Tahu Claims Settlement Act 1999, there is specific acknowledgement of the relationship that Ngāi Tahu has with places and taonga, including bird, fish and mammal species. The Act requires that certain boards must have a Ngāi Tahu representative as a member, especially when making decisions on the management of those specific areas and species.

[109] Stafford Group et al., 2001.
[110] Stafford Group et al., 2001.
[111] Ruru, 2008.

Administration of Te Urewera changed significantly in 2013 when a Treaty settlement was affected. The national park status was removed and the land was recognised as a legal person in its own right, represented by a board with joint Tūhoe and Crown membership.[112] The Te Awa Tupua (Whanganui River Claims Settlement) Act 2017 followed a similar formula, recognising the river as its own legal entity with a co-governance board.[113,114]

The Treaty settlement process is ongoing and a key way of responding to and redressing tourism's environmental and cultural impacts. It can also underpin future developments in the tourism sector by providing a mandate for Māori to have a meaningful role in any strategies, policies and initiatives that impact their people, whenua and taonga.

Conclusion

Tourism is often touted as a relatively benign, non-consumptive industry. Compared with industries like mining or indigenous forestry, there is little extraction of finite resources. However, looking back on the development of the country's tourism industry, many environmental and cultural impacts can be identified. Tourism's development has involved the dispossession of Māori land, increased pressure on biodiversity as rail, roads and other infrastructure have been created, and the deliberate introduction and dispersal of destructive exotic plants and animals.

The state was the prime director of tourist development for the century from 1890 to 1990. Many legacy impacts are now being identified and redressed. The state's dominance gave it many levers to regulate tourist flows and impacts, but since tourist numbers were growing only slowly, they were not engaged. Ironically, beginning in the late 1980s, the government divested itself of many of these levers just as tourist numbers escalated and social and environmental stresses started to be felt.

Many of tourism's impacts are compounding and cumulative. But that is so of the way New Zealanders themselves live – both here and when they travel abroad. It might be tempting to assert that tourism cannot be distinguished from the economy at large. While there is an element of truth to that, the New Zealand government has spent and continues to spend significant sums of money promoting this particular kind of consumption.[115]

In the circumstances, it would be perverse to pretend that a sector that enjoys significant financial and policy support should not be subject to sectoral analysis of the pressures it imposes. The next chapters look at those pressures and the policy responses and management options being used to address them.

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[112] Te Urewera Act 2014.

[113] Te Āti Haunui-a-Pāpārangi, who lived along the banks of the Whanganui, had about 140 pā and whare along the river. This was their home, with the river providing their identity and livelihood. The scenery and river transport protection actions of the Wanganui River Trust Act effectively drove people from their land, unable to exercise customary fishing practices. This led to one of the longest litigation cases in Aotearoa New Zealand's legal history (Waitangi Tribunal, 1999, p.xiii; 2015).

[114] See Te Awa Tupua (Whanganui River Claims Settlement) Act 2017.

[115] For example, in 2018 TNZ's annual budget was $117 million per year (TNZ, 2018, p.19).

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Microsorum pustulatum, kōwaowao

The present: pressures and perceptions

Chapter summary

- Tourism makes a significant contribution to the New Zealand economy. However, a limited evidence base makes it difficult to characterise the detailed environmental pressures that tourism is having across the country.
- International visitor numbers increased to 3.9 million in 2019, but continued to be concentrated in certain regions. However, domestic tourists make up a greater proportion of tourism expenditure.
- Environmental pressures due to tourism growth are starting to become more visible. This has been highlighted by comparing the issues that are being reported within the New Zealand news media, academic literature and the perceptions held by host populations and Māori.
- The environmental pressures from tourism growth are manifesting across temporal and spatial scales. The cumulative impact of growing visitor numbers is eroding visitor experience and making management of waste more difficult in popular locations. Infrastructure is often not designed to meet current needs, and where it is being built to accommodate growth it may contribute to greater environmental pressure.
- Most tourism activity results in greenhouse gas emissions. The emissions footprint is particularly high for international tourists for whom Aotearoa New Zealand is often a distant destination.

The evolution of tourism in New Zealand discussed in the previous chapter highlights the importance of the physical environment as a drawcard for visitors – and the determination of successive governments to exploit that for economic development. Tourism has been built around unique landscapes and biodiversity that predate human contact. In the process, tourism has shaped those landscapes – through the location and development of settlements dedicated to visitors' needs, and the preservation of vast tracts of land not just to protect their natural values, but to facilitate people's enjoyment of them.

Tourism is by no means the only pressure on the environment. Even where it is the principal pressure, it is rarely the only one. But a desire to have tourism contribute to the economy has exacerbated longstanding pressures that human presence places on Aotearoa New Zealand's environment.

The destination New Zealand offers to the world is inextricably bound up with the natural, physical environment and with Māori culture. It is a place where the imprint of human presence is recent and, in many cases, still light. As population density and environmental degradation intensify in many parts of the world, the scarcity of what New Zealand has to offer rises. As those special qualities become more highly valued, they become more vulnerable.

Ironically, tourism in New Zealand is, in part, driven by a desire to see what a world without those pressures looks like. Yet growing awareness of the cumulative pressures that greenhouse gas emissions, urban sprawl and biodiversity loss are placing on our planet has focused attention on tourism's contribution to these very pressures.

The recent growth in New Zealand's tourism has brought this tension to the fore. Barely a day passes without media coverage of some aspect of tourism. Stories range from the positive benefits of tourism as our leading export industry and moves by the industry to shrink its environmental footprint, to growing disquiet in some communities that are feeling the pressure of tourist numbers. Pressure on infrastructure, and the industry's contribution to climate change, have joined more visible concerns like littering and congestion.

This chapter seeks to describe:

- tourism in Aotearoa New Zealand today
- the range of environmental pressures attributed to tourism
- how tourism is currently perceived.

Tourism in Aotearoa New Zealand today

Many sectors of the economy contribute to the tourist experience, just as tourism supports and sustains many parts of the economy. The spread of domestic and international tourist expenditure across industries and regions reveals just how much tourism is an integral part of New Zealand's economy. A snapshot of the current state of tourism shows:

- Total tourist expenditure for the year ended March 2018 was $39.1 billion, consisting of $23 billion from domestic visitors and $16.2 billion from international tourists.[1]
- International visitors per year surpassed one million in 1993, two million in 2003, three million in 2016, and reached almost 3.9 million in 2019.[2]
- The international component of tourism makes it the largest source of export (foreign revenue) earnings for the economy, accounting for 20.6 per cent of total earnings.[3]
- Over half our international visitors come for a holiday, another third has the primary intention of visiting friends and family and a smaller percentage arrive for business or other purposes.[4]
- New Zealand's closest neighbour, Australia, has consistently been the single largest source of international visitors, with 1.5 million arrivals in 2019. Australia and six other countries (China, United States, United Kingdom, Germany and Japan) have accounted for over 70 per cent of total international visitors each year since 1990.[5]
- International visitor arrivals are highly seasonal, peaking during the summer.
- The four 'gateway' regions – Auckland, Wellington, Christchurch and Queenstown-Lakes – receive the highest tourist expenditure (figure 3.1).[6]
- Auckland, being the major international gateway to New Zealand, has about one third of the market share of tourism spend.[7]
- Estimates of the proportion of international tourism spending between gateway and non-gateway regions are about 65 and 35 per cent respectively. This ratio has remained relatively static over recent years.[8]

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[1] Of the $39.1 billion, $15.9 billion was directly contributed to the economy by tourism (6.1% of New Zealand's gross domestic product (GDP)), with a further $11.1 billion from indirect tourism value add, $8.5 billion from imports sold to tourists and $3.7 billion from goods and services tax (GST) paid of tourist purchases (Stats NZ, 2018, pp.10, 12).

[2] Source: International travel and migration statistics, Stats NZ. All data year ending March

[3] In comparison, export earnings from dairy products (including casein) accounted for $15.1 billion (Stats NZ, 2018, p.7).

[4] Source: International travel and migration statistics, Stats NZ.

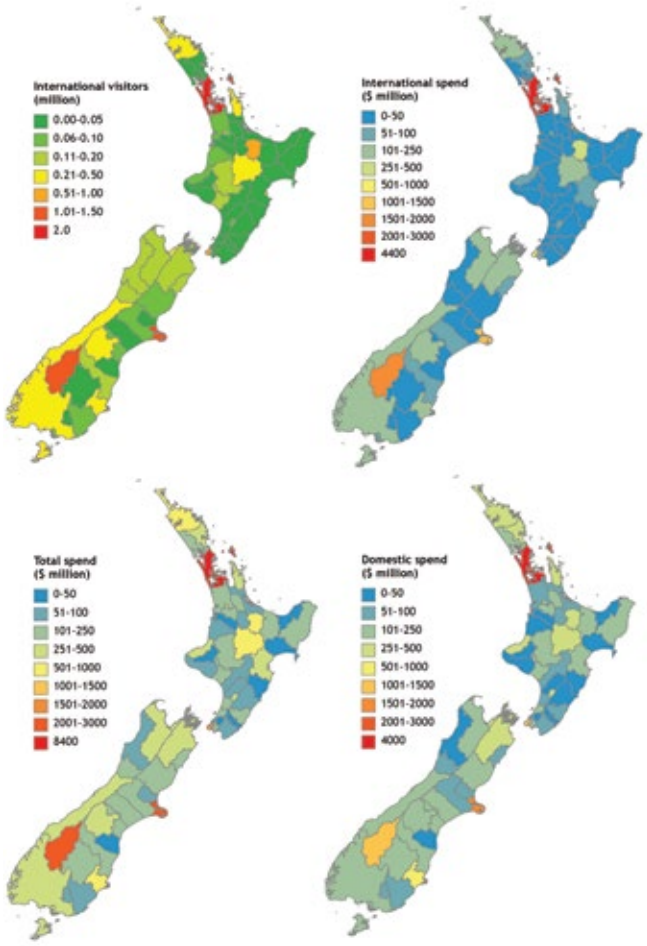
[5] Source: International travel and migration statistics, Stats NZ.

[6] 'Gateway regions' are those regions that have international connectivity through air travel (MBIE, 2016).

[7] For example, tourism spending in Auckland for the year ended March 2019 totalled $8.4 billion, compared to the national total of $29.2 billion (Source: Monthly Regional Tourism Estimates, MBIE).

[8] MBIE, 2016, p.12.

- Average international visitor spend per day and average length of stay has remained fairly static for the past two decades.[9] However, once inflation is accounted for, per-visitor spend actually fell during this period.[10]
- Regional spend and accommodation estimates show that although there is a clustering of domestic tourism around major city centres, there is a far wider distribution of places throughout the country that New Zealanders travel to (figure 3.1).



Source: International Visitor Survey and Monthly Regional Tourism Estimates, MBIE

Figure 3.1: Geographic distribution of international visitors, international tourism expenditure and domestic tourism expenditure for the year ended March 2019 by territorial authority. Distribution of domestic visitors is unavailable. Expenditure data is grouped by magnitude, except for Auckland (red in all maps), which is actual expenditure.

[9] MBIE, 2019b, p.14. Average spend per visitor day has increased in the last five years. However, this is still less than spending levels during the early 2000s.

[10] Between 2000 and 2018, international arrivals grew at an average annual rate of 4.4% (derived from international travel and migration, Stats NZ) while international visitor spending (in nominal terms) grew at 4.7% (derived from tourism satellite account, Stats NZ). During the same period, the average annual rate of inflation was 2.2% (derived from consumer price index, Stats NZ).

While we have a well-developed understanding of high-level visitor arrival and spending patterns, the granularity and quality of tourism data has long been an issue.[11] Spending and visitor arrival data only reveal general patterns. Generating more in-depth data is considered to be expensive and time consuming.[12] This means that understanding the detail of international tourist patterns is difficult.

Data relating to domestic tourism is even more limited. For example, the Domestic Tourism Survey was discontinued in 2012, leaving a gap in knowledge that was only partially filled by other surveys (e.g. the Commercial Accommodation Survey and Monthly Regional Tourism Estimates). The ending of the Accommodation Survey in September 2019 further limits the data available about domestic and international tourists.[13]

Ongoing initiatives (e.g. Tourism Data Domain Plan and Tourism Information and Data Hui) acknowledge these data gaps and are attempting to prioritise work to fill them.[14] However, without investment, gaps and limitations will continue.

When it comes to environmental pressures, the problem is compounded because the impact of visitors is often inextricably tied up with the day-to-day life of New Zealanders. Existing surveys and datasets are not designed to capture potentially relevant information.

For the moment, we have no systematic way of quantifying the environmental and cultural impacts of tourism. While we can record visitor numbers in specific locations, tourism is so much part of the fabric of the entire economy that pressures exerted in many locations are virtually indistinguishable from the functioning of society itself.

Given the lack of systematic data about detailed tourism impacts, the use of anecdotal evidence offers one way of providing improved insight. It can also illustrate pressures that can be neither aggregated nor disaggregated as the need requires.

[11] PCE, 1997.

[12] For example, data collected by the International Visitor Survey (run by MBIE) was redeveloped in 2013. As part of this redevelopment, some itinerary data (e.g. the order of places stayed) was removed from the survey to simplify data collection (MBIE, 2013, p.8). The loss of this data has limited the usefulness of data for some environmental research purposes (e.g. Wilson et al., 2018).

[13] Recent suggestions for Tourism New Zealand to collect data insights on domestic tourism to partially fill this gap, reinforces the issue of limited data capture that we have at present (Smol et al., 2019).

[14] MBIE, 2018a; 2019d.

Environmental tourism pressures through a media lens

Describing *all* the pressures tourism exerts in Aotearoa New Zealand is neither practical nor feasible. For example, there are differences between sites, visitor numbers and types of activity.[15] Tourism happens in places and at particular times of the year.

Further, there is a graduation of effects from local to global (see figure 1.3 on page 22). The following sections reflect this, describing those environmental effects that are generally:

- localised (waste generation and management at place and visitor experience)
- found at a landscape or national scale (infrastructure development, wastewater pollution and biosecurity risks posed to pristine environments)
- global (greenhouse gas emissions associated with international transport).

Media coverage is one, albeit imperfect, way of gathering an appreciation of current environmental impacts associated with tourism. It is an imperfect tool as it will tend to over-represent issues that are simply topical and easily rectified, whereas important systemic, complex issues may not be discussed much or even considered at all.

However, newspaper articles are a primary source of information about historical and current events. They can illustrate a snapshot in time, as well as reflect the social and cultural values of a certain place.[16] Media coverage can also indicate where an issue is under public or political scrutiny, often denoting importance.[17]

When supplemented with relevant research insights and the interviews conducted during this investigation, a picture starts to emerge of where and why environmental pressures from tourism are growing.

To identify important environmental pressures felt within New Zealand, a media scan was carried out between June 2018 and June 2019 (figure 3.2 and appendix one for methodology).

In the following sections, a specific instance that illustrates each pressure has been described – not because that instance is more important than any other example, but because it demonstrates the specific, place-based way in which these pressures manifest themselves.

[15] Examples include crowding and increased carbon dioxide (CO_2) levels in tourist caves, decreased geyser activity due to draw-off of geothermal waters, helicopters and tourist planes breaking the silence over wilderness areas, and higher greenhouse gas emissions from increased aircraft activity.

[16] Tanacković et al., 2014, p.2.

[17] Bayne et al., 2019, p.18.

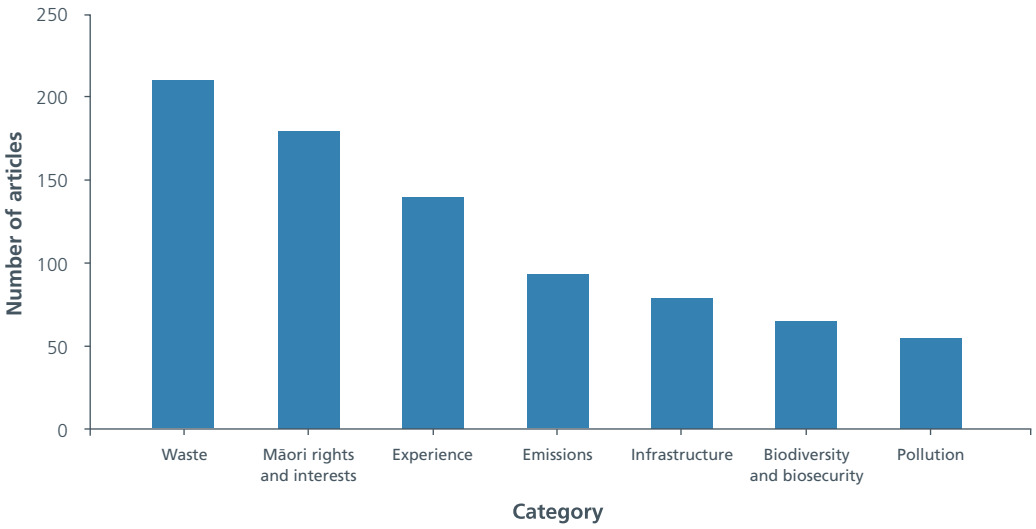


Figure 3.2: Themes of articles on the environmental and cultural effects of tourism, July 2018 to June 2019 (n = 822).

Waste generation and management at place

The generation of waste (e.g. rubbish or human effluent) at tourist hotspots and the resulting management issues have long been a concern. The growth of tourism in recent years has only compounded them. Not only are there more visitors, but they continue to be concentrated in a small number of sought-after locations.

The presence and accumulation of waste from tourists affect environmental, social and cultural values. Importantly, the effects of discarded waste depend on the location. A single piece of rubbish in a city may go unnoticed. In the wilderness, that single piece of rubbish will be much more prominent and troublesome.

Managing the waste generated by tourists in places also depends on the characteristics of the site. In some locations (e.g. towns and cities) building more infrastructure might suffice. In other areas (e.g. wilderness or alpine regions) building infrastructure is neither practical nor desirable.

The issue of tourist-generated waste at key sites was very prominent in interviews and in the media scan (210 articles or 26 per cent of articles). Waste issues raised in the scan were primarily concerned about rubbish, litter and human effluent in and around camping grounds (185 articles). In contrast, overflowing bins in tourist hotspots were raised repeatedly during interviews conducted for this investigation. Both issues are highly visible, bringing them to the forefront of people's minds.

By and large, waste issues at tourist hotspots can be addressed by improving infrastructure. There were many articles that highlighted new public toilet facilities being constructed around the country, and education about expected behaviour (via a sector-led initiative called the Tiaki Promise).[18] However, once collected, there are still issues with how to dispose of the growing quantities of waste that tourists generate.

[18]Cropp, 2018b.

An issue that exemplifies a combination of factors noted above was the expenditure incurred by DOC to transport human waste from national parks, with waste from remote huts and toilets needing to be helicoptered out.[19]

The 2006 Tongariro National Park Management Plan aims to preserve the high water and air quality of the maunga.[20] To support this, policies in the plan note that "all other effluent generated with the park will be removed or treated" and "where no facilities are provided, visitors should remove all waste, including human waste, themselves."[21]

This poses issues for DOC's management of the popular Tongariro Alpine Crossing (figure 3.3). The department's historical approach was to provide the "minimum necessary" conveniences.[22] However, the track now attracts more than 130,000 walkers per year, mostly between October and May, with sometimes more than 2,000 walkers per day.[23] This poses significant logistical issues, and "growing queues to the few toilets, and deposits alongside the track have become a huge, detrimental issue."[24]

Source: 5737586, Flickr

Figure 3.3: The number of walkers on the Tongariro Alpine Crossing continues to increase. With increasing numbers, dealing with waste on the maunga is a growing problem.

[19] Cropp, 2018c.

[20] The plans sets out three main objectives to do this: protect the park and its environs in their natural state, provide natural quiet for visitor experience and minimise waste generated within the park (DOC, 2006b, p.109).

[21] DOC, 2006b, pp.110–111.

[22] Blaschke and Whitney, 2007, pp.vii, 25.

[23] Driver, 2018.

[24] Ombler, 2016.

Waste from all toilets continues to be helicoptered out. Some visitors complain about the helicopter noise and fuel use, but according to a DOC technical advisor, it is "either that or smelly, inadequate toilets."[25]

In response to the growing number of visitors and the waste they generate, Ngāti Tūwharetoa has partnered with DOC to assist in developing tourism models that reflect their tikanga.[26] The belief is that a tikanga based, taonga- centric model will add immense value to tourism and other industries. The iwi's preference is for no more toilets on Tongariro, but they prefer them to be built at the carparks or somewhere off the maunga.[27]

Visitor experience at popular locations

Many of Aotearoa New Zealand's most spectacular destinations are remote from major population centres. They will often be where 'civilisation' stops and nature takes over. The attraction of going to these places is often linked with experiencing a world unmarked by human modification. Connection with the environment is also essential to the health and wellbeing of Māori and for many other cultures.

People have a fascination with experiencing isolation and solitude. When they turn up in large numbers, the very experience they are seeking can be quickly degraded. What may be encountered instead is congested car parks, queues and many boats on the water, plus the sound of small planes and/or helicopters overhead.

In the media scan, articles relating to visitor experience reflected these concerns. Many articles centred on national parks (110 of 140), and more specifically the management of high visitor numbers and visitor safety.

One area particularly feeling the pressure of numbers is Milford Sound Piopiotahi, with congestion being reported in the media several times during 2018/19 (figure 3.4).[28] In the past 15 years, the number of visitors there has doubled to 946,000 annually. It is projected to reach 1.2 million by 2023 and climb to two million by 2035.[29] Many visitors are bussed in from Queenstown, four hours away, and the single road there via Te Anau experiences regular traffic congestion and accidents. This arrangement means that thousands of people all arrive at the same time, in the middle of the day.

[25] Ombler, 2016.

[26] Te Ngaehe Wanikau, pers. comm., 25 September 2019.

[27] Te Ngaehe Wanikau, pers. comm., 25 September 2019.

[28] For example, four articles related specifically to congestion in Milford (e.g. Nicoll, 2019), with an additional 11 articles concerned with wider visitor experience (e.g. helicopter use in Fiordland National Park and visitor safety).

[29] McMillan, 2019.

Source: Dennis Sylvester Hurd, Flickr

Figure 3.4: More and more tourists are travelling to Milford Sound to experience the scenery and tranquillity. However, due to the logistics of getting to the Sounds, visitor experience can be diminished, as most people arrive at the same time creating congestion and loss of natural quiet.

The 2007 Fiordland National Park Management Plan recommended restricting annual visitors using the Freshwater Basin Activity Area to a maximum of 4,000 per day, with visitor numbers between 11am and 2pm not exceeding 2,500.[30] Those thresholds have been exceeded several times per month during the high season since late 2015.[31]

Thus, the experience of Milford Sound can be a day spent on a bus to and from Queenstown, vehicles waiting a long time to get through the Homer Tunnel, and overcrowded carparks, all for a brief visit to a place that is crowded and noisy. None of this is easily compatible with a place that has always been associated with a special quality of isolation as well as being a place of special significance for South Island iwi with many names attesting to its importance and sites of waka landings in the area.[32]

Its resilience (for the moment) is underlined by the findings of a 2017 University of Otago survey which found that while half the visitors surveyed were slightly annoyed by the pressure of numbers, 78 per cent said they still "truly felt the wilderness and natural quiet".[33]

[30] DOC, 2007b, p.170.
[31] Dobson et al., 2018, p.224.
[32] DOC, 2007b, p.19.
[33] Milford Sound Tourism, 2017.

Under business as usual, however, tourist operators and governance bodies in the area do not expect to "be able to protect conservation and deliver a safe and quality visitor experience".[34] A multi-year, multi-agency Milford Opportunities Project was started in 2017, with the aim of addressing issues through a master plan looking forward 30 years. One possible option previously proposed is encouraging the use of Te Anau as a 'park and ride' hub to enable visitors to travel into Milford Sound over a broader range of hours.[35]

In addition to changing visitor experiences at existing iconic sites, social media is also influencing visitor experiences more widely. Social media can change visitors' expectations, greatly increase visitor numbers and drive some tourists to pursue 'unique' experiences (e.g. posing close to protected wildlife). For example, the dramatic increase in visitors to Roy's Peak, west of Wanaka, has been attributed to social media (figure 3.5).[36] The result is that existing infrastructure (e.g. carparks, tracks and toilets) designed for only a modest number of people could become overwhelmed.

Source: Edward Hathway, hikingscenery.com

Figure 3.5: Social media has led to dramatic increases in the number of visitors to sites such as Roy's Peak. The rapid increase in popularity has affected both visitor experience (such as long lines to get 'the' photo) and the environment.

[34] McMillan, 2019, p.5.

[35] Owen, 2015; McMillan, 2019. Other options suggested over the years have included a gondola, additional tunnel and a monorail.

[36] Price, 2018.

Infrastructure development

New Zealand's landscape has been significantly modified to build the infrastructure required to entice and accommodate tourists. Given a growing understanding of the impacts that modifying a landscape has on ecosystems and biodiversity, it would make sense to at least weigh the push to reinforce and extend infrastructure alongside alternatives such as capping visitor numbers. Māori also consider some places wāhi tapu, where visitor access should not be granted.

However, responses such as these are rare. The more common response is to simply increase capacity – improve roads, build larger airports and cruise terminals, and install more rubbish bins, toilets and carparks.[37] All this development has a footprint with environmental and social impacts.

In total, 79 articles associated with infrastructure were identified for the 2018/19 period. A large proportion related to traffic congestion and carparks, with others relating to the development of large transport infrastructure.

Moving millions of tourists into, around and out of the country requires investment in some very large ticket infrastructure items, most notably airports and wharves. In recent decades, considerable sums of money have been invested in airport and port terminal developments in Aotearoa New Zealand, much of it to cater for growth in tourist numbers. The scale of noise and congestion impacts that come with these operations are often over-sized compared with the communities in which they may be located.

One area where airport expansion options were being debated in the media throughout 2018/19 was the Queenstown-Lakes District.[38]

Between 2005 and 2016, passenger movement numbers at Queenstown Airport tripled from 0.6 to 1.8 million. They are projected to increase to 3.2 million by 2025 and 6.0 million by 2035.[39] The Queenstown Airport Corporation has consequently been developing a 30-year master plan for future development. Rather than extending the runway to accommodate larger, wide-body aircraft, there is a desire to build a new terminal with more aircraft stands, allowing the airport to handle 5.1 million passenger movements per year.[40]

Growth could be met through the dual expansion of Queenstown and Wanaka airports, and the Queenstown Airport Corporation has finalised the terms of a 100-year lease over Wanaka Airport.[41] However, in August 2019 all airport expansion plans were put on hold, given growing public opposition, until further social and economic impact assessment had been undertaken.[42]

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[37] For example, funding from the Tourism Infrastructure Fund has largely been directed at building more infrastructure (e.g. toilets and carparks) to accommodate (or catch up with) tourism growth. This is unsurprising given the goal of the fund but highlights the general sentiment that all that is needed to head off issues with tourism is more infrastructure.

[38] For example, Walton and Chadler (2018).

[39] Queenstown Airport Corporation, 2017, p.11.

[40] Queenstown Airport Corporation, 2017.

[41] Queenstown Airport Corporation, 2018.

[42] *Tourism Ticker,* 2019.

While relocation issues are largely dismissed, they highlight the need to look at wider long-term regional transport planning and innovation to ameliorate pressures. For example, more people could enter the Southland/Otago region via Invercargill Airport, which is currently underused.[43] However, any tourist entry point south of Queenstown has to overcome transportation issues along the southern arm of Lake Wakatipu.[44]

Wastewater pollution and degraded water quality

Water quality is important for freshwater ecosystem health and recreation, and it is the basis of many tourist activities (e.g. white-water rafting and jet-boating). However, water quality has been degraded due to human activities like intensive farming and urban development.[45] This is a major environmental issue for all New Zealanders and an increasing focus of Māori criticism.[46]

Matching infrastructure like wastewater treatment facilities to the demands of a population is never straightforward. Today's ratepayers may not be willing or numerous enough to invest in tomorrow's growth. Infrastructure wears out, and replacement costs – and expectations – may be much higher than they were decades earlier. These are problems that may seem unrelated to tourism, but tourist growth (and the way visitors use infrastructure) can bring to light these inadequacies.

As temporary residents, tourists (domestic or international) place extra demand on wastewater services. This is especially true in popular tourist destinations. These towns often have a small rating base (e.g. West Coast) and experience significant fluctuations in demand throughout the year.[47]

The result of these (and other) factors is that overloaded facilities can overflow and pollute waterways. When this occurs, there are not only ecosystem and human health concerns, but damage to the perception of New Zealand as a tourist destination.

It is for this reason that media attention was focused on Queenstown Lakes District Council and its application for a 35-year, district-wide resource consent to discharge wastewater overflows into the waters of Lake Wanaka and Lake Wakatipu in the event that pipes break or block.[48]

Media reports in April 2019 highlighted that these lakes have high water quality, which is one of the most important features valued by visitors to the region.[49] They are also microtrophic lakes, meaning that they are sensitive to even small changes in nutrient concentrations. Such overflows had already been happening but had not been regulated.[50] The resource consent sought, in effect, to legalise ongoing pollution.

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[43] Burton, 2018; Price, 2019.

[44] One transportation issue for tourists travelling from the south is the Devil's Staircase on the Kingston Road (NZTA, 2018). An option around this might be ferrying passengers to Queenstown from Kingston, that town operating as a 'park and ride' hub to reduce road congestion and road wear and tear (Chandler, 2018).

[45] MfE and Stats NZ, 2019b.

[46] For example, the Waitangi Tribunal report released in September 2019 states that Māori values are not reflected in freshwater management and Māori involvement in decision making is negligible (Waitangi Tribunal, 2019).

[47] New Zealand Productivity Commission, 2019.

[48] Beca Ltd, 2019.

[49] Mitchell, 2019a.

[50] Beca Ltd, 2019; Mitchell, 2019a.

After consultation with the relevant rūnanga of Ngāi Tahu, consent conditions were drafted. A broad array of issues and values were acknowledged, including protecting and restoring the mauri of all water, promoting catchment-based models like 'Ki uta ki tai',[51] avoiding using waterbodies as a receiving environment for the discharge of contaminants, and enhancing the relationship of the iwi with freshwater resources.[52]

One could argue that these overflows are an issue concerning ageing infrastructure rather than Queenstown tourism. Yet the average age of the infrastructure making up the network is only 21 years, with the pipes having an expected lifespan of 60–80 years.[53] The assessment of environmental effects noted:

> "The predominant cause of wastewater overflows is foreign objects in the systems, rather than age-related failures of the infrastructure. This means that it is important to educate the community that the wastewater network is made to transport human waste, toilet paper, soaps, and grey water only, and that anything else contributes to blockages and breakages that cause overflows and may affect the integrity of the system."[54]

The issue here, then, appears to be the number of people and their behaviours that is resulting in pollution from human waste sometimes ending up in waterways, rather than defective infrastructure.

This media coverage highlights the importance of wastewater management, water quality and the compounding issues that tourism brings. There is an additional dimension at play here. When things go wrong, not only does the environment suffer, but also tourism and the perception of New Zealand as a clean, green destination. Worryingly, news of untreated sewage entering waterways in some of the country's most well-known locations has been reported in articles globally.[55]

Biosecurity risk to a pristine, isolated environment

Some of New Zealand's most famous destinations have barely changed since humans discovered these islands. Being able to come face to face with primeval landscapes that have never been modified is one of Aotearoa New Zealand's most distinctive drawcards (figure 3.6). While introduced pests have in fact altered even the most remote places, the adjective 'pristine' still springs to many people's minds. The pressure of tourists wanting to reach these places inevitably puts that pristine quality at risk.

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[51] For more information on ki uta ki tai (from the mountains to the sea), see the Ministry for the Environment website (https://www.mfe.govt.nz/publications/fresh-water/fresh-water-report-2017-introductionto-our-fresh-water/ki-uta-ki-tai-%E2%80%93).

[52] Beca Ltd, 2019, Appendix F.

[53] Beca Ltd, 2019.

[54] Beca Ltd, 2019, p.10.

[55] For example, the influx of tourists into Franz Josef has overloaded the town's wastewater infrastructure, resulting in the discharge of effluent into the Waiho River on several occasions (Office of the Controller and Auditor-General, 2019, p.14). News of these discharges have made their way into international media (e.g. Withers and Brockett, 2017).

With movement of people and vehicles comes the potential for movement of weeds, pests and diseases – a biosecurity risk. In part, biosecurity involves border control: attempting to prevent the incursion of new weeds, pests and diseases. With more people, planes and ships coming into the country, there is more risk of incursion.[56] But weeds, pests and diseases already here also have the capacity to be spread – in water and on land – by travellers.

Source: Toni Almodóvar Escuder, Flickr

Figure 3.6: People walking remote tracks like the Veronica Loop Track (pictured) can represent a biosecurity risk as they move unwanted organisms from one area to another.

Of the 65 articles relating to the biosecurity risk posed to a pristine environment, two growing concerns stood out – the presence of *Undaria* in Breaksea Sound and kauri dieback. Other risks identified included ongoing concerns about the spread of didymo and the risk that cruise ships pose to the coastal marine environment (box 3.1).

[56]MPI, 2016, p.8.

Box 3.1: Cruise ships in pristine waters

Potential pollution from passenger ships was in the media on occasion during 2018/19 (26 articles found). Articles mainly related to concern about emissions to air from ferries and cruise liners in places like Milford Sound, the Marlborough Sounds and Wellington. There was also some concern about air and water pollution from cruise ships, given that six ships charged with pollution violations in the Alaskan Sounds were cruising in New Zealand waters during the 2018/19 season.[57]

Cruise ships plying New Zealand's territorial waters, especially the wild and remote subantarctic islands or fiords and sounds, also have the potential for environmental damage resulting from accidents. In the past, there have been incidents where ferries and cruise liners have sunk, but generally close to shore, such as the 1986 sinking of the *Mikhail Lermontov* in the Marlborough Sounds. On that occasion environmental damage was averted.[58] Despite these incidents, there continue to be close calls (e.g. the grounding of the cruise liner *L'Austral* in 2017 discussed in chapter 2).

While no environmental damage resulted from cruise ship incidents described here, they highlight an issue: how prepared and able is New Zealand to address maritime accidents in remote locations? Furthermore, the cruise ship *L'Austral* was one of the smallest visiting New Zealand's shores. Most are much larger.[59]

Undaria in Breaksea Sound

One current concern is the spread of the Asian kelp *Undaria* at Breaksea Sound, Fiordland.[60] Native to Japan, China, Korea and Russia, since 1981 the kelp has been spread to 14 other countries.[61] *Undaria* was first reported in New Zealand in Wellington Harbour in 1987.[62] Since then, it has been spreading and proliferating around New Zealand harbours. It can colonise a wide range of substrates, create a thick kelp forest down to a depth of 25 metres and displace native biota.

In April 2010, the weed was first found in the fiords, with a single specimen attached to a mooring rope in Breaksea Cove.[63] This started a major multi-year, multi-agency eradication project. However, eradication has failed and biosecurity policies have now moved to containment, with boats excluded from certain areas of Breaksea Sound. *Undaria* has the potential to significantly alter Fiordland's marine ecosystem, and the risk of it spreading throughout the Fiordland Marine Area remains high.[64]

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[57] Cropp, 2018a.

[58] Castell, 2002.

[59] For example, there has been a trend for bigger and bigger ships. The *Astor* (built 1986) is around 21,000 gross tonnes, the *Sea Princess* (1998) is around 77,000 gross tonnes, the Ruby Princess (2008) is over 113,000 gross tonnes and the *Ovation of the Seas* (2016) is over 167,000 gross tonnes (Chanev, 2018).

[60] Rowe, 2019.

[61] Gnanalingham and Hepburn, 2019, p.1.

[62] Stuart, 2004, p.5.

[63] Gnanalingham and Hepburn, 2019.

[64] Gnanalingham and Hepburn, 2019.

Kauri dieback

On land, the primary tourist-related biosecurity issue in the media through 2018/19 was control of the spread of an incurable kauri dieback disease (38 articles).

Phytophthora agathidicida, the pathogen causing the death of kauri, was only discovered in 2009 and named in 2015, although it may have been active in the country for a century or longer.[65] Kauri trees are exposed to the pathogen when infected soil is deposited around the roots of the tree.

A primary route for infection is through visitors walking on the roots with infected footwear. Consequently, disinfection stations are being installed for trampers to wash boots before entering kauri forests, and many walking tracks through kauri forests are being closed, or new raised walkways are being built.[66]

There was particular concern about its proximity to the largest remaining kauri, Tāne Mahuta.[67] In 2018, the disease was identified in two sites 60 and 90 metres away from Tāne Mahuta.[68]

Kauri are taonga to Māori, especially iwi and hapū that have kauri within their rohe. Te Roroa (Waipoua Forest iwi) are inextricably linked to kauri through the mauri and mana of their communities and will continue to be heard on how biosecurity responses should be managed.[69]

Greenhouse gas emissions associated with travel

In addition to the national and place-based effects that tourism can have, simply travelling to New Zealand has a significant environmental impact. This is because visitors travelling here have a significant greenhouse gas emissions profile.[70]

For example, 98 per cent of international visitors arrived in Aotearoa New Zealand by plane in the year ending March 2019.[71] The contribution of aviation to climate change includes both direct effects (i.e. carbon dioxide emissions from aviation fuel combustion) and indirect effects (e.g. due to nitrogen oxides, water vapour, aerosols and contrail formation).[72]

The benefits of increased visitor arrivals and tourism growth have long been emphasised. However, the ramifications that this growth has had on greenhouse gas emissions has not, until recently, received much attention.[73] This appears to be changing.

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[65] See the kauri dieback web page (https://www.kauridieback.co.nz/what-is-kauri-dieback/) and Beachman (2017

[66] White, 2018.

[67] Tāne Mahuta is estimated to be somewhere between 1,500 and 2,000 years old (Orwin, 2007).

[68] *Northern Advocate*, 2018.

[69] Lambert et al., 2018.

[70] Smith and Rodger, 2009.

[71] Source: International travel and migration statistics, Stats NZ.

[72] See Dessens et al. (2014) for more information. If all the contribution of aviation emissions were considered, the climate impact of aircraft could be 2–4 times greater than that of their carbon emissions alone (Penner et al., 1999). For information on the effects of aviation on greenhouse gas emissions, see ICAO (2016, pp.97–107).

[73] Climate change and air travel was acknowledged as a key global influence on the New Zealand tourism sector in the *New Zealand Tourism Strategy 2015* (Ministry of Tourism, 2007, p.12), but actions to mitigate tourism's emissions were not described.

Overall, concerns about tourism's contribution to greenhouse gas emissions were raised in 94 articles during 2018/19. Emissions associated with air travel were described in the media as "tourism's flying elephant in the room"[74] and "significant, mostly unavoidable, and growing".[75]

Due to its prominence as the national carrier, Air New Zealand was singled out by the media as one of the country's largest greenhouse gas emitters – having "the same greenhouse gas footprint as the country's entire waste disposal sector".[76] Articles highlighted the fact that international aviation emissions are not captured under national emission accounting schemes and the difficulties of marrying growth and its greenhouse gas footprint.

For example, efforts to decrease international aviation emissions have largely focused on improving efficiencies within the aviation system.[77] However, even under the most aggressive projections of technological improvements, it is unlikely that efficiency improvements will offset emissions from the current growth in demand – let alone the future emissions of the sector.[78]

In addition, little progress has been made on replacing fossil fuels to reduce emissions in recent years.[79]

Public awareness and concern about the climate impacts of aviation is growing. But this growing concern does not appear to have impacted on growth in air travel to and from New Zealand. On the contrary, international visitor arrivals – and the departure of New Zealanders on holiday – have continued to increase year on year.[80]

A growing number of people are choosing to offset their emissions through voluntary offsetting programmes such as Air New Zealand's FlyNeutral initiative.[81] However, the share of New Zealanders opting to offset their emissions (4.6 per cent) remains significantly below the share in the United Kingdom (9.8 per cent).[82] Scepticism of offsetting remains widespread, in part because the long-term environmental benefits of some types of offsetting schemes are questionable.[83]

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[74] Macdonald, 2019.

[75] Mitchell, 2019b.

[76] Mitchell, 2019b.

[77] ICAO, 2016, p.97.

[78] Peeters et al., 2016.

[79] Coninck, de et al., 2018, p.333.

[80] Source: International travel and migration statistics, Stats NZ.

[81] Other initiatives include Air New Zealand and Ngāi Tahu's recent (September 2019) agreement to achieve economic, environmental, cultural and social outcomes within the rohe of Ngāi Tahu (Air New Zealand, 2019b).

[82] In 2018/19, 184,000 journeys were offset, up from about 130,000 the year before (Air New Zealand, 2019a, p.22).

[83] The validity of using offsets to compensate for carbon dioxide emissions is questionable for several reasons, including the particular risks related to the use of forestry offsets (PCE, 2019) and public scepticism of their usefulness (Higham et al., 2016).

There appears to be a growing tension between concern about aviation emissions' effect on the climate and action to limit them at a personal level – characterised as the "flyers' dilemma".[84] Why this exists and mechanisms to overcome it are complex and rooted in deeply embedded attitudes towards air travel as a necessity of modern life.[85] In part because of this conflict, it has been suggested that personal actions will not be enough to induce significant change in personal air travel behaviour.[86]

International aviation emissions were also not the sole concern in the media.[87] Cruise ship holidays also generate considerable emissions, and their number is increasing significantly.[88] For example, the global average cruise emissions per passenger have been estimated to be the same as a return economy class flight between London and Tokyo (0.82 tonnes of carbon dioxide equivalent).[89]

Tourism and the interests of mana whenua

The impact of tourism on Māori values was not well represented in the media scan. The most common keyword result in our media scan was the association of tourism with iwi and hapū. The high number of articles found is unsurprising given the connection of iwi with the land and taonga on which much of New Zealand's tourism is based, together with many post-Treaty settlement initiatives to better promote and manage areas.

One issue in the media during the year – road improvements in Te Urewera – highlights an important cultural tension regarding destination management.[90] In June 2019, the Regional Economic Development Minister had been preparing to announce the award of $10 million from the Provincial Growth Fund to tar-seal ten kilometres of road to Lake Waikaremoana in Te Urewera.

As kaitiaki of Te Urewera, Tūhoe had to consider the impact of a tar-seal road on the Urewera as a legal person as legislated in the Te Urewera Act 2014. In 2016, Tūhoe commissioned WSP Opus Research to investigate potential options for the resurfacing and maintenance of the largely unsealed State Highway 38. They challenged WSP Opus to find an environmentally friendly solution in keeping with local values. It needed to "exemplify the principles of sustainable co-existence between people and the land."[91]

[84] Higham et al., 2014.
[85] Higham et al., 2014.
[86] Higham et al., 2016, p.345.
[87] Macdonald, 2019.
[88] Howitt et al., 2010.
[89] Griffith Institute for Tourism, 2017; Macdonald, 2019; Norman and Douglas, 2019.
[90] Palmer et al., 2018; *Gisborne Herald*, 2019.
[91] Palmer et al., 2018.

The solution being trialled is using tree resin to bind gravel, suppressing dust and reducing corrugation.[92] Trials were started in January 2018 on two sections of road with very different conditions. Twelve months later the trial sites were still reasonably well-bound and dust-free. Further trials are proposed on what is being described as 'Nature's Road'.[93]

Some Ministers opposed the delays. They argued that because the road through Te Urewera is a state highway, the Government should be able to invest in road improvements for higher tourist volumes and higher regional economic growth.[94]

This is the latest example of a more than century-old conflict between central government's desire to grow the tourism industry coming up against the aspiration of local communities to protect natural resources and maintain their values and connection with the land. They represent two distinct pathways: one following a 'business-as-usual' approach, and one heading towards a more 'sustainable future'.

Perceptions of tourism in Aotearoa New Zealand

Tourism's ongoing presence at a location is conditional in part on visitor and host experiences. If perceptions of tourism change (either from the tourist's or host's perspective), the desirability of a location (or New Zealand as a 'premium destination' in general) may suffer. Therefore, in addition to media reportage, surveys of the perception of tourism in Aotearoa New Zealand can help to fill out the picture of what people care about and how this is evolving over time.

To understand perceptions of tourism and the environment, three surveys have been drawn upon: the International Visitor Survey,[95] the Mood of the Nation,[96] and a survey of selected kaitiaki and Māori tourism providers commissioned for this study.[97]

International tourist and host perceptions

International visitors generally have very high levels of satisfaction for all experiences.[98] The highest scores are for the natural and built environment, a sense of safety and overall experience. Low scores are uncommon, and typically relate to experience of food and beverage outlets and accommodation. Over half of international visitors stated that New Zealand met their expectations, while for a further 40 per cent it exceeded expectations.[99] For international visitors, New Zealand remains highly regarded.

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[92] Tree-resin emulsions have been used in the past on forestry roads for dust suppression, but with the caveat that they work best in low rainfall areas and on flat to moderate slopes (the compact coating becoming slippery when wet) (Kestler, 2009).

[93] Palmer et al., 2018; Tūhoe, 2019.

[94] *Hawke's Bay Today*, 2019; Kirk, 2019.

[95] The International Visitor Survey is a questionnaire that helps determine aspects of international visitors' time in New Zealand (e.g. places visited, expenditure, activities, accommodation and degree of satisfaction). For more information, see the International Visitor Survey web page (https://www.mbie.govt.nz/immigration-and-tourism/tourism-research-and-data/tourism-data-releases/international-visitor-survey-ivs/).

[96] The Mood of the Nation survey, initiated by Tourism Industry Aotearoa (TIA) and Tourism New Zealand in 2015, is conducted twice yearly (March and August). It captures host perceptions (e.g. perceived value, benefits and issues) of tourism. For more information, see TNS (2015, p.2) and the TIA website (https://tia.org.nz/resources-and-tools/insight/mood-of-the-nation/).

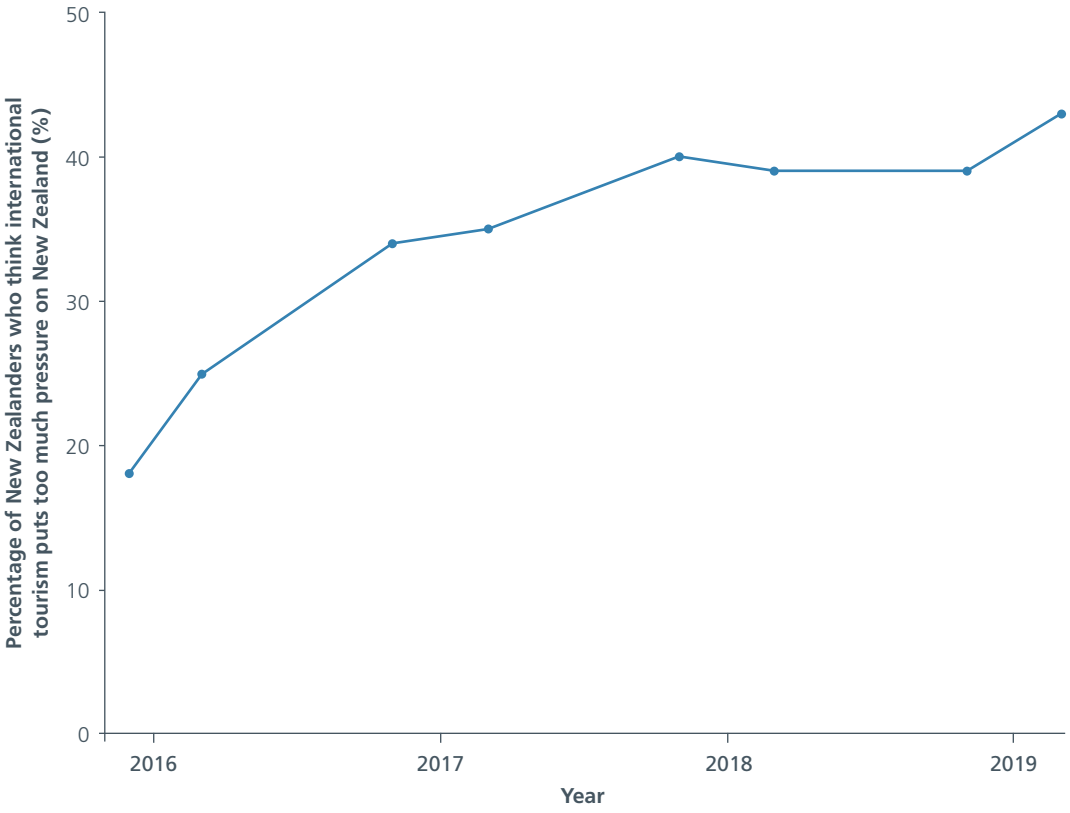
[97] Potter, 2018.

[98] MBIE, 2017b.

[99] MBIE, 2017b.

By contrast, New Zealanders' perception of tourism and the pressure that it is placing on the country has been changing in recent years. For example, the March 2019 Mood of the Nation survey found that 93 per cent of New Zealanders agreed or strongly agreed that international tourism is good for the country, but an increasing proportion (now up to 43 per cent of respondents) believed that tourism puts too much pressure on New Zealand (figure 3.7). The main pressures described were:[100]

- New Zealand lacking the infrastructure needed to support the growing number of tourists
- increased traffic congestion and road safety issues
- environmental damage
- accommodation shortages
- overcrowding.



Source: Kantar TNS (2019)

Figure 3.7: Percentage of New Zealanders who believe that tourists put too much pressure on New Zealand, 2015 to 2019.

[100] Kantar TNS, 2019, p.9.

These views were strongly influenced by personal experience (figure 3.8) plus information in national media. Queenstown was consistently seen as the area experiencing the most pressure.[101]

Source: Eli Duke, Flickr

Figure 3.8: Experiences of overcrowding at popular sites such as Hot Water Beach in the Coromandel (pictured) are contributing to the feeling that tourism is placing increasing pressure on New Zealand.

In addition, the proportion of people who felt that there were too many international visitors climbed from 13 per cent in 2015 to 26 per cent in 2019, while the proportion who felt that predicted tourist growth was 'too much' grew from 30 per cent to 52 per cent over the same period (some potential reasons for this change are discussed more in box 3.2).

[101] For example, responses to open-ended questions regarding overcrowding noted that "popular spots such as Milford Sound and Queenstown are bursting at the seams" (Kantar TNS, 2019, p.20).

Box 3.2: Understanding host perceptions

Community perceptions can vary markedly from place to place, depending on the local situation. They are often conditional on a range of factors. For example:

- Some communities are 'tourist towns', familiar with seasonal peaks and troughs, whereas residents in a small and previously quiet town may struggle with even a fairly minor increase in visitor numbers.
- Growth in visitor numbers can exceed what a community is willing to accommodate and disrupt its functioning.
- Financial pressure placed on locals due to rising costs of living (such as increasing rates to pay for mixed use public infrastructure) may make it less desirable to live in a location.
- Competition for shared resources (e.g. rental housing vs peer-to-peer accommodation such as Airbnb) can displace residents.
- Communities may become fragmented due to seasonal peaks in visitor numbers, a transient workforce, displacement of population (falling permanent residents affecting school rolls and viability) and/or impact on local volunteer services such as fire and ambulance.
- Resentment towards visitors can easily develop, as guests may be seen to be getting a 'free ride' at the expense of ratepayers.
- There are also often conflicting priorities within communities between generating economic return from tourism and not losing what makes the community unique in the first place.

Statistics like visitor numbers, guest nights and visitor spending cannot paint the full picture of what is happening on the ground or how communities feel. Host surveys can help communities to determine what tourism in their area should look like. However, the ability for local councils to deploy the tools needed to shape the outcomes they want are currently limited and an ongoing concern.[102]

[102] See New Zealand Productivity Commission (2019) for more details.

Māori perceptions of tourism

Māori have been active and influential in the tourism sector in some parts of New Zealand since the beginnings of tourism in this country. Conversations with Māori in the course of this investigation have, as a common theme, underlined the importance of three principles: manaakitanga, kaitiakitanga and tino rangatiratanga.

Many Pākehā New Zealanders would have little difficulty regarding manaakitanga and kaitiakitanga (hospitality and guardianship) as host behaviours with which they can identify. Tino rangatiratanga in New Zealand's still unfinished post-colonial evolution may seem more threatening. But the notion of autonomy and self-determination has real potency when it comes to the challenges that mass tourism poses.

On whose terms do visitors come? Many New Zealanders would say 'on our terms', and for Māori, where whakapapa is defined in terms of the land, and where the wellbeing of people is inextricably linked to the wellbeing of the environment and land, this sits at the heart of their role as kaitiaki and mana whenua.

Drawing from the survey commissioned for this study, for selected kaitiaki and Māori tourism providers, perceptions of tourism varied based on whether their rohe were tourism hotspots or still developing.[103] Positive impacts included economic development, cultural revitalisation and environmental education. However, positive impacts were often conditional. For example, economic development was seasonal and inconsistent, cultural revitalisation could only occur when Māori were at the decision-making table and environmental education often neglects mātauranga Māori.

In general, negative impacts discussed by Māori were felt most keenly by those in high tourism areas. These included inadequate infrastructure, biosecurity threats (especially from cruise ships), water quality, pressure on resources and physical damage.[104] For all participants in the survey, "Kaitiakitanga was seen as paramount", and "tourism activities need to be consistent with sustaining, nurturing and protecting environmental taonga tuku iho for use by future generations".[105] In addition, balancing the wellbeing of whānau and the wellbeing of the environment was also seen as a priority.[106]

Importantly, a lack of understanding of different cultural values was raised – not only for tourists but also for those managing tourism. If wāhi tapu, manaakitanga, kaitiakitanga and Māori histories are not better reflected, the feeling was that there will continue to be tension between the tourism sector and Māori. An expanded role for Māori in tourism management at all levels was seen as a critical step forward.

[103] Potter, 2018.
[104] Potter, 2018.
[105] Potter, 2018, p.9.
[106] Potter, 2018.

Any attempt to understand the future of tourism growth and the pressure it places on our environment must therefore be undertaken in partnership with Māori. Māori views are not monolithic. The diversity of iwi, hapū, whānau and individual practices means that while these underlying principles may be shared, the way they are practised and prioritised can be vastly different.

Conclusion

This chapter began by noting the tension that has emerged between the economic benefits that tourism generates and the various environmental and social pressures that it creates. Tourism has become one of the largest economic sectors in Aotearoa New Zealand. But tourism growth has not been without consequences.

As this chapter has shown, the temporary movement of people to, and around, New Zealand is creating a wide range of pressures on the environment. For example, visitor experience continues to be diminished at popular sites due to congestion and waste generation and management. Similarly, tourism growth is contributing to increased pressure being placed on existing infrastructure (e.g. wastewater management). New infrastructure designed to accommodate growth supports current pressures and, by allowing for future growth, lays the foundation for continued volume-driven path dependency. Growth in visitor numbers has also come with increased air travel and associated greenhouse gas emissions.

Perceptions of tourism in New Zealand are also changing. Although international visitors still hold New Zealand in high regard, New Zealanders are starting to note environmental and social pressures and question the benefits of growth.

Similar views are held by Māori interviewed for this study. However, this is set against a backdrop of longstanding issues that iwi and hapū have with exercising their role as kaitiaki and mana whenua.

As both an actor and steward of tourism in New Zealand, the Government plays an important role in shaping tourism and mitigating its impacts. In the face of recent tourism growth, how well do the Government's policies tackle the environmental pressures manifesting throughout the country? The next chapter seeks to answer this question by characterising the Government's current approach and matching this against the environmental pressures visible today.

4

Hymenophyllum nephrophyllum, raurenga

A shift towards addressing environmental pressures?

Chapter summary

- With intensifying concern about tourism's environmental and social pressures, various strategies and remedial policies have been developed by the Government.
- Tourism-specific policies pursued by the Government largely boil down to four approaches:
  - increased tourism productivity (via value-led growth, seasonal dispersal and skills training)
  - increased geographic dispersal of visitors
  - improved visitor management at place
  - raised awareness and education.
- Analysis of each of these approaches suggests that most tourism policies have limited capacity to decouple tourism growth from the impacts it has on the environment. Recent initiatives such as the International Visitor Conservation and Tourism Levy and the development of destination management plans are promising, but considerably more ambition will be required if a continued worsening of tourism-related environmental pressures is to be avoided.
- Policies also need to consider the connection that Māori have with the environment. Values and principles that connect people to the land could have a positive impact on the tourism sector as well as provide a unique cultural experience.

With intensifying environmental pressures and public concern about tourism's contribution to them, various strategies and remedial policies have been developed. But how adequate or effective are these responses? The following section appraises the range of current responses and provides a critique of their adequacy (using a 'traffic light' approach).

The acknowledgement of a potential trade-off between economic opportunities on the one hand and environmental degradation on the other is largely absent from existing high-level tourism strategies. The most recent strategies by government (*New Zealand-Aotearoa Government Tourism Strategy*) and industry (T*ourism 2025 & Beyond*) both argue that, if appropriately managed, tourism growth can actually be restorative, generating improved environmental outcomes.

The stated goal of the *New Zealand-Aotearoa Government Tourism Strategy* is that tourism should "enrich New Zealand-Aotearoa through sustainable tourism growth" by improving New Zealanders' social, cultural, environmental and economic wellbeing.[1] This is a commendable sentiment. The question, however, is whether it is more than just a well-intentioned formula, and whether potential trade-offs from growth are adequately dealt with.

Tourism takes place in the context of a wide-ranging policy landscape. The tools that may be used to manage visitor numbers or provide for infrastructure are diverse and not necessarily uniquely designed to be part of 'tourism policy'. They range from regulations to limit visitor numbers at particular sites to awareness-raising campaigns intended to shape visitor behaviour.

The decisions that tourists and tourism businesses make are also influenced by the wider regulatory environment. Many policies exist in this regard. For example, there are economic policies that support regional economic development and infrastructure, such as the Government's Provincial Growth Fund. Other examples include environmental policies, such as the pricing of emissions under the New Zealand Emissions Trading Scheme.

Not all tourism policy is made at central government level. While tourism outcomes are significantly shaped by international agreements (e.g. open skies agreements, free trade agreements, etc), they are also influenced by marketing, infrastructure and zoning decisions made at the local level. In addition, voluntary industry commitments (e.g. the Tourism Industry Aotearoa (TIA) New Zealand Tourism Sustainability Commitment) and the actions of individual companies also play a supporting role.[2]

[1] Similarly, the environmental goal presented in TIA's strategy is that "Aotearoa is enhanced by tourism" (MBIE and DOC, 2019, p.5; TIA, 2019b, p.2).

[2] For more information, see the New Zealand Tourism Sustainability Commitment website (https://www.sustainabletourism.nz/).

The Government's approach to sustainable tourism growth effectively rests on four key pillars:[3]

- increased tourism productivity (via value-led growth, seasonal dispersal and skills training)
- increased geographic dispersal of visitors
- improved visitor management at place
- raised awareness and education.

This section assesses various policy tools arranged under each of these pillars to determine their effectiveness in mitigating current environmental pressures. Some examples of where Māori may be impacted or are currently involved, both at place and nationally, are included. Economic and environmental policies that sit in the wider regulatory environment are not specifically assessed. Table 4.1 indicates the various policy tools assessed against the pillars they sit under and provides examples of their implementation.

A simple traffic light approach is used to assess the effectiveness of each policy tool outlined in table 4.1. This traffic light approach should be interpreted as follows: a 'green light' indicates that the policy tool will, or is likely to, decouple environmental pressure from tourism growth; a 'red light' indicates that the policy tool is, or is likely to be, associated with an increasing level of environmental pressure along with tourism growth; and an 'orange light' indicates that the level of environmental pressure associated with tourism growth neither decouples nor worsens.

The traffic light approach is used to assess each policy tool against each of the key environmental pressures identified in the first chapter.

[3] MBIE, 2017a; MBIE and DOC, 2019.

Table 4.1: Current policy tools matched against the four pillars underlying the Government's tourism strategy.

Approach	Policy tools	Example
Increased tourism productivity (via value-led growth, seasonal dispersal and skills training)	International marketing (central)	Central government funding directed to international marketing via Tourism New Zealand and its cornerstone 100% Pure marketing campaign.
		New Zealand Māori Tourism promoting Māori tourism product to visitors.
	Funding for national visitor attractions (central)	Centrally funded maintenance (DOC) and promotion (DOC and Tourism New Zealand) of Great Walks.
		Government funding for America's Cup infrastructure.
	Destination marketing (local)	Destination marketing by locally funded Regional Tourism Organisations (e.g. Auckland Tourism, Events and Economic Development).
Increased geographic dispersal	Funding for regional visitor attractions (central)	The Provincial Growth Fund used to assist development of regional attractions such as the Sky Waka Gondola at Whakapapa.
	Funding for visitor-specific transport (e.g. rail/road) (central)	Provincial Growth Fund used for improvement and development of roads with increasing tourism potential, such as the funding provided for the Croesus Road upgrade in the West Coast, the Tairāwhiti roads upgrade in Gisborne and the Twin Coast Discovery Route in Northland.
Improved visitor management at place	Destination management plans (central, local)	International Visitor Conservation and Tourism Levy, which helps fund the Milford Opportunities Project. In addition, a significant proportion of the $80 million expected to be generated by the levy – due to be implemented in late 2019 – will be directed towards relieving pressure on existing infrastructure and biodiversity initiatives.[4]
		Iwi involvement in destination management through input into national park (and other reserve) management plans.
	Provision of visitor-specific (mitigating) infrastructure (local, central)	Local government investment.
		Central government funding via Responsible Camping funding and Tourism Infrastructure Fund.
Raised awareness and education	Targeted awareness and education campaigns (central, industry)	New Zealand Tourism Sustainability Commitment (host targeted).
		The Tiaki Promise and Biosecurity 2025 (visitor targeted).

[4] For more information, see the International Visitor Conservation and Tourism Levy web page (https://www.mbie.govt.nz/immigration-and-tourism/tourism/tourism-funding/international-visitor-conservation-and-tourism-levy/).

Increasing tourism productivity

Increasing the productivity of the tourism industry – through value-led growth, increased seasonal dispersal and improvements in tourism workforce capability – is seen as a key means of addressing the less desirable aspects of tourism growth.[5] The underlying logic is rarely stated explicitly, but appears to involve an assumption that spending growth is less environmentally harmful than visitor growth (see box 4.1).

Box 4.1: The empirical basis for promoting value-led tourism growth

Attracting higher-value visitors has been a central tenet of the Government's tourism strategy in recent years.[6] The underlying assumption seems to be that by growing value rather than volume, the economic benefits of tourism can be decoupled from the associated environmental and social pressures.

The evidence base supporting this idea is unclear, as is, in many cases, the underlying logic.

For those environmental pressures that are strongly linked to the consumption of goods and services – greenhouse gas emissions or waste generation, for example – it is not obvious that the footprint of higher-spending tourists is particularly small. By definition, higher-spending tourists consume more goods and services, with the associated environmental footprint that goes with this. Similarly, higher-spending tourists seem more likely, all else equal, to fly business class or travel independently by road.

The idea that a smaller number of higher-spending tourists can reduce environmental pressures unrelated to consumption (e.g. wastewater overflows or a loss of natural quiet) is easier to grasp. But any such improvement relies crucially on any growth in higher-spending tourists being accompanied by a reduction in their lower-spending peers. It is far from clear that this is the intention. The *New Zealand-Aotearoa Government Tourism Strategy* states that "we want the value of tourism to continue to grow faster than volume", but provides no mention of limiting volume itself.[7]

[5] MBIE, 2017a; MBIE and DOC, 2019.

[6] For example, TNZ's focus on marketing to high-value tourists (TNZ, 2012, p.12). While often described as a new approach, focusing on improved tourism productivity dates back even further to the first New Zealand tourism strategy – albeit described then in terms of "yield driven" growth (Tourism Strategy Group, 2001, p.ii).

[7] MBIE and DOC, 2019, p.12.

Targeted international marketing, destination marketing, investment in visitor attractions and skills training are seen as key policy tools for improving tourism productivity.[8] For example, TNZ currently spends $117 million per year on marketing Aotearoa New Zealand's tourism offering internationally.[9] This campaign focuses on high-value markets and emphasises shoulder seasons. To a lesser extent, the development of attractions that appeal to high-value tourists, particularly during off-peak periods, is also supported through the provision of targeted public finance (figure 4.1).[10]

Source: Chien-Chung Chen, Flickr

Figure 4.1: Tourism organisations in the central North Island are using ski tourism at Mt Ruapehu as one means of encouraging seasonal dispersal.

Policy tools that aim to improve tourism productivity may alleviate some of the place-based environmental pressures resulting from tourism growth. To the extent that productivity gains translate into slower growth in visitor numbers, they will mitigate biosecurity risks and congestion at emerging destinations, as well as reduce the need for additional infrastructure development. They may also make manaakitanga and kaitiakitanga more achievable if visitor numbers are smaller at place.

[8] MBIE, 2017a; MBIE and DOC, 2019.

[9] TNZ, 2018, p.19.

[10] For example, the Provincial Growth Fund provided Ruapehu Alpine Lifts with a concessionary $10 million loan for the installation of new ski lift facilities in 2018.

That said, realising the potential environmental benefits of value-led growth and increased seasonal dispersal has proved to be challenging in practice. 'Value over volume' has been a key tenet of the Government's tourism strategy since at least 2012.[11] However, international visitor spending has grown at an average annual rate of 7.3 per cent over the intervening period, while international arrivals have grown at 6.3 per cent.[12] In other words, once inflation is accounted for, spending per visitor has actually remained more or less constant in recent years.[13]

Stimulating greater seasonal dispersal has also proved to be difficult. Since 2000, the average proportion of visitors arriving in summer (34 per cent), autumn (23 per cent), winter (19 per cent) and spring (24 per cent) has remained essentially constant.[14]

Despite recent efforts, per tourist spending and seasonal dispersal have not changed significantly. Furthermore, even if policy effectiveness did improve, it is not clear that this would deliver tangible improvements across all of the tourism-related environmental pressures considered in this report.

In particular, as discussed in box 4.1, value-led tourism growth may actually worsen those pressures that are linked with consumption. Higher-value visitors, by definition, consume more goods and services, all of which have an associated greenhouse gas and solid waste footprint.

In addition, although limited data is available, the goods and services consumed by higher-value visitors are probably also different to those consumed by lower-value visitors. To the extent that these goods and services are relatively energy intensive (e.g. car rather than bus travel, hotel rather than campground accommodation, helicopter rides rather than hiking), high-value visitors will again have a relatively large greenhouse gas footprint.

Based on the above, table 4.2 summarises the likely environmental effects of boosting tourism productivity through value-led growth and increased seasonal dispersal. The analysis suggests that policies that support seasonal dispersal, to the extent that they reduce growth during peak periods, are likely to mitigate several place-based pressures. By contrast, there remain concerns with value-led growth. Value-led growth without simultaneous moderation of visitor numbers is unlikely to mitigate environmental pressures.

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[11] TNZ, 2012.

[12] Derived from average annual change in international visitor arrivals (Source: international travel and migration statistics, Stats NZ) and international tourism expenditure (Source: tourism satellite account, Stats NZ) for year end March 2012–18. The primary reason for an increase in spending over this period has been linked to a doubling of spending by Chinese visitors (MBIE, 2018b, p.28). In addition, the Government has technically had a focus on improving tourism productivity since its first published strategy in 2001 (Tourism Strategy Group, 2001). When calculated over this longer term (2000–18), international visitor spend has increased 5.6%, while visitor arrivals have increased 5.1% (derived from tourism satellite account and international travel and migration statistics, Stats NZ).

[13] The average inflation rate between 2012 and 2018 was 1.1% (derived from consumer price index, Stats NZ).

[14] Derived from the international travel and migration statistics, Stats NZ.

Table 4.2: Suggested traffic lights for approaches that support increased tourism productivity via value-led growth and seasonal dispersal, as against key environmental pressures. Policies that support tourism productivity include international marketing, funding of national attractions and destination marketing.

Environmental pressure	Value-led growth	Seasonal dispersal
Visitor density and loss of natural quiet		
Water quality degradation		
Solid waste generation and management		
Infrastructure development and landscape modification		
Biodiversity loss and biosecurity risks		
Greenhouse gas emissions		

Increasing geographic dispersal of visitors

Increasing the geographic dispersal of domestic and international visitors is another key tenet of the Government's current tourism strategy.[15] It has two main objectives. First, by sharing the economic benefits of tourism more widely, increased geographic dispersal of visitors is seen as a means of improving the inclusiveness of tourism growth. Second, by redistributing tourists away from existing hotspots, the pressures associated with high concentrations of visitor numbers may also be mitigated.

Particular policies that aim to increase the geographic dispersal of visitors include the funding and provision of regional visitor attractions, the funding and provision of visitor-specific transport, and the Government's recognition of the "5As" of tourism (increased **awareness** of alternative destinations, improved **access** to alternative destinations, targeted investment in **attractions** and **amenities** to attract visitors to alternative destinations and ensuring host **attitudes** at alternative destinations are supportive of tourism) to promote dispersal in its tourism strategy (figure 4.2).[16]

[15] MBIE, 2017a; MBIE and DOC, 2019.

[16] MBIE and DOC, 2019.

Source: Pxhere.com

Figure 4.2: One way to encourage regional dispersal is to create attractions in under-visited areas. One recent success story has been the development of Hobbiton near Matamata.

Policies that support increased geographic dispersal of visitors will deliver economic benefits for communities not currently on the tourism trail. Further, in concert with other policies (e.g. destination management planning), it may help to ease congestion-related pressure and noise at more popular sites.

However, as the Government acknowledges, a wider geographic spread of visitors will also lead to a "sharing of the costs" of tourism.[17] As such, communities in emerging destinations like Rakiura Stewart Island or the Catlins will begin to experience the congestion-related pressures that are commonplace at relatively established destinations (figure 4.3).

[17]MBIE and DOC, 2018, p.35.

Source: AlasdairW, Wikimedia Commons

Figure 4.3: Ringaringa Beach on Rakiura Stewart Island may start to become congested as visitors are encouraged to disperse to a wider range of destinations.

Increased geographic dispersal of visitors also has other environmental implications. The infrastructure required to stimulate regional arrivals may, or is likely to, exacerbate landscape modification. It is also unlikely to be beneficial from a biosecurity perspective: additional regional travel will increase the risk of already introduced organisms being more widely disseminated.

Policies that support increased geographic dispersion are unlikely to reduce the amount of greenhouse gas emissions or waste generated by visitors. These policies may also place visitors in areas where waste and wastewater management systems have less capacity to cope with increased waste levels.

For Māori, the impact of the geographic dispersal of visitors will be variable. If kaitiakitanga, manaakitanga and tino rangatiratanga are taken into consideration at the policy level, dispersal and its impact on Māori will be dependent on the impact on the environment, whether whānau, hapū and iwi are able to accommodate visitors, and whether they have a say on where, when and how visitor dispersal will be managed.

Table 4.3 illustrates the suggested traffic lights for the various policy tools that support increased geographic dispersal against key environmental pressures. While there might be some localised environmental benefits from policy tools supporting geographic dispersal, overall these policies are not likely to support lasting decreases in environmental pressures. On the contrary, these policies may exacerbate some environmental pressures.

Table 4.3: Suggested traffic lights for increased geographic dispersal, as against key environmental pressures. Policy tools that support increased geographic dispersal include funding for visitor attractions and visitor-specific transport.

Environmental pressures	Geographic dispersal
Visitor density and loss of natural quiet	
Water quality degradation	
Solid waste generation and management	
Infrastructure development and landscape modification	
Biodiversity loss and biosecurity risks	
Greenhouse gas emissions	

Improving visitor management at place

Effective, place-based visitor management is central to the Government's current tourism strategy.[18] This pillar is seen as the key means of ensuring that tourism growth does not detract from the visitor experience that Aotearoa New Zealand offers, or erode tourism's social licence to operate in communities. Public investment in mitigating infrastructure and developing and implementing destination management plans are seen as the key enabling policy tools to support improved visitor management.

Local infrastructure (e.g. rubbish bins, car parks, local roads and toilet facilities) that mitigates place-based environmental pressures of growing visitor numbers has traditionally been provided by local government. However, since 2017 this investment has been supplemented by almost $50 million of central government funding via the Tourism Infrastructure Fund to allow these councils feeling acute pressure from tourism growth to 'catch up'.[19]

The provision of new infrastructure is undoubtedly a key means of mitigating some of the place-based environmental pressures that tourism generates. At the level of specific tourist attractions, the provision of rubbish bins and toilet facilities can reduce the incidence of littering, support waste management efforts and limit the use of surrounding areas as an open 'toilet'.

[18]For example, see MBIE (2017a) and MBIE and DOC (2019).
[19]MBIE, 2017a, p.6; MBIE, 2019f.

At the level of a town or city, additional car parks, upgraded wastewater treatment facilities and new walkways can reduce congestion, noise and tourism-related wastewater pressures during peak season. That said, investment in new infrastructure can amplify other tourism-related pressures. The development of new car parks, roads and toilet blocks may also alter the character and landscape of particular destinations, and risk locking in emissions-intensive technologies and behaviours (e.g. investment in car parks and roads can delay the shift to alternative transport modes).

However, there is a limit to the environmental benefits that mitigating infrastructure can provide. The development of infrastructure is just as likely to increase tourism demand, which may nullify the benefits of reduced congestion and noise.

Destination management planning represents an alternative to the provision of new infrastructure (figure 4.4). The development of destination management plans necessarily involves collaboration between a range of stakeholders, including central government agencies, territorial authorities, iwi, hapū and commercial interests. As such, their effectiveness largely depends on the ability of these disparate groups to reach consensus and enforce the resulting management plan.

Destination management plans could ensure that sites of high natural character are not fundamentally modified by visitor growth. However, in many cases, limits on visitor numbers and an appropriate enforcement mechanism would be necessary to safeguard a site. To date, restricting access through regulations has been limited.

Iwi involvement in destination management may also refocus the industry to think more clearly about its impact on the environment. For example, Ngāti Tūwharetoa see themselves as guardians (not owners) of Maunga Tongariro. Thus, everything done on the maunga needs to have the maunga at the centre of the decision so visitor behaviour is shaped to fit the maunga rather than the maunga being shaped to fit the visitors: "manage the numbers, elevate the experience."[20]

[20]Te Ngaehe Wanikau, pers. comm., 25 September 2019.

Source: Bernard Spragg, Flickr

Figure 4.4: To better manage visitors in Milford, the Milford Opportunities Project has been established to create a destination management plan. One of the difficulties is managing how people get to and from Milford via the Cleddau Valley (pictured).

Table 4.4 illustrates the suggested traffic lights for the various policy tools that support improved visitor management at place against key environmental pressures. Policies that support visitor management at place when working together are unlikely to exacerbate environmental pressures, and may provide some environmental benefits, especially at local sites.

Table 4.4: Suggested traffic lights for improved visitor management at place via destination management planning and infrastructure investment, as against key environmental pressures.

Environmental pressure	Destination management planning	Infrastructure investment (mitigating)
Visitor density and loss of natural quiet		
Water quality degradation		
Solid waste generation and management		
Infrastructure development and landscape modification		
Biodiversity loss and biosecurity risk		
Greenhouse gas emissions		

Raising awareness and education

Ensuring that visitors are appropriately informed represents the final part of the overarching strategy. There is a range of targeted awareness and education campaigns, which differ in respect of who is targeted and what is being communicated. For example, the Biosecurity 2025 initiative includes actions that are intended to increase visitor awareness of the role they can play in minimising the risk of introducing or dispersing invasive organisms.[21]

The Tiaki Promise campaign developed by a group of public and private sector organisations including TNZ, has a wider focus, encouraging visitors to consider the impacts they have on all aspects of Aotearoa New Zealand's cultural and natural environment (box 4.2).

[21] MBIE and DOC, 2019.

Box 4.2: The Tiaki Promise

In response to growing unease about the environmental effects of tourism, particularly with regard to visitor behaviour and rubbish, the Tiaki – Care for New Zealand initiative was launched in November 2018, aiming to change visitor and host attitudes and behaviours.

The initiative was launched by a mixture of government and private sector bodies. The initiative builds on earlier work by these players. For example, the Department of Conservation has a summer visitor campaign aiming to achieve more environmentally respectful behaviours.

Tiaki – Care for New Zealand involves a voluntary pledge: the Tiaki Promise. Those that make the promise are expected to care for the land, sea and nature, tread lightly and leave no trace, travel safely, show care and consideration for all, respect the culture and travel with an open heart.

Many New Zealand businesses have committed to it and are using it as an educational tool for their customers.[22] The governance group has set performance indicators that allow the supporting organisations to measure its success, one of these indicators being the Mood of the Nation survey results on 'positivity'.[23]

Several countries have launched initiatives where visitors and hosts pledge to respect places. The Palau Pledge (which is the only pledge enacted through legislation and is compulsory) is aimed at protecting the culture and environment of the Pacific archipelago and can be enforced through fines. It is an attempt at 'conscious tourism', and there is a plan to educate the children of Palau and businesses to implement the pledge.[24] The Pono Pledge in Hawai'i and the Icelandic Pledge are other examples.

Educating visitors about the consequences of their activities can help to stimulate behavioural change. However, as with awareness-raising campaigns in other regulatory contexts (e.g. Smokefree Aotearoa 2025), tourism-specific awareness campaigns are unlikely to expunge all undesirable behaviour. A subset of tourists can be expected to continue to pollute or fail to take sufficient precautions.

Awareness and education campaigns ideally need to target both visitors and tourism businesses. Indeed, it is important that tourism businesses are proactive in this area to ensure they continue to have a social licence to operate.

[22] The main supporters were DOC, TNZ, TIA and Tourism Holdings Limited (*thl*), along with Air New Zealand, 100% Pure New Zealand, New Zealand Māori Tourism and Local Government New Zealand. Operators can source free online resources for their businesses to use. See the Tiaki website (https://tiakinewzealand.com/).

[23] TNZ has a plan for the next stage of the Tiaki Promise, which will be launched next season, and *thl* is working on not just visitor behaviour but also host behaviour to help educate visitors.

[24] For more information, see the Palau Pledge website (https://palaupledge.com/).

One example of tourism businesses being targeted is the New Zealand Tourism Sustainability Commitment introduced by TIA in November 2017. This campaign aims to see every New Zealand tourism business committed to environmental sustainability.

Through educating tourism businesses, some enterprises have started to change their practices towards more quadruple bottom-line accounting and reporting of their environmental impacts. This is in line with wider trends throughout the economy to better account for environmental externalities from tourism activities.

However, the majority of tourism businesses in Aotearoa New Zealand are small and tied to a volume-based model. Viability and growth largely come from increasing the number of visitors that they service. As a result, prioritising non-economic factors and quadruple bottom-lines may be difficult because implementing practices to address them can conflict with the very model that a business relies on (e.g. volume of tourists serviced). Despite this, engagement with initiatives such as the New Zealand Tourism Sustainability Commitment are reported to be positive.[25]

Table 4.5 illustrates the suggested traffic lights for the various policy tools that support raised awareness and education against key environmental pressures. Awareness and education campaigns are more likely to have an impact on tourist behaviour but are unlikely to affect the development that supports the tourism ecosystem (e.g. transport, infrastructure development).

Table 4.5: Suggested traffic lights for raised awareness and education, as against key environmental pressures.

Environmental pressures	Raised awareness and education
Visitor density and loss of natural quiet	
Water quality degradation	
Solid waste generation and management	
Infrastructure development and landscape modification	
Biodiversity loss and biosecurity risks	
Greenhouse gas emissions	

[25]TIA, 2019a.

Conclusion

In response to growing environmental pressure and changing perceptions of recent tourism growth, the Government has published an updated tourism strategy – the *New Zealand-Aotearoa Government Tourism Strategy*. The strategy seeks to ensure that tourism improves New Zealanders' social, cultural, environmental and economic wellbeing. The underlying premise seems to be that tourism, if managed appropriately, can deliver economic wellbeing without the less desirable environmental and social side effects.

This chapter took this claim at face value and examined the likely environmental effectiveness of the main policy approaches proposed in the strategy.

The foregoing analysis suggests that most policies have limited capacity to decouple tourism activity from the environment and in some cases, such as geographic dispersal, may actually exacerbate environmental pressures. Policies that support value-led growth are unlikely to reduce environmental pressures unless they are supported with policies that simultaneously aim to reduce the volume of visitors.

Other approaches – greater seasonal dispersal, for example – have the potential to address certain environmental pressures. But again, the same caveat applies. Seasonal dispersal without stable or reduced peak demand simply spreads the pressure to areas that may or may not be able to cope. The goal in this case should be to move all future growth from the peak season to less busy times.

Policies also need to consider the connection that Māori have with the environment. Values and principles that connect people to the land could have a positive impact on the tourism sector as well as provide a unique cultural experience. But at best, this remains a work in progress. This means that, as well as partnering with Māori on macro-level tourism issues, whānau, hapū and iwi must also be engaged at the regional and local level to ensure their role as kaitiaki and mana whenua, and thus their rights and interests, are upheld. It is fair to ask how well some of our current policies are likely to respect this connection.

For the most part, the analysis suggests that, as it stands, the broader policy package will be insufficient to head off a continued worsening of the pressures resulting from tourism growth.

If this is the case, then in a world without limits what could the environmental consequences of tourism growth be in Aotearoa New Zealand? This is the focus of the next chapter, which provides an assessment of how tourism-related environmental pressures could evolve in a business-as-usual future.

5

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The challenges of business-as-usual tourism growth

Chapter summary

- Third-party forecasts of tourism growth along with the extrapolation of existing trends have been used to create a business-as-usual future for tourism to 2050.
- In this future, international visitor arrivals increase by a factor of between two to four. Nominal tourism spending – both domestic and international – increases roughly in line with this, but much more slowly once forecast inflation is accounted for.
- There is a range of factors that could drive tourism activity significantly higher – or lower – than this future suggests.
- At a general level, environmental pressures are likely to grow in line with the size of the tourism industry. But there will be variation across the environmental impact categories analysed.
- For greenhouse gas emissions, the implementation of the measures included in the Climate Change Response (Zero Carbon) Amendment Act 2019 (Zero Carbon Act) and supporting policies will trigger a significant reduction in the emissions that tourists generate while in New Zealand. Despite that, total tourism-related emissions will only fall slightly by 2050 due to a growing share of emissions from international aviation.
- Increased waste generation will be an unavoidable consequence of business-as-usual tourism growth.
- Continued tourism growth will impose additional pressure on wastewater infrastructure that is already under significant stress.
- Visitor numbers at emerging tourism destinations will continue growing, and the net result will be a greater number of places operating at or close to full capacity, together with the loss of the tranquillity and isolation that made those places worth visiting in the first instance.

- Investment and development in new infrastructure (such as new airports, ports, roads and car parks) to support population and tourism growth will result in significant landscape modification and ecosystem fragmentation.
- A greater number of travellers crossing New Zealand's borders will inevitably increase the risk of foreign species being introduced.
- Significant growth in visitor numbers will pose challenges for Māori.

There is a tension at the heart of tourism's growth. On the one hand, New Zealand benefits significantly from the cultural interchange, job creation, foreign exchange earnings and economic growth that the industry generates. Māori also view tourism as a potentially positive force, provided it is on their terms.

On the other hand, the persistent growth of recent decades has resulted in steadily increasing pressure on people and places. The large increases in visitor numbers to some areas of high natural amenity have contributed to the loss of tranquillity, sense of wilderness and cultural heritage that made these sites special in the first place.[1] It has also compromised the ability to exercise kaitiakitanga. The development of infrastructure required to accommodate visitor growth – roads, car parks, hotels, toilet blocks and airports – has led to an incremental, but cumulatively significant modification of the landscape.

The evolution of this tension between economic opportunities and environmental and cultural harm will largely determine the industry's social licence to operate in the future.

There are two opposing views on this tension. The first is that it is inherent in the nature of tourism – environmental pressure will be the inevitable consequence of continued growth. The second is that tourism can in some sense be regenerative if an appropriate set of management approaches are put in place. In other words, the pressures associated with historical tourism growth have developed largely because this growth has taken place in a context that has not required costs and pressures to be addressed.

This chapter provides an insight into these issues by sketching out how the environmental pressures resulting from tourism might evolve in a business-as-usual future – one where existing policy settings remain unchanged.

[1] Cultural heritage sites for Māori include wāhi tapu (sacred sites) and other locations of traditional and contemporary importance to whānau, hapū and iwi, like mahinga kai (food gathering) and rongoā (medicinal) sites.

The methodology used is summarised in figure 5.1. Projections of visitor numbers and spending are developed to 2050 based on stated industry targets, published forecasts and the extrapolation of existing trends. Impact multipliers derived from the tourism literature are then used to translate projected tourism growth into six main pressure categories:

- greenhouse gas emissions
- solid waste generation and management
- water quality degradation
- visitor density and loss of natural quiet
- infrastructure development and landscape modification
- biosecurity risk.

There is also consideration of the challenges of projected tourism growth for Māori.

The analysis includes both international and domestic tourism growth.[2] It is mainly undertaken at the national level, as this is where most published tourism forecasts have focused. Wherever possible, the analysis is extended to the local level to reflect the fact that tourism growth rates are likely to vary widely across the country.

In terms of impact multipliers, the analysis takes an 'average tourist' approach (rather than distinguishing between tourists with footprints of different sizes). While there is good reason to believe that higher-spending tourists have a larger footprint on some pressure categories (see box 4.1), there is only limited empirical evidence to back this up. Additional work is required here. Finally, the analysis recognises that the environmental footprint of an 'average' tourist is likely to vary with time. Where appropriate, impact multipliers are therefore adjusted to reflect the influence of, among other things, future technological and behavioural change.

[2] Incorporating domestic tourism growth is often challenging. Data describing the current size of domestic tourism activity (e.g. number of trips per person per year, domestic tourists by destination) are relatively poor. Furthermore, in contrast to international tourism, very little forecasting has focused on the likely evolution of domestic tourism activity.

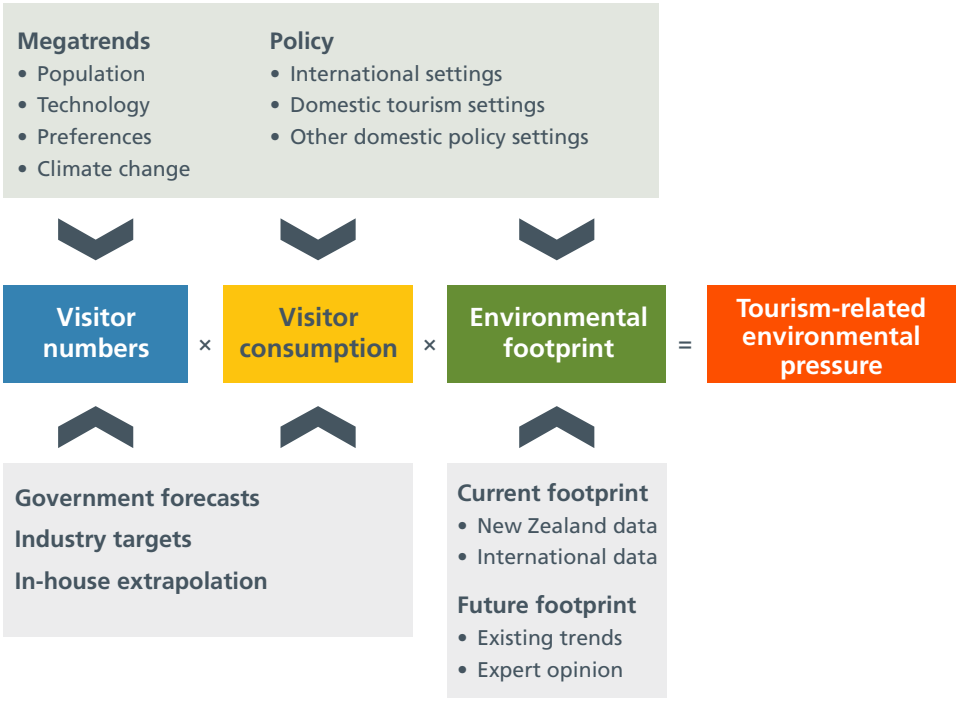


Figure 5.1: Analytical framework for the development of the business-as-usual future.

Future tourism growth

Megatrends will continue to drive international departures

Future global demand for tourism is likely to continue growing in response to economic growth, technological change, population growth and other factors.

Population growth is set to continue, with the global population expected to increase by an additional two billion people by 2050.[3] Per capita incomes are also projected to grow. Almost two billion additional people are expected to enter the global middle class by 2030,[4] and many of these individuals will probably be interested in taking overseas trips. The cost of travelling abroad will also fall as aviation technology and business models continue to evolve.[5]

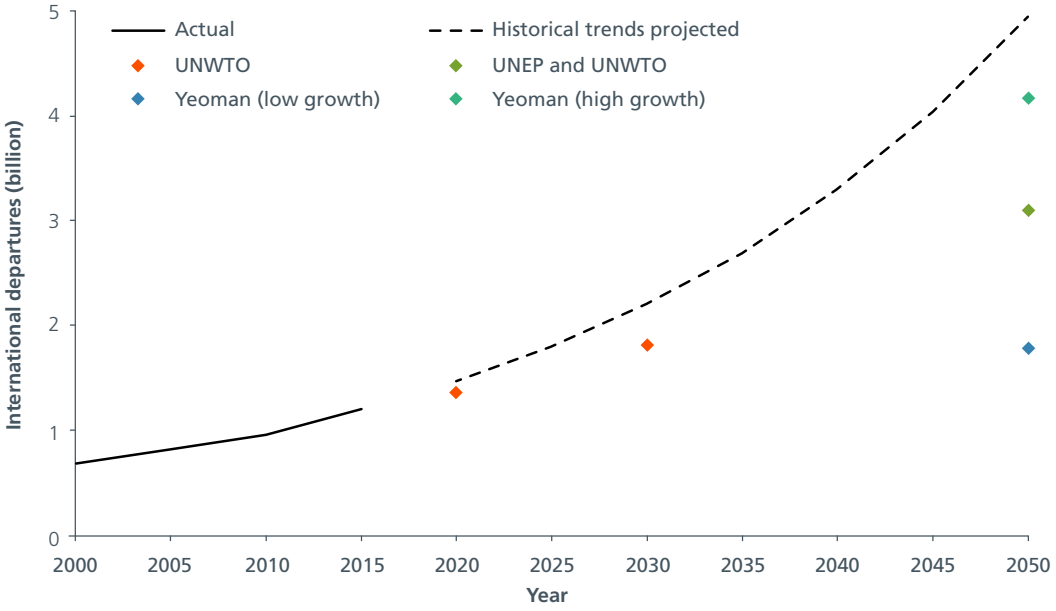
Two sets of model-based assessments have attempted to translate the drivers of global travel and tourism demand into quantitative forecasts.

[3] UN DESA, 2019, p.5.

[4] Kharas, 2017.

[5] McKinsey estimates that the real cost of air travel has fallen by a factor of four since 1960 (Saxon and Weber, 2019).

The first set of assessments is associated with the academic tourism literature[6] and focuses on how international tourism growth might evolve.[7,8] Taken together, these assessments suggest that global tourism will continue to grow, but at a slower rate than observed in recent decades (figure 5.2).[9,10] International departures are expected to reach 1.8 billion by 2030 and around 3 billion by 2050. Relative to today, this represents a large pool of additional travellers,[11] of which some proportion will choose to visit New Zealand.



Source: UNWTO (2011; 2016), UNWTO and UNEP (2012), Yeoman (2012) and calculated in-house

Note: The historical trends scenario represents how global tourism departures would evolve if the average growth rate observed between 2000 and 2015 continued.

Figure 5.2: Actual and forecast global tourism departures: 2000 to 2050.

[6] UNWTO, 2011; UNEP and UNWTO, 2012.

[7] UNWTO (2011) developed an empirical model describing international tourist arrivals as a function of GDP and transport costs. Third-party projections of the latter two variables were then used to forecast international tourist arrivals to 2030. The forecasts of international tourism growth contained in UNEP and UNWTO (2012) are based on work undertaken by the Millennium Institute, however, the methodology used is unclear.

[8] Yeoman (2012) also discusses the potential magnitude of international tourism growth, but in terms of possible scenarios rather than forecasts.

[9] The model parameters that are driving the forecast slowdown are unclear.

[10] In reality, unforeseen events – conflict, economic fluctuations, pandemics, etc – will superimpose fluctuations on these longer-term trends. The modelling approaches presented here assume that, as in the past, the underlying structural determinants of tourism demand will be persistent, and rebounds will occur quickly.

[11] Global departures reached 1.4 billion in 2018, having increased at an average annual rate of 4% since 2000 (UNWTO, 2019).

The second set of assessments focuses on future air travel more broadly.[12]

These are produced by aerospace manufacturers, and therefore extend to all domestic and international air travel, regardless of whether it is tourism-related or not. The results of these assessments suggest that air travel will grow at an average rate of four per cent per year to 2040 – in line with historical trends, but significantly faster than implied by the international tourism departures forecasts.[13]

Importantly, the industry forecasts suggest that international travel growth on routes involving New Zealand may be significantly higher than in the tourism forecasts shown in figure 5.2. For example:

- Boeing's forecasts suggest that passenger numbers on the North America, Middle East, and China–Oceania routes will grow at annual average rates of 3.6, 4.5, and 5 per cent to 2037.
- Airbus's forecasts suggest that passenger numbers on the sub-Saharan Africa and emerging Asia–Oceania routes will grow at annual average rates of 5.2 and 5.7 per cent during the same period.

The seemingly small difference in academic and industry forecasts become significant in the longer term. The additional one per cent per year departures growth implied by the industry forecast would result in an additional one billion individuals travelling globally by 2050.

Tourism in New Zealand is forecast to continue growing

International arrivals to New Zealand reached 3.82 million in 2018,[14] or 0.27 per cent of all global departures. Given the projections of global departures growth presented in the previous section (3–4 per cent growth annually), and assuming that New Zealand continued to receive a constant proportion of these travellers, international arrivals would reach five to six million by 2030, and 10–13 million by 2050.

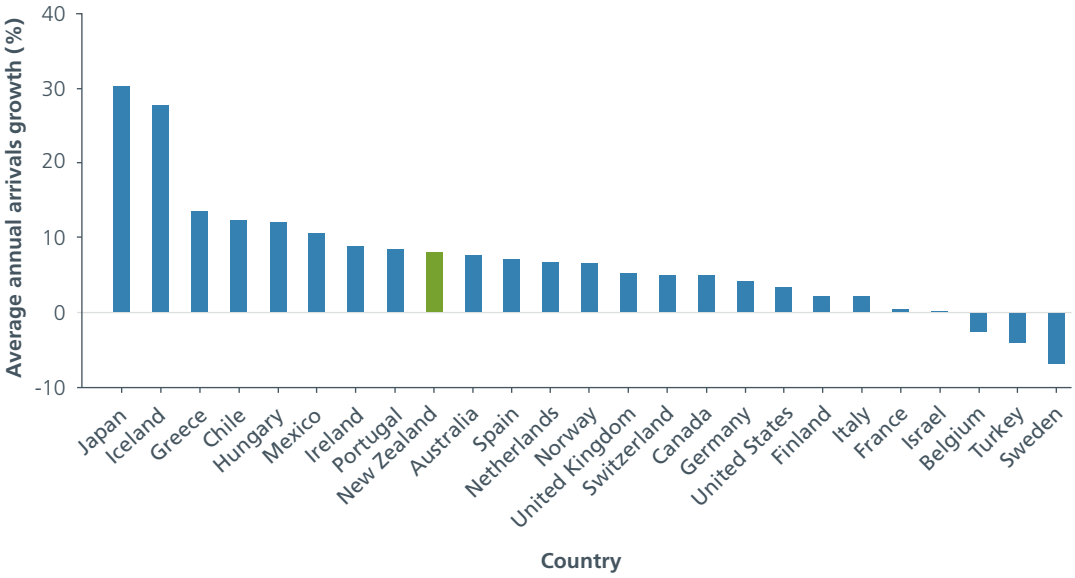
But international arrivals to New Zealand are unlikely to grow in line with global trends. Instead, shifting traveller preferences and changes in the relative attractiveness and affordability of alternative destinations will interact to determine demand for New Zealand's tourism offering.

This phenomenon is illustrated by highly variable arrivals growth across Organisation for Economic Co-operation and Development (OECD) countries in recent years. Popular destinations such as Japan and Ireland have experienced growth of 25–30 per cent per year while other countries – Sweden, Turkey and Belgium, for example – have experienced a contraction in arrivals (figure 5.3).

[12] Airbus, 2018; IATA, 2019a; Boeing, 2019.

[13] In part, this may be an artefact of both domestic and international departures being included in the industry forecasts. The relative affordability of domestic air travel may mean it might be expected to grow faster than international air travel.

[14] Stats NZ, 2018.



Source: OECD (2018b)

Figure 5.3: Tourism arrivals growth in OECD countries between 2012 and 2016.

There have been relatively few attempts to systematically translate the drivers of global tourism into long-term projections of arrivals growth to New Zealand. The following section therefore draws on the existing set of industry and government targets and forecasts, as well as an extrapolation of current and forecast trends, to develop a picture of how New Zealand's tourism industry could evolve. The primary focus is on how tourism could evolve in terms of visitor numbers, but potential spending growth is also considered because of the influence it has on certain environmental pressures.

Targets

While targets do not necessarily represent what the future is most likely to look like, they do reflect what informed stakeholders presumably believe is possible.

Two sets of targets are relevant for New Zealand's tourism industry:

- Tourism Industry Aotearoa (TIA), in *Tourism 2025* (2014), established a spending target of $41 billion for the tourism sector by 2025.[15] This included $19.1 billion from international visitors. Total tourism spending reached $39.1 billion in 2018, and TIA established a revised spending target of $50 billion by 2025.[16]
- The *New Zealand-Aotearoa Government Tourism Strategy* does not establish a numeric growth target for the industry. Instead, the objective is to "increase tourism's value" to New Zealand, while ensuring that value grows faster than volume.[17]

[15]TIA, 2014.
[16]TIA, 2019b.
[17]MBIE and DOC, 2019, p.12.

Forecasts

Forecasts establish an empirical relationship between an outcome of interest (e.g. visitor numbers) and the drivers of that outcome (e.g. household incomes, travel costs, quantity and quality of visitor attractions). Expectations about the future evolution of the underlying drivers are then used to forecast how the outcome of interest will be affected.

Three sets of forecasts exist for New Zealand's tourism industry. Each focuses on tourism associated with international visitors – forecasts of domestic visitor activity are unknown.

- Auckland Airport, in collaboration with Tourism Futures International, developed forecasts of visitor arrivals growth in 2014.[18] Based on a review of economic forecasts and potential air carrier capacity, this work suggested that international arrivals to New Zealand would reach 4.2–5.2 million by 2025, an average growth rate of 3.6–5.5 per cent. More recently, Auckland Airport has suggested that passenger movements could reach 40 million by 2040 – an almost threefold increase over 2013 levels.[19] The contribution of tourism – both domestic and international – to this growth is unclear.
- The Ministry of Business, Innovation and Employment (MBIE) produces annual forecasts of international visitor arrivals and spending.[20] The most recent set of forecasts (published in May 2019) suggests that international arrivals will increase to 5.1 million in 2025, an average growth rate of four per cent per year. In nominal terms, visitor expenditure is expected to grow broadly in line with arrivals, reaching $15 billion by 2025.[21] However, when adjusted for future inflation,[22] these forecasts suggest that expenditure per visitor is likely to fall.
- The Ministry of Transport (MOT), as part of its 2017 Transport Outlook, produced a set of possible futures for aviation (domestic and international), road transport and freight volumes.[23] The international aviation future is based on MBIE forecasting until 2023. Beyond that, international arrivals are assumed to grow between three per cent (the business-as-usual future) and four per cent per year (the higher growth future). On this basis, international arrivals to New Zealand reach 7.6–9.3 million per year by 2043.

[18] Auckland Airport, 2014.

[19] Auckland Airport, 2019.

[20] MBIE, 2019b.

[21] The MBIE expenditure forecasts do not align with the targets produced by TIA. The latter includes international education services and international airfares, whereas the MBIE forecasts do not.

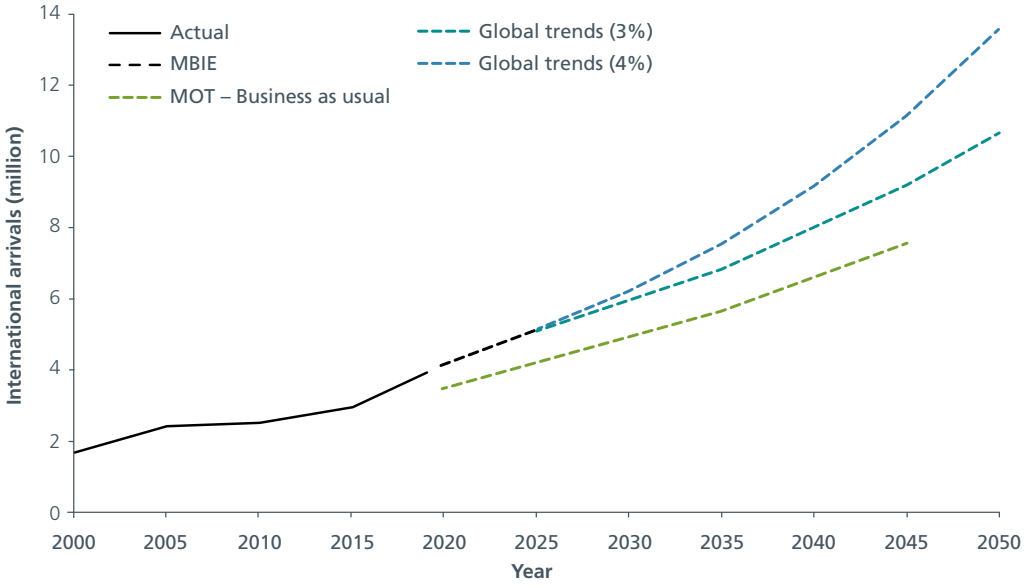
[22] The *Budget Economic and Fiscal Update 2019* assumes an inflation rate of 2% between 2020 and 2023 (Treasury, 2019).

[23] MOT, 2017.

Extrapolation

The targets and forecasts outlined above focus largely on the near term – only the MOT projections extend beyond 2025.[24] While there are important reasons for this,[25] understanding how international arrivals could evolve in the longer term is important for planning today.

Figure 5.4 shows the likely evolution of international arrivals to New Zealand by 2050 in two 'global trends' scenarios. These assume that (i) the forecasts of global tourism departures presented above materialise, and (ii) New Zealand continues to attract a constant proportion (0.27 per cent) of these departures. Under these scenarios, New Zealand could expect international arrivals to reach five to six million by 2030, and 10–13 million by 2050.[26]



Source: International travel and migration, Stats NZ (actual), MBIE (2019b), MOT (2017) and global trends calculated from UNWTO and UNEP (2012)

Figure 5.4: Actual and forecast international arrivals to New Zealand: 2000 to 2050.

[24] The MOT projections do this by assumption. That is, rather than examining how the underlying drivers of international arrivals might evolve beyond 2025, it is simply assumed that they will grow at between 3% (base case scenario) and 4% (higher growth scenarios).

[25] The near-term focus is partly a consequence of the methodology used to forecast international arrivals to New Zealand. Empirical forecasting relies on third-party projections of factors such as foreign GDP growth and airline capacity, most of which are only published for periods of five or so years into the future. The short-term focus of the existing forecasts also reflects that the historical relationship between the drivers of tourism demand (e.g. foreign GDP) and international tourist arrivals becomes more uncertain the further into the future one considers.

[26] Computable general equilibrium (CGE) and related macroeconomic models would represent an alternative, more rigorous means of thinking about the evolution of the tourism sector in the longer term. These models employ assumptions about changes in productivity, consumer preferences and economic convergence between countries to develop projections of sectoral economic growth. They could usefully be applied to the tourism industry.

The targets and forecasts summarised above focus almost exclusively on international arrivals. On the one hand this is understandable – in a sparsely populated country like New Zealand, the growth potential of international tourism far exceeds that of domestic tourism.[27] On the other hand, domestic tourists represented 56 per cent of all guest nights and 59 per cent of visitor spending in 2018.[28] Further, the environmental pressures generated by domestic tourists are, in most cases, identical to those generated by international arrivals.[29]

Figures 5.5 and 5.6 summarise the data on historical tourism spending from the tourism satellite account, forward-looking spending targets published by TIA,[30] and the MBIE forecasts of international visitor spending.[31]

Figure 5.5 also includes an assessment of how domestic tourism spending might evolve beyond 2025 if (i) it grows in line with existing trends ('existing trends'), or (ii) it grows in line with projections of domestic population and economic growth ('socio-economic trends').[32] The key message is that domestic tourism activity is likely to continue to grow, but to what extent will depend significantly on economic and demographic factors as well as the preferences of New Zealanders for tourism relative to other types of consumption (and for domestic tourism relative to trips abroad).[33] In particular, the 'existing trends' scenario is likely to be overly optimistic if the appetite of New Zealanders for additional domestic travel becomes saturated at levels above those of today.

[27] New Zealand's population is expected to grow by around 1.5 million people by 2050 (Statistics New Zealand, 2016b). As shown in figure 5.1, the worldwide pool of tourists is expected to increase by 2 billion people during the same period.

[28] Stats NZ, 2018.

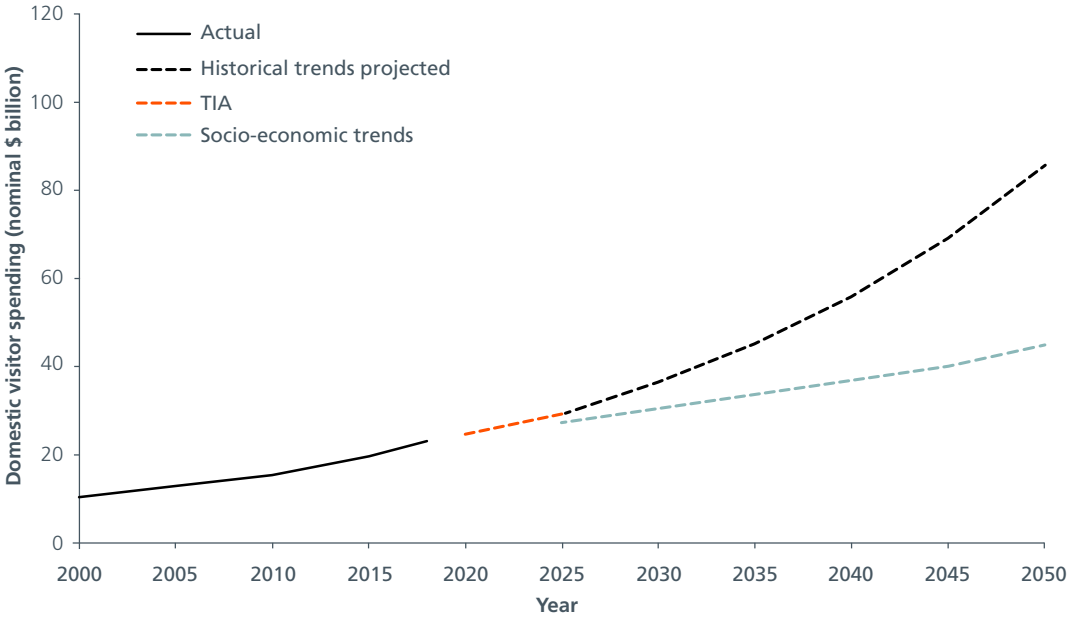
[29] But with two significant exceptions. First, the fact that long-distance travel is required to reach New Zealand means that international visitors will have a disproportionately high greenhouse gas footprint and will be more likely to introduce undesirable foreign species. Second, the place-based pressures created by domestic tourists are to some extent 'cancelled out' by the fact that they are not creating these same pressures in their normal place of abode elsewhere in New Zealand. Consider solid waste generation, for example.

[30] The TIA forecast for domestic visitor spending was derived from the $50 billion spending target (domestic and international) presented in *Tourism 2025 & Beyond* (TIA, 2019b). An additional assumption – that domestic and international spending will grow at the same rate – was introduced in order to calculate domestic tourism spending growth.

[31] Data on historical tourism spending and forecast future spending by international visitors are in nominal terms – i.e. not adjusted for past or future inflation (Stats NZ, pers. comm., 22 October 2019; MBIE, pers. comm., 30 October 2019).

[32] Statistics New Zealand, 2016b; Treasury, 2016.

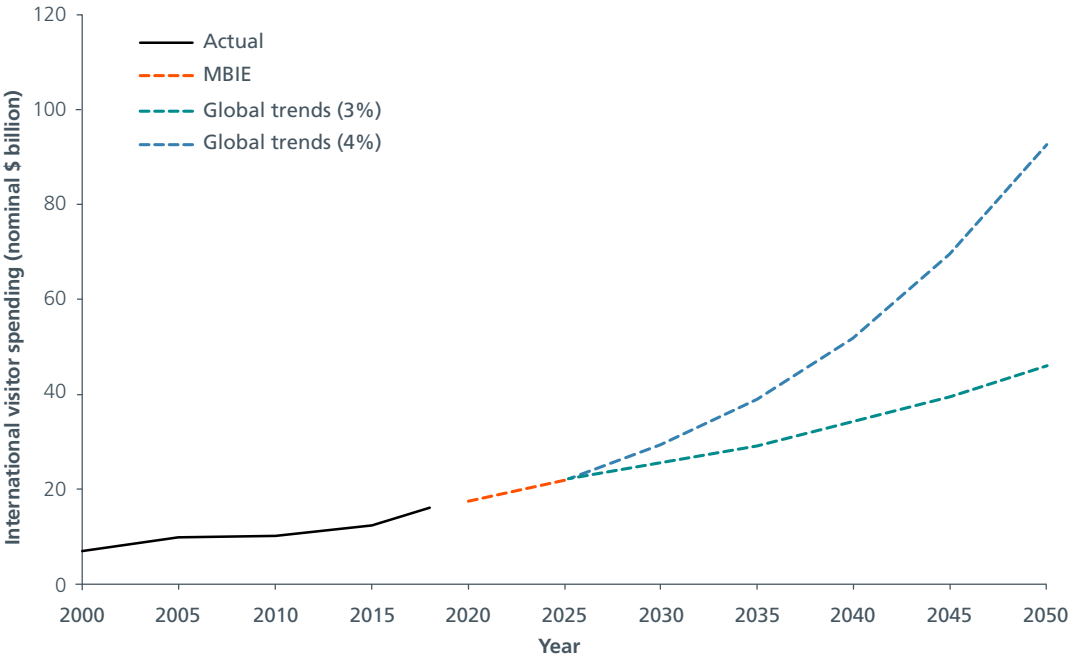
[33] The large divergence between the 'existing trends' and 'socio-economic trends' scenarios reflects the fact that future domestic tourism spending is likely to grow faster than the combined rate of population and economic growth. As discussed previously, tourism is typically considered to be a luxury good (Park et al., 2011). In economic terms, this means that individuals devote a proportionally larger amount of their income to it as per capita incomes grow.



Source: Stats NZ (2018), projected trends derived from TIA (2019b) and calculated in-house

Note: the 'historical trends projected' scenario shows how domestic tourism spending by New Zealand residents would evolve if the trends observed between 2000 and 2017 were to continue. In contrast, the 'socio-economic trends' scenario shows how this spending would evolve if it grew in line with forecast population and economic growth.

Figure 5.5: Actual and forecast domestic tourism spending by New Zealand residents: 2000 to 2050.



Source: Stats NZ (2018), MBIE (2019) and global trends calculated from UNWTO and UNEP (2012)

Note: the 'global trends (three per cent)' scenario shows how international visitor spending in New Zealand would evolve if (i) the forecasts of three per cent per annum growth of global tourism departures presented above materialise, (ii) New Zealand continues to attract a constant proportion (0.27 per cent) of these departures, and (iii) per-visitor spend remains constant (i.e. in line with observed trends since 2005).[34] In contrast, the 'global trends (four per cent)' scenario shows how international visitor spending would evolve if (i) global tourism departures increased at four per cent per annum, (ii) New Zealand continues to attract a constant proportion (0.27 per cent) of these departures, and (iii) if per-visitor spend grew in line with projected economic growth in OECD countries (1.8 per cent per annum).[35]

Figure 5.6: Actual and forecast tourism spending by international visitors: 2000 to 2050.

But things could change…

The projections presented above suggest that tourism activity in New Zealand could increase by a factor of two to four by 2050. However, the methodologies that this result is built on – econometric forecasting and the extrapolation of existing trends – rely heavily on the twin assumptions that (i) the historical relationship between tourism activity and its underlying drivers will remain unchanged, and (ii) these drivers will evolve in a way that is consistent with historical trends. In short, the projections offer an answer to the question: how will the New Zealand tourism industry grow *if all else remains the same*?

[34] MBIE, 2019b.
[35] OECD, 2018a.

Clearly, the future will not unfold in such a linear way. Emerging trends and unforeseen events will mean that tourism activity in New Zealand will be punctuated by discontinuities and could grow much more rapidly – or slowly – than suggested by the projections. This is important, as the environmental pressures generated by a four-fold increase in tourism activity are likely to be quite distinct from those generated by a doubling. Equally, the policy tools and approaches that are used to manage future growth will need to be flexible enough to deal with both upside and downside risks to growth.

Being aware of influential emerging trends and potential unforeseen events is useful, even if formally incorporating them into forecasts and projections is difficult. This issue is picked up in appendix two, which outlines a selection of factors that are not necessarily incorporated in existing forecasts but that could drive tourism activity in New Zealand significantly higher or lower. These factors relate to both global tourism growth and the attractiveness of New Zealand as a destination.

Potential pressures from business-as-usual growth

Under business as usual, the environmental and cultural pressures resulting from tourism are likely to grow as the industry grows. Thus, the two- to four-fold increase in the size of the tourism industry discussed in the preceding section would, all else being equal, result in significant increases in greenhouse gas emissions, solid waste generation, biosecurity risks, etc.

Of course, not all else is equal. Technological change and shifts in consumer preferences will allow some pressures to be decoupled from tourism growth.[36] Policy initiatives and management approaches that have been implemented but are yet to take full effect – such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and the Zero Carbon Act (see box 5.2) – will have a similar effect. Finally, the environmental pressures resulting from tourism do not always grow linearly with tourism numbers or spending. This is certainly the case for many of the place-based social pressures related to visitor congestion.[37]

This section takes these factors into account to assess how pressures on places and people could evolve in response to projected business-as-usual tourism industry growth. Six key pressures are examined: greenhouse gas emissions, solid waste generation, water quality degradation, visitor density and loss of natural quiet, infrastructure development and landscape modification and biosecurity risk. There is also consideration of the challenges of projected tourism growth for Māori.

[36] Historical decoupling of environmental pressure from economic activity is well documented. At the aggregate level, the carbon intensity of the New Zealand economy improved at an average rate of 1.6% per year between 1990 and 2016 (OECD, 2019b). Similar trends exist at the sectoral level. For example, in the aviation sector, the fuel required per seat kilometre has almost halved since the 1960s (ATAG, 2018).

[37] Although there is limited data available, it seems likely that the pressure generated by an additional tourist at a place depends on how many other tourists are there. For example, the loss of natural quiet resulting from an additional visitor is probably quite small at high levels of visitors – the tranquillity of the site is already lost.

The pressures are assessed using footprint analysis. This approach allows the likely magnitude of the pressures resulting from business-as-usual tourism growth to be examined, and similar approaches have been used in several existing studies.[38] Essentially, projections of future visitor numbers and spending are translated into environmental and cultural pressures using published estimates of the footprint of an individual tourist or dollar of tourist spending.[39]

Where possible (i.e. for greenhouse gas emissions and solid waste generation), this is done in quantitative terms. Where information is lacking, or where the pressure category does not lend itself to quantitative analysis, projected visitor growth is translated in a more descriptive way using scenarios and storytelling. Box 5.1 elaborates further on the methodology used, including its limitations.

Box 5.1: Footprint analysis in the tourism industry: some methodological limitations

The methodology used in this section involves multiplying projected visitor numbers and spending by their respective environmental footprints. These footprints (derived from the literature) are unlikely to remain constant but will evolve in response to both technological and behavioural changes as well as policy settings that are already on the books. Where possible, the footprints are manually adjusted over time to reflect these changes.

The footprint analysis applied here also has the following limitations:

- Except for greenhouse gas emissions related to international aviation, footprints are developed for an 'average' tourist or dollar spend. While this helps to simplify the analysis, it also ignores the fact that different types of tourists generate environmental pressures of different magnitudes. For example, as discussed in box 4.1, higher-value tourists (those that spend more) will tend to have a relatively large environmental footprint, particularly for consumption-related pressures such as greenhouse gas emissions and solid waste generation.
- For the most part, most of the estimates of environmental pressure resulting from projected tourism growth presented in this section are 'direct' in nature. Put differently, they do not account for the water required to grow the food that tourists eat, or the solid waste generated in the manufacture of the goods and services (e.g. hotels, roads and runways) that tourists consume.
- The approach taken focuses primarily on establishing the potential magnitude of the environmental pressures resulting from tourism growth. It provides relatively little insight into the likely resilience of ecosystems, communities, people's wellbeing or policy and management frameworks in the face of these pressures.

[38] For example, see Patterson and McDonald (2004) and Gössling and Peeters (2015).

[39] This approach is similar to that applied by Patterson and McDonald (2004) and Gössling and Peeters (2015) to examine the domestic and global impacts of tourism respectively. However, unlike Patterson and McDonald (2004), it does not include an assessment of the pressures resulting indirectly from tourism growth (i.e. the demands that growth places on other sectors). See box 5.1 for additional details.

Greenhouse gas emissions

Global tourism accounted for an estimated 4.5 gigatonnes of carbon dioxide equivalent, or eight per cent of global greenhouse gas emissions, in 2013.[40] For tourists from high-income countries (where visitors to New Zealand typically come from),[41] around one quarter of these emissions result from air travel. Road transport accounts for another quarter of emissions. The remaining half is associated with the supply chains of the goods and services (accommodation, food, activities, etc) that are consumed by tourists.

There is limited data on tourism-related greenhouse gas emissions in New Zealand. For the purpose of this report, the carbon and sustainability firm thinkstep ANZ was therefore commissioned to estimate the emissions footprint of New Zealand's tourism sector.

The methodology used involved a hybrid of two approaches (see appendix three for a full description). Economic input-output life cycle assessment (EIO-LCA) was used to estimate the emissions associated with the goods and services that tourists consume while in New Zealand. Both direct and indirect emissions were estimated.[42] The emissions associated with movement of tourists to, from, and within New Zealand were estimated using previously published statistics combined with a route-based approach for international aviation.[43]

On this basis, the emissions generated by New Zealand's tourism industry were estimated to be 12.5 million tonnes of carbon dioxide equivalent ($MtCO_2$-e) in 2017 (figure 5.7). The share of these emissions associated with international and domestic air transport was around 35 per cent, which is slightly higher than the international average (~25 per cent – see above). This is probably not surprising given New Zealand's geographic remoteness.

Around 5.2 million tonnes of carbon dioxide equivalent, or 42 per cent of these emissions, were generated beyond New Zealand's territorial boundaries through both international aviation and the international supply chains that sit behind the goods and services that tourists consume in New Zealand. The remaining 58 per cent were generated within New Zealand. These represented around nine per cent of New Zealand's total greenhouse gas emissions in 2017.[44,45]

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[40] Lenzen et al., 2018.

[41] Lenzen et al. (2018) classify high-income visitors as those with per capita incomes of greater than US$10,000 per year.

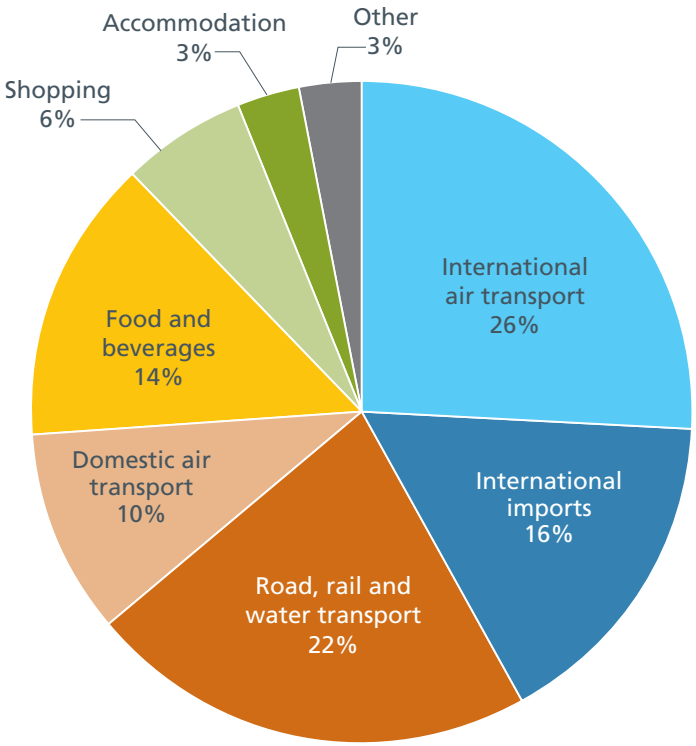
[42] The results of the thinkstep ANZ modelling are available at https://www.pce.parliament.nz/publications/pristine-popular-imperilled-the-environmental-consequences-of-projected-tourism-growth. Direct emissions are those immediately associated with the goods and services that tourists consume. In contrast, indirect emissions are generated by the supply chains of these goods and services. For example, the emissions generated in the heating and lighting of a hotel are direct in nature while the emissions associated with the construction of the hotel are indirect.

[43] Estimates of tourism-related emissions associated with domestic aviation and road transport drew on the New Zealand Greenhouse Gas Inventory (MfE, 2019a) and Environmental – Economic Accounts (published by Stats NZ) respectively.

[44] Excluding emissions and removals from land use, land use change and forestry. Emissions associated with international aviation and shipping to and from New Zealand are not included in New Zealand's United Nations Framework Convention on Climate Change (UNFCCC) reporting requirements.

[45] New Zealand's gross greenhouse gas emissions in 2017 were 80.9 $MtCO_2$-e (MfE, 2019a).

Domestic road, air, rail and water transport account for the majority (56 per cent) of the tourism-related emissions generated within New Zealand's borders. Consumption of food and beverages (24 per cent) and shopping for consumer goods (ten per cent) also make significant contributions.



Total emissions: 12.5 $MtCO_2$-e

Source: thinkstep ANZ analysis

Figure 5.7: Greenhouse gas emissions associated with tourism in New Zealand in 2017.[46]

Projected growth in international arrivals and domestic tourism in New Zealand in coming decades will place upward pressure on travel-related emissions. That said, business-as-usual tourism growth will take place in the presence of emerging climate policy, some of which has already been announced (e.g. box 5.2). Any assessment of the likely evolution of tourism-related greenhouse gas emissions needs to account for the effect of these regulations.

[46]The 'other' category includes emissions from tourism activities, tourism services, health care and education.

Box 5.2: Emerging carbon regulation: CORSIA, the International Maritime Organization and the Zero Carbon Act

At the international level, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) has been adopted by 193 states.[47]

From 2021, CORSIA will require the emissions resulting from international aviation *growth* (i.e. those above and beyond 2019/20 levels) to be progressively offset. The scheme will be implemented in two stages. Participation is voluntary during the pilot and first phases (2021–26). As of September 2019, 81 states representing 77 per cent of international aviation activity had signed up.[48] Brazil, China, India and Russia were the main major economies not to have confirmed their participation.

During the second phase (2027–35), participation is mandatory for all International Civil Aviation Organization member states (except for a small number of least developed countries, small island developing states, landlocked developing countries, and countries that represent less than 0.5 per cent of international aviation). Importantly, those countries that choose not to voluntarily participate in the pilot and first phases of CORSIA will, as part of the second phase, be required to offset any emissions growth that took place between 2021 and 2026.[49]

Thus, in the medium term, net emissions from international aviation might be expected to stabilise at levels close to those of 2019/20, assuming offsets are of high environmental integrity. However, CORSIA does not extend beyond 2035 (a 'special review' is planned for 2032 to determine whether the scheme should continue after 2035), and so the likely evolution of emissions from international aviation in the longer term is unclear. The International Air Transport Association has adopted a target to reduce net emissions from international aviation to 50 per cent of 2005 levels by 2050.[50] However, this target is aspirational in character and, as of September 2019, was unsupported by any formal mitigation mechanism. It remains to be seen how effective it will be.

There is also emerging international cooperation about the greenhouse gas emissions generated by international shipping, including those that are cruise related. In April 2018, the member states that constitute the International Maritime Organization published a strategy that included three possible levels of ambition for the abatement of shipping-related emissions.[51]

The most stringent of these sets out a target to "peak [greenhouse gas] emissions from international shipping as soon as possible and to reduce the total annual GHG emissions by at least 50 per cent by 2050 compared to 2008". At the time of writing, the Initial Strategy is under review, but with a view to a revised strategy being adopted in 2023.

[47] IATA, 2019c.
[48] ICAO, 2019.
[49] Timperley, 2019.
[50] IATA, 2019b.
[51] IMO, 2018.

At the domestic level, the Zero Carbon Act has amended the Climate Change Response Act to include long-term targets for New Zealand's greenhouse gas emissions. These targets, and the supporting policies expected to follow, will have significant implications for the decisions that domestic and international tourists make about how to travel around New Zealand, where to stay and what activities to take part in while they are here.

The modelling commissioned for this report includes an assessment of how tourism-related emissions are likely to evolve if (i) the projections of tourism growth presented above eventuate,[52] and (ii) the implementation of the Zero Carbon Act drives significant technological change and decarbonisation.[53]

In this scenario, tourism-related emissions continue to track upwards until around 2026, then begin to fall as an increasing emissions price begins to stimulate significant mitigation in New Zealand (figure 5.8). Despite that, forecast growth in tourism activity means that the emissions associated with New Zealand's tourism remain significant. By 2050, tourism generates around 11.6 million tonnes of carbon dioxide equivalent, a fall of around seven per cent relative to 2017 levels.

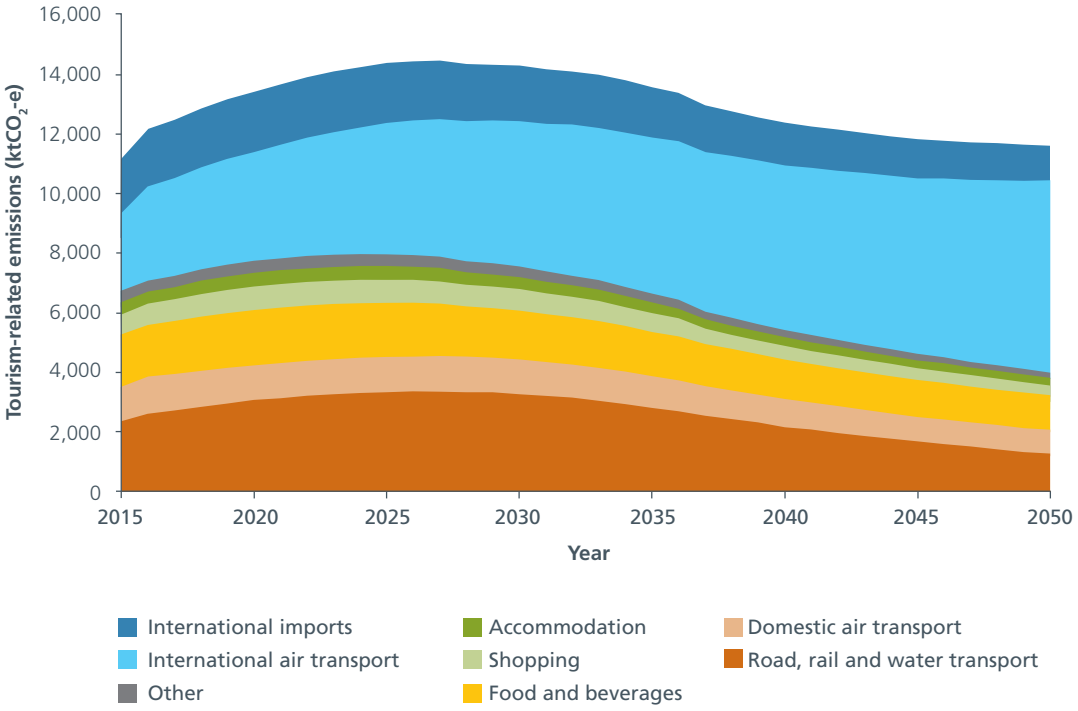
That tourism-related emissions only fall slightly between 2017 and 2050 in this scenario is in large part due to a doubling of emissions associated with international tourists flying to and from New Zealand. As discussed in box 5.2, international aviation-related emissions will be subject to CORSIA. However, given that CORSIA only requires emissions *growth* to be offset, and that low-carbon technologies for long-haul aviation are currently decades away from widespread deployment, emissions from this sector are likely to continue growing in gross terms. In concert with a reduction in domestic emissions expected to follow from the implementation of the Zero Carbon Act and supporting policies, this means that international aviation is likely to represent a steadily growing proportion of tourism-related emissions (from 26 per cent in 2017 to 55 per cent in 2050).[54]

[52] The projections presented in the preceding section ('Future of tourism growth') reflect a business-as-usual future. In this future it is assumed that tourist activity increases over time, but that the structure of the economy stays largely the same as it is today, so that tourists in the future have similar 'wants' to tourists today, even when faced with an increasing price on greenhouse gas emissions.

[53] More precisely, the modelling assumed that all greenhouse gas emissions generated within New Zealand – including biogenic methane – converge to net zero by 2050. The relative contribution of mitigation and offsetting for these emissions is driven by assumptions about the rate of technological adoption in response to an increasing emissions price. In contrast, for emissions associated with international aviation, it is assumed that the implementation of CORSIA does result in widespread offsetting, but not in any significant mitigation activity.

[54] To be clear, emissions associated with international aviation (and shipping) to and from New Zealand are not included in New Zealand's UNFCCC reporting requirements.

Figure 5.8 shows how greenhouse gas emissions could evolve in response to forecast tourism growth. In this scenario, tourism growth would also result in a significant amount of offsetting – under both CORSIA and in accordance with the target introduced by the Zero Carbon Act). While offsetting can slow the build-up of carbon in the atmosphere, it also comes with significant risks. First, it delays investment in the gross emissions reductions that will ultimately be required to achieve the objectives contained in the Paris Agreement. Second, some types of offsets are riskier than others. For example, the carbon stored by forests can be quickly released back into the atmosphere in the event of fires, pests and other disturbances, and these risks are likely to be exacerbated in future by climate change itself.[55]



Source: thinkstep ANZ analysis

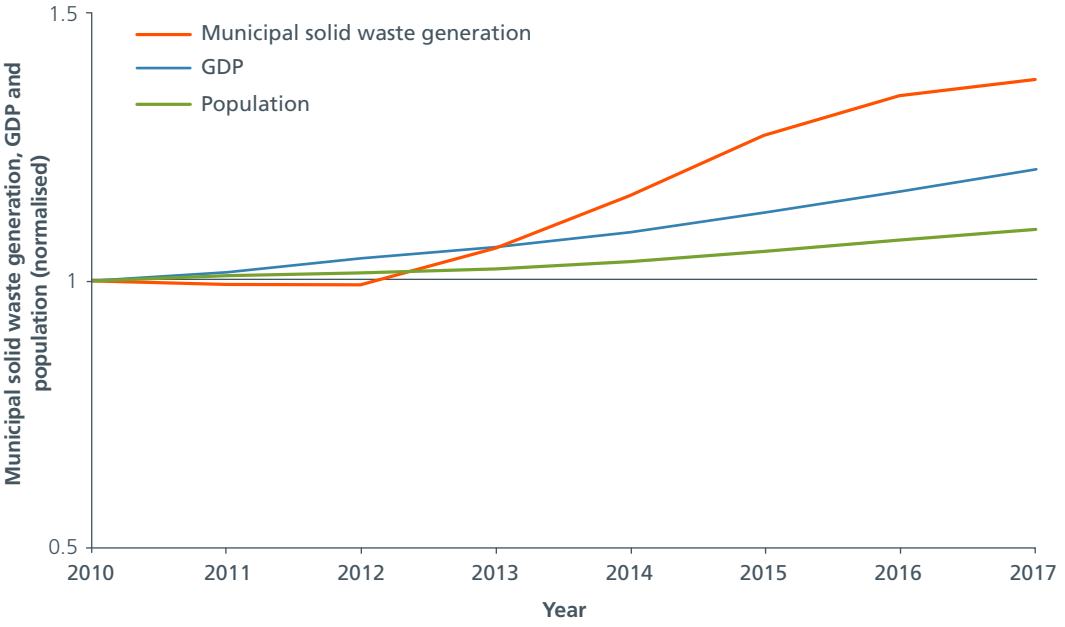
Figure 5.8: Possible evolution of New Zealand's tourism-related greenhouse gas emissions to 2050.[56]

[55] See chapter four of *Farms, forests and fossil fuels: The next great landscape transformation?* (PCE, 2019).

[56] Units: kilotonnes of carbon dioxide equivalent ($ktCO_2$-e). The 'other' category includes emissions from tourism activities, tourism services, health care and education.

Solid waste generation and management

New Zealand has a poor record when it comes to waste. Municipal solid waste generation in New Zealand grew at an annual rate of 4.5 per cent between 2010 and 2017,[57] roughly twice the rate of aggregate economic growth, and three times the rate of population growth (figure 5.9). Of the 3.5 million tonnes generated in 2018, around 90 per cent was disposed of in landfills. The remainder is diverted for recycling or is lost into the natural environment.



Source: Derived from MfE (2019c) and population estimates and national accounts statistics, Stats NZ

Figure 5.9: Municipal solid waste generation in New Zealand grew significantly faster than gross domestic product (GDP) and population growth between 2010 and 2017.

There is no official data on the volume of solid waste that is generated by international visitors. However, data on the waste footprint of tourists elsewhere,[58] and on the proportion of consumption spending accounted for by international visitors to New Zealand,[59] suggests that international visitors could be responsible for 70,000 to 180,000 tonnes (or 2–5 per cent) of solid waste generation per year. That is roughly equivalent to the amount of solid waste (120,000 tonnes) sent to landfill by Hamilton city each year.[60]

[57] MfE, 2019c.

[58] Data from Jamieson et al. (2003) and Mateu-Sbert et al. (2013) suggests that tourists typically generate 1–2 kg of solid waste per day. Assuming this figure is representative of international visitors to New Zealand, and given arrivals of 3.8 million visitors and an average stay of 18 nights (MBIE, 2019b), the data suggests that international visitors generated 70,000 to 140,000 tonnes of waste in New Zealand in 2018.

[59] Data from Stats NZ (2019c) and MfE (2019c) indicates that each dollar of final consumption expenditure in New Zealand is associated with the generation of 0.016 kg of solid waste. At the same time, tourism spending currently represents around 5% of all final consumption expenditure in New Zealand (MBIE, 2019b; Stats NZ, 2019b). Assuming that the consumption patterns of international tourists are broadly similar to domestic residents, this data suggests that international visitors generated around 180,000 tonnes of waste in 2018.

[60] Murray, 2017.

Clearly, the majority of solid waste is, and will continue to be, generated by residents of New Zealand. Further, the vast majority of this 'domestic' waste is associated with consumption decisions that residents make in their normal place of abode. While domestic residents do generate solid waste in their capacity as tourists, the effect of this is primarily to transfer the waste burden from one part of New Zealand to another.

Projected international visitor growth will place upward pressure on solid waste volumes. Furthermore, any increase in visitor spending (whether, for example, due to income growth abroad or a continued domestic focus on value over volume), or in the material footprint of this spending, will tend to reinforce this trend by boosting material consumption.

Reductions in waste generation per capita, either through the dematerialisation of products, more widespread product reuse, or reduced packaging use, could help to counteract growing waste volumes. However, there is little empirical evidence for significant falls in waste generation per capita in any OECD country. Per capita waste generation has actually increased in New Zealand since 2012 (e.g. figure 5.9).[61]

In this context, the two- to four-fold increase in international visitor activity presented above would probably translate into a roughly equivalent increase in visitor waste generation. In absolute terms, that would be equivalent to an additional 3–13 million tonnes of solid waste between 2020 and 2050. This waste would fill the entirety of Kate Valley Landfill – a facility that was designed to accept the vast majority of Canterbury's waste for a 35 year period (~10.5 million tonnes).[62]

The environmental pressures – increased litter, the development of new landfill facilities, etc – associated with additional waste generation will be concentrated in regions with high visitor numbers (both domestic and international). This has two immediate implications. First, these regions will tend to be those with the most outstanding natural character. Ensuring that appropriate waste management systems are put in place will be critical in preserving this character. Second, many of these same regions are those with relatively limited ratepayer bases – generating the finance required to fund these systems is likely to be challenging. Westland District provides a graphic illustration of these issues and is discussed further in box 5.3.

[61] See also OECD (2019a).

[62] ERM New Zealand Ltd, 2015.

Box 5.3: Tourism growth and waste management in Westland District

In 2018, tourists represented one quarter of the resident population of Westland District on a per-night basis.[63] Further, tourists are thought to account for one third of the district's generation of municipal solid waste.[64] At the same time, the two landfill facilities that accept the entirety of the district's waste are currently estimated to have capacity for another seven years of waste generation.[65]

Given its many natural attractions, Westland is likely to receive an at least proportional share of any future tourism growth in New Zealand. This growth will come with an additional solid waste burden.

Clearly, the Westland District Council could build additional waste disposal infrastructure to manage this material. However, that will require significant funding, and will also carry with it considerable risk. One only has to consider the environmental damage that has resulted from the exposure and erosion of the legacy landfill at Fox River to grasp the risk of burying large volumes of potentially hazardous material in such a dynamic environmental setting.[66]

Water quality degradation

The degraded state of New Zealand's freshwater is well documented and, in many cases, is as compromised in urban areas as it is in rural ones.[67] Between 2013 and 2017, more than 90 per cent of the length of urban rivers exceeded the nitrogen and phosphorous limits set out in the Australian and New Zealand guidelines for freshwater quality.[68]

[63] The estimated resident population of Westland District in 2018 was 8,890 (Source: population estimates – DPE, Stats NZ). Visitor nights during the same year were 870,600 (Source: Accommodation survey, Stats NZ), but with strong seasonality: nightly stays in the six months from November to May accounted for 70% of annual stays.

[64] And possibly as much as 50% of waste generation (Westland District Council, pers. comm., 3 September 2019 and 11 October 2019).

[65] Westland District Council, pers. comm., 3 September 2019.

[66] See Crysell (2019) for more information on the environmental consequences of erosion of the landfill.

[67] MfE and Stats NZ, 2019b.

[68] In absolute terms, urban rivers had median nitrate-nitrogen levels 19.5 times, dissolved reactive phosphorous levels 4.7 times, and *E. coli* levels 30 times, higher than what might be expected for natural conditions (MfE and Stats NZ, 2019b).

While there are a number of factors that contribute to these outcomes, poor wastewater management has received particular attention.[69] Data from Water New Zealand indicates that in 2018, there were around 1.1 wet weather-related and 2.3 dry weather-related overflow events for every thousand connected households in New Zealand.[70] In other words, partially treated wastewater and sewage is thought to have made its way into the natural environment on as many as 4,200 individual occasions.[71,72] Several recent high-profile wastewater spills have drawn attention to the potential environmental damage that can occur as a result.[73]

Ageing infrastructure, adverse weather events and misguided behaviour appear to have been the main drivers of wastewater spills.[74] That said, the population increases – temporary or otherwise – associated with tourism have almost certainly exacerbated the problem.[75] It is perhaps not surprising that around one quarter of the Tourism Infrastructure Fund ($11 million) has been directed to improving wastewater treatment networks at headline tourism destinations.[76]

Tourism exacerbates the risk of wastewater spills in two ways. First, the strong summer seasonality that characterises New Zealand's tourism industry means that the population of many coastal and lakeside towns increases severalfold during summer.[77] This can overwhelm existing wastewater networks and can lead to the type of recurring spills that have taken place recently in Raglan.[78]

Second, the more permanent increases in local population that tourism growth can create (i.e. workers drawn to an area by economic opportunities and job creation) may result in the design capacity of wastewater infrastructure being exceeded much sooner than intended. Recent spills into Lake Wakatipu and Lake Wanaka probably partially reflect this process.

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[69] MfE and Stats NZ, 2017.

[70] Water New Zealand, 2019.

[71] Which is probably an upper estimate given that a significant proportion of New Zealand homes are not connected to a wastewater network.

[72] Some parts of New Zealand performed significantly worse than others (Water New Zealand, 2019). For example, Hamilton, the Far North, Kaipara, Ōpōtiki and Rotorua had particularly high rates of wet weather-related overflow events, whereas Whanganui, Hamilton, Mackenzie, South Taranaki, Nelson and Hauraki had the most frequent dry weather events. In general, the main cities of Auckland, Wellington, Christchurch and Dunedin performed relatively well on a per capita basis.

[73] For example, Franz Josef in 2016 (McMahon, 2018), the ongoing Queenstown and Wanaka overflows (Mitchell, 2019a), and Taupō in 2019 (Bathgate, 2019).

[74] Wastewater overflows are typically classified according to whether they occur during wet or dry weather (Water New Zealand, 2018). During wet weather events, it is the capacity of the pipes that transport effluent that is exceeded, resulting in sewage overflows. During dry weather, it tends to be mechanical failures or blockages resulting from the incorrect disposal of fats or non-dispersible products (e.g. wet wipes) that lead to overflows.

[75] The relationship between tourism growth and wastewater infrastructure was highlighted by the Minister for Local Government in a 2018 speech (Mahuta, 2018): "When you put all this together with other factors such as increasing tourism numbers and protecting our clean green image … it suggests a significant funding challenge ahead for councils and communities".

[76] For example, Te Anau, Hanmer and Franz Josef townships have received $5 million, $2.25 million and $1.985 million respectively (MBIE, 2019f).

[77] In 2018, international visitors represented around 5% of New Zealand's population by nights spent in the country (MBIE, 2019b). However, tourism does not happen in averages: seasonal and geographic concentration often means that the temporary population of a place far exceeds the permanent population.

[78] Mather, 2018.

These pressures are only likely to increase in the future. As discussed above, international tourist arrivals to New Zealand could well increase by a factor of between two and four by 2050. A persistent preference for travel during warm and stable weather as well as during holiday periods will mean that tourism activity continues to be concentrated in a well-defined summer peak. Furthermore, headline growth will probably be accompanied by greater visitor dispersal, either due to a continuation of current government policy or to more organic drivers.[79]

Any additional infrastructure spending that emerges as a result of the Government's current Three Waters Review will, to some extent, mitigate tourism-related wastewater pressures.[80] However, the initial findings of this review indicate that $3–4.3 billion would be required to upgrade wastewater networks to a level where the freshwater standards contained in the National Policy Statement for Freshwater Management would be met.[81] It remains to be seen how quickly this funding can be mobilised.

The places most likely to be at risk in a business-as-usual tourism future will be those that (i) have ageing or low-quality wastewater infrastructure, (ii) have a relatively small ratepayer base, and (iii) will see the most rapid visitor growth.

Data published by Water New Zealand summarises the quality of current wastewater infrastructure by territorial authority (figure 5.10). It is notable that a number of the districts with the poorest wastewater infrastructure – Nelson, New Plymouth, Whakatāne and Ōpōtiki – are also those that are being promoted as alternative tourism destinations, and that could see significant growth.[82]

In addition, Westland and Buller, while not represented in the Water New Zealand dataset, are also likely to be at risk. The Department of Internal Affairs found that the per capita cost of ensuring that wastewater infrastructure is consistent with the National Policy Statement for Freshwater Management was $1,800 on the West Coast – around three times more than the next most expensive districts (Manawatū, Northland and Taranaki).[83]

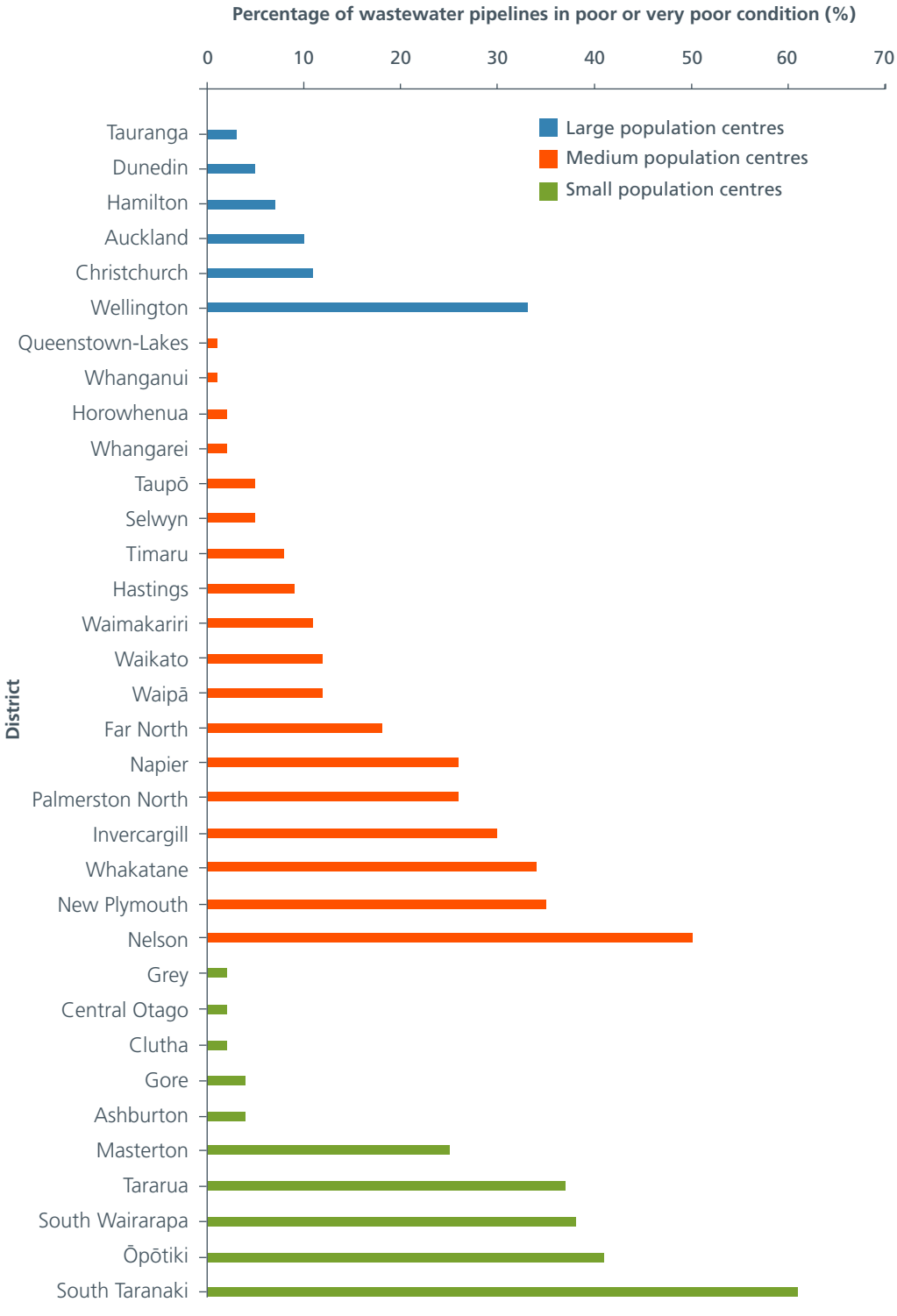
[79] Increased visitor dispersal is probably a natural consequence of growing visitor numbers. Congestion at popular sites degrades the tourist experience, resulting in a search for alternative attractions elsewhere. To some extent, this is already happening. Visitor growth at Rakiura Stewart Island and Waipoua Forest grew by more than 40% during the 2018/19 season (DOC, 2019b).

[80] The term 'three waters' refers to drinking water, wastewater and stormwater. The Three Waters Review refers to a central-government inquiry into the provision of these services that began in 2017. For more information, see the Three Waters Review web page (https://www.dia.govt.nz/Three-Waters-Review).

[81] Mahuta, 2019.

[82] For example, the Nelson and Tasman councils recently launched a website that promotes the region's attractions (www.nelsontasman.nz/visit-nelson-tasman/). Taranaki and the Bay of Plenty have similar sites (https://visit.taranaki.info/ and https://www.bayofplentynz.com/).

[83] Office of the Minister of Local Government and Office of the Minister of Health, 2018.



Source: Water New Zealand (2019)

Figure 5.10: Proportion of wastewater pipelines in poor or very poor condition by district population.

In sum, tourism growth will impose additional pressure on an ageing wastewater network that is already under significant stress.[84] In concert with the increased likelihood of extreme rainfall events resulting from climate change, the probability of large-scale spills (such as those that have occurred recently in Franz Josef and Taupō) will only increase. Although investment in improved wastewater infrastructure could help to mitigate risk, the regions where improvements are most urgently required are often those that are least able to afford them.

Visitor density and loss of natural quiet

A sense of remoteness and the absence of people are defining features of many New Zealand landscapes. The easy ability to experience solitude is something New Zealanders take for granted. It is an experience much less easily come by for many hundreds of millions of potential visitors who live in an increasingly urbanised and crowded world.

Almost four million international visitors arrived in New Zealand in 2018. At the same time, the vast majority of New Zealand residents travel domestically, either for pleasure or to visit friends and family, during weekends and holiday periods.[85] These travellers – both domestic and international – are attracted to those parts of New Zealand with high natural character, often for the sense of peace and quiet they offer. The proportion of international visitors that visited a national park is thought to have reached 47 per cent in 2018.[86]

The congestion resulting from visitor growth at sites of high natural character is well documented. More than 2,000 people per day visited each of Aoraki/Mount Cook, Milford Sound and Franz Josef in 2018, and numbers during peak summer periods were several times higher.[87] Car parks are full, visitors jostle for photos, there is hustle and bustle and noise levels are not insignificant.

Taken together, current visitor concentrations mean that several of New Zealand's most outstanding natural sites are no longer what they were. The sense of tranquillity, isolation and grandeur that attracted visitors in the first place has, to some degree, already been lost. This is reflected in recent survey data. The Public Perceptions of New Zealand's Environment: 2016 survey indicated that 32–51 per cent of New Zealanders felt that tourism was a key pressure on national parks.[88]

This pressure is reflected in anthropogenic noise monitoring and modelling undertaken recently by DOC, which revealed that tranquillity levels across large expanses of Aoraki/Mount Cook and Westland Tai Poutini National Parks have declined significantly as a consequence of a steady increase in tourism-related aircraft operations.[89]

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[84] Wastewater spills have become significantly more frequent in recent years. According to Water New Zealand (2018), the median number of overflows per 1,000 properties increased threefold between 2015–16 and 2017–18. The number of wet weather-related overflows almost quadrupled during the same period, but was probably more closely related to the frequency of relatively idiosyncratic extreme rainfall events.

[85] TIA, no date.

[86] Derived from International Visitor Survey and international travel and migration statistics, Stats NZ.

[87] DOC, 2019b.

[88] Hughey et al., 2016.

[89] DOC, 2019d.

Future visitor growth, whether domestic or international in origin, will only serve to exacerbate this issue. The problem will not be so much at existing tourism hotspots, where additional visitor numbers will only add incrementally to already high levels of congestion. In these places, solitude has already been lost. Rather, the greater risk is that, as existing hotspots become saturated and the visitor experience degraded, people will naturally begin to search for places 'off the tourist map'.

Emerging tourism sites will become established sites, and with time, it will become increasingly difficult to find places whose natural character and tranquillity has not been fundamentally altered. This process is currently being actively reinforced by the Government's focus on geographic visitor dispersal – as exemplified by the "5As" of access, amenities, attractions, visitor awareness and resident attitudes.[90]

What places might be at risk in a future where international arrivals reach ten million, where a domestic population of six million has an increased propensity to travel,[91] and where the current management focus on visitor dispersal persists?

Clearly, well-established destinations – Aoraki/Mount Cook, Franz Josef, Milford Sound, etc – will continue to attract large numbers of visitors by virtue of their grandeur and outstanding natural character.[92] That said, while growth is likely to continue, it will probably be relatively slow, and is only likely to result in marginal further losses. The experience of remoteness, solitude and tranquillity of the site has already been lost.

It is easy to imagine that continued marketing and investment combined with congestion at headline sites will result in significantly increased visitor interest in destinations that are beginning to emerge (consider Rakiura Stewart Island and the Catlins, for example). This process is already taking place. In 2018, visitor growth at Ulva Island (in Rakiura National Park) and the Tāne Mahuta Walk (in Waipoua Forest) exceeded 40 per cent, relative to only several per cent at Franz Josef, Milford Sound and Tongariro National Park.[93] The main implication of more distributed visitor growth is clear: what has been lost to date at a handful of headline sites will occur much more widely. Once again, visitor congestion will detract from the tranquillity, isolation and spiritual qualities that make these sites special in the first place.

Finally, places that currently see very little visitor interest – less well-known tracks, backcountry areas and isolated settlements – will begin to attract more adventurous travellers. This will be partly a consequence of ongoing visitor dispersal. Local sites that would otherwise have remained anonymous will attract interest from people already visiting the area. It will also be a consequence of growing congestion at headline tourist sites. Visitors who are unable to secure access to one of New Zealand's Great Walks may choose a less well-known option.[94] However, even with business-as-usual tourism growth in New Zealand, the relative anonymity of these sites will probably mean that visitor numbers and the corresponding loss of isolation will remain small.

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[90] MBIE, 2017a; MBIE and DOC, 2019.

[91] For example, because of a greater proportion of retirees as well as continued declines in working hours.

[92] Although glacier retreat associated with climate change may impact this.

[93] DOC, 2019b.

[94] Consider the Abel Tasman Inland Track, the St James Walkway, or the Manuoha–Waikareiti Track, for example.

Infrastructure development and landscape modification

Transport infrastructure – airports, ferry terminals, roads, car parks, railways, cycle paths, walkways, etc – contributes significantly to the quality of people's lives. These networks facilitate mobility, provide recreational opportunities and aid regional economic development.

In a similar way, transport infrastructure is also a critical element of the tourism system. It is frequently identified as a potential solution to the growing congestion at well-established tourism destinations. Improved roading is also highlighted as a tool to increase the regional dispersal of tourists, thereby improving the economic inclusiveness of the industry.

But transport infrastructure, despite its benefits, is far from environmentally benign.[95] In the first instance, new infrastructure implies land use change, which can threaten biodiversity, both directly (i.e. where largely unmodified ecosystems are affected) or indirectly (i.e. where the option of allowing already modified ecosystems to re-establish themselves is lost). Infrastructure development also imposes a footprint on the natural landscape, often with an associated loss of landscape amenity. Grahame Sydney has savagely captured the forces at work in his description of the "magnificent Remarkables now boasting a foreground of an orange Megastore, the lurid sickly yellow of PakNSave, and the blood red Warehouse, where everyone gets a bargain".[96]

Finally, by increasing the physical carrying capacity of tourism sites or gateway towns, and by easing bottlenecks at arrival hubs, new infrastructure can stimulate further arrivals growth. The net result is that many of the other environmental and cultural pressures described in this section are exacerbated. Ngāi Tūhoe's recent opposition to the use of funding from the Provincial Growth Fund to seal State Highway 38 to Lake Waikaremoana is apparently driven, in part, by these concerns. Tūhoe Te Uru Taumatua chairman Tamati Kruger was quoted as saying, "The road brings rubbish to Waikaremoana and we have a huge pollution problem at Waikaremoana. As you seal the road, it increases the traffic, people buy their alcohol and their products in Wairoa, Hawke's Bay, Napier and then they dump it at Waikaremoana".[97]

By 2050, New Zealand's domestic population is expected to exceed six million people.[98] Population growth will have been particularly fast in some regions (e.g. Auckland), but slower or even negative in others (e.g. West Coast and Southland).[99] At the same time, tourist demand will have increased, with international arrivals potentially exceeding ten million people per year, and the vast majority of New Zealanders taking domestic trips.

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[95] For example, MOT (2018).

[96] Newport, 2019.

[97] *Gisborne Herald*, 2019.

[98] Statistics New Zealand, 2016b.

[99] Stats NZ, 2017.

A persistent preference for travel during warm, stable weather as well as during holiday periods will mean that tourism activity continues to be concentrated in a well-defined summer peak. Meanwhile, the promotion of geographic dispersal will have led to greater demand for tourism destinations that are currently emerging.

Taken together, these factors will necessitate the creation of significant amounts of additional infrastructure (which will, in turn, support additional visitor arrivals). Some of this is already in the pipeline. For example:

- Auckland Airport has announced the planned development of a second runway that would enable the airport to meet demand for 40 million passengers. Several proposals to develop new landing facilities in the Southern Lakes district (to ease existing capacity constraints at Queenstown Airport) have also been advanced.
- Panuku Development Auckland – the development arm of Auckland Council – is seeking to extend the existing cruise ship facility at Queen's Wharf in Auckland to accommodate larger ships.[100] Similarly, in 2019, Lyttelton Port Company began construction of a new 150-metre cruise ship berthing facility in Lyttelton Harbour. At a smaller scale, funding from the Provincial Growth Fund has been allocated to the extension of wharves and jetties in Ōpua, Paihia and Russell.[101]
- The New Zealand Transport Agency, via the National Land Transport Fund, has allocated around $9 billion to the maintenance, improvement and development of the national roading network between 2018 and 2021.[102] Clearly, the majority of these projects are not motivated by tourism. However, by providing improved access to places, this infrastructure will contribute to the path dependence described above.
- The funding provided via the Provincial Growth Fund for the Croesus Road upgrade on the West Coast,[103] the Tairāwhiti roads upgrade in Gisborne[104] and the Twin Coast Discovery Route in Northland[105] is partly motivated by tourism.
- At the local level, as of August 2019, the Tourism Infrastructure Fund administered by MBIE had provided funding for 41 projects involving the improvement or extension of tourist car parking facilities.[106]

[100] At the time of writing, this proposal sat before the Environment Court.

[101] Far North Holdings Limited, 2018.

[102] See NZTA (2019). An additional $35 billion is expected to be spent on similar – but yet to be defined – projects by 2029 (NZTA, 2019b).

[103] Jones, 2018.

[104] Jones, 2019.

[105] Davis and Twyford, 2018.

[106] MBIE, 2019e.

Individually, each of these airports, wharves, roads and car parks – and those that will follow them – will leave a relatively small footprint on the natural environment. However, in their totality, and in the context of decades rather than years, persistent infrastructure development will incrementally lead to further landscape modification and ecosystem fragmentation. Furthermore, these changes will be amplified by the increase in visitor numbers that an infrastructure-related boost to a region's carrying capacity allows.

In this respect, infrastructure development is in many ways a self-fulfilling prophecy. Those regions that choose to invest in new attractions, and improved access to them, are likely to stimulate additional visitor demand. In turn, visitor demand will create new business opportunities, drive inward migration from job seekers and, ultimately, result in greater demand for housing, roading and water infrastructure.

The economic benefits of all of this activity are easy enough to quantify. But equally, one only has to look at the extent to which the landscapes surrounding gateway towns like Queenstown or Wanaka have been modified to grasp the potential magnitude of the trade-off involved.[107]

Biosecurity risk

New Zealand has a lot to lose from the introduction and establishment of foreign organisms. We live on a landmass whose isolation in geological time has led to the development of a biota that is as unique as it is vulnerable. At the same time, our economy is heavily biological in character, as well as being reliant on access to international markets.[108] One only has to consider the impact that possums and mustelids have had on our bird life, or that *Mycoplasma bovis* has had on the agricultural sector, to grasp the risks that biosecurity breaches pose for New Zealand.

Biosecurity is also important to Māori due to the relationship they have with the environment and taonga species. This is based on practicality (e.g. for food, medicine or weaving) and also has a spiritual dimension (e.g. for ritual purposes or species seen as spiritual guardians).[109] The recent incursion of myrtle rust (unrelated to tourism) will have a direct impact on culturally and commercially significant plant species[110] and thus a direct impact on kaitiakitanga. Another example that has directly impacted traditional Māori food sources like taewa, kūmara and poroporo is the tomato potato psyllid discovered in New Zealand in 2006.[111]

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[107] Again, as Grahame Sydney says: "So we get the insidious creep and crawl of low level housing, each new development a handy precedent for the next, and in far less than a lifetime – more like a single generation – the charm, the magic which made a place so very desirable and memorable, is lost, consigned to blessed memory." (Newport, 2019).

[108] The direct contribution of agriculture, forestry and fishing to GDP in 2018 was $13 billion, or ~6% of GDP. The total contribution (i.e. including the indirect contributions from the various inputs that these activities draw on) was probably significantly larger. In addition, agriculture, forestry and fishing accounted for around $28 billion of exports, or ~35% of New Zealand's total exports of goods and services (source: National accounts, Stats NZ).

[109] Waitangi Tribunal, 2011.

[110] Lambert et al., 2018.

[111] Puketapu and Roskruge, 2011.

Biosecurity incursions occur through a variety of channels. Although empirical data is scarce, merchandise trade seems to have been the most significant vector for historical incursions into New Zealand.[112] However, there is also ample evidence to suggest that tourism is an important risk vector, both in terms of the introduction of foreign organisms and their subsequent dispersal once established.[113] For example:

- International visitors (or residents returning from holidays abroad) can unknowingly transport foreign organisms with them. For example, during the six months from October 2018 to March 2019, 14 of the 36 known incursions of brown marmorated stink bugs were linked with tourism activity.[114] Similarly, inspections of private yachts and motor launches arriving in New Zealand waters between 2007 and 2016 resulted in the identification of foreign ants in 11 instances.[115] The introduction of didymo to New Zealand is also widely thought to be linked with recreational fishers from North America (figure 5.11).[116] The total social costs resulting from the introduction of didymo have been estimated to be in the order of $130 million between 2006 and 2011.[117]
- Tourists can also accelerate the dispersal of foreign organisms that have already been introduced. The rapid spread of didymo across many South Island rivers has been attributed to recreational water users failing to adequately clean or dry their equipment after use. More recently, the closure of several kauri forests has been triggered by fears that visitors could be transporting *Phytophthora agathidicida* in the soil on their shoes between kauri forests. Finally, the discovery of the Asian kelp species *Undaria pinnatifida* in Fiordland has been linked to visitors travelling by boat.[118]

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[112] For example, both *Pseudomonas syringae* pv. *actinidiae* (Psa) and *Mycoplasma bovis* are thought to have been introduced by merchandise imports (contaminated kiwifruit pollen in the case of Psa, and bull semen, cow embryos, vaccines, feed, machinery or live animals in the case of *Mycoplasma bovis*) (Kiwifruit Claim, 2017; MPI, 2017).

[113] Two aspects of our tourism offering make tourism a particularly significant biosecurity risk vector in the New Zealand context. First, almost half of international visitors to New Zealand come to experience and interact with the natural environment such as national parks (DOC, 2017). These individuals – and the equipment (boots, tents, fishing gear, etc) they bring with them – are likely to have spent time in the outdoors in other countries. Relative to visitors who travel primarily to visit cultural attractions, this demographic is probably more likely to 'piggyback' foreign organisms into New Zealand. Second, the relative isolation of New Zealand, and the range of landscapes on offer, means that international visitors often come for extended periods and attempt to see as much as possible during their stay. The high levels of visitor mobility that result increases the risk of already introduced organisms being dispersed to unaffected regions.

[114] See Biosecurity New Zealand's *Surveillance* magazine (http://www.sciquest.org.nz/surveillance) for more information on incursions. Brown marmorated stink bugs are, with the exception of fruit flies, considered to represent the largest biosecurity threat to New Zealand's horticultural industry (Kiwifruit Vine Health, 2019).

[115] Craddock, 2016.

[116] Kilroy and Unwin, 2009; 2011.

[117] Deloitte, 2011.

[118] DOC, 2019a.

Source: Alan Liefting, Wikimedia Commons

Figure 5.11: The introduction of didymo (*Didymosphenia geminata*) into the South Island is an example of tourists and tourism-related activities representing a biosecurity risk that can have significant long-term impacts on New Zealand's environment.

With international arrivals to New Zealand potentially increasing by a factor of between two and four by 2050, and a larger domestic population with an increased propensity to travel abroad, the risks from tourist movements can only increase. The probability that any one of these individuals – either resident or visiting – unknowingly introduces a foreign organism to New Zealand will remain small. However, the sheer number of individuals crossing New Zealand's border each day will significantly increase tourism-related biosecurity risk.

At the same time, the profile of tourism-related biosecurity risks will evolve in response to changes in the geographic origin of visitors to New Zealand, the effects of climate change and the Government's current focus on visitor dispersal. For example:

- The rapid income and population growth that is forecast to play out in China and other countries in Southeast Asia is likely to mean that these countries will constitute a progressively larger proportion of international arrivals to New Zealand. The biota present in Asia is quite different from that found in our traditional tourism markets (e.g. Australia, Europe and North America). As such, the types of organisms most likely to be 'piggybacked' into New Zealand will probably change, and the risk associated with many of these is currently largely unknown.[119]

[119] For example, Kean et al. (2015, p.14) state: "Many of the most invasive species from our long-standing trading partners will have either established already in New Zealand or have had effective border protection measures put in place to exclude specific species or to mitigate specific entry pathways. This is not necessarily the case for newer trading partners in Asia, South America and Africa, though many pests may be excluded by generic and specific pathway measures."

- Higher ocean and atmospheric temperatures resulting from climate change are likely to make New Zealand a more hospitable environment for some foreign organisms. As such, the probability that biosecurity incursions – tourism-related or not – become established species will increase.[120] The interaction with projected shifts in the origin of international arrivals is clear. The probability of organisms from tropical or sub-tropical regions being introduced will increase, as will the probability that they will be able to become established.
- To the extent that it continues, the Government's current focus on visitor dispersal as a tool for managing congestion is likely to accelerate the dispersal of already introduced organisms. Parts of New Zealand currently off the tourist trail that have been targeted for future growth will be at greater risk of internal pest and weed migrations.

Establishing the probability of future tourism-related biosecurity incursions – and the magnitude of the damages that could emerge as a result – is difficult. That said, two things are clear. First, the risk of foreign organisms being introduced to New Zealand (or transported around it) by tourism activity is only likely to increase with additional arrivals, a warming climate and a continued focus on visitor dispersal. Second, even if the probability of a tourism-related biosecurity incursion is small, the potential cost of the 'wrong' organism being introduced could be extremely high.[121]

New Zealand's biodiversity and economy are particularly vulnerable to introduced species and, as history has shown, once a species has been introduced, it can be almost impossible to eradicate.

Challenges for Māori

Speculating on what large increases in tourist numbers might mean for Māori under current policy settings is not a matter of extrapolating numbers, but it is just as important as any future environmental pressures. Three current policy settings raise questions worth further consideration: dispersal, the pursuit of 'value' not volume, and the state of shared management.

Dispersal

Not all iwi have been historically engaged with tourism. Displacement of domestic travellers from existing hotspots may become an issue, particularly if numbers are not managed. Many whānau now live away from their tūrangawaewae (place of birth, home, place where one has the right to stand) but travel back home during the peak holiday season. Increasing international visitor numbers in these locations, together with a growing population of domestic holidaymakers, could thus adversely impact the ability of whānau to return to and connect with their ancestral lands.

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[120] For example, modelling presented in Kean et al. (2015) indicates that the regions of New Zealand where Queensland fruit flies could potentially become established will expand significantly given projected warming to 2050.

[121] The potential economic cost resulting from the introduction and establishment of Queensland fruit flies has been estimated by Biosecurity New Zealand (2019) as being in the order of $5 billion.

Desecration of wāhi tapu is also a key concern for Māori, where visitors' interactions with sacred sites, intentional or not, can have significant spiritual and cultural ramifications. As kaitiaki of those sites, Māori thus see themselves as having the responsibility to protect and, at times, restrict visitors and developments in those areas.

The East Coast of the North Island and Gisborne are a case in point. Local iwi can see the potential for tourism, but not at the expense of their whānau coming home for the holidays and not at the expense of their wāhi tapu, like their maunga, being desecrated. Having an influx of more people into their rohe over a season may also mean they are unable and unprepared to manaaki those visitors appropriately. Resources, health and safety, and the capacity of marae to accommodate people are thus some of the limitations that will be faced in areas where tourism is not yet established.

For those iwi that have been part of the tourism industry for a long time, an increase in visitor numbers may not have such significant effects since the infrastructure to accommodate more people is already in place. However, the environment in which they are kaitiaki may already have been impacted to a point where it is now unrecognisable or where additional infrastructure needs to be built to accommodate more numbers. These impacts will pose a challenge for kaitiaki.

While dispersal of visitors to uncongested areas may seem at a national level to be a good strategy, for local whānau, hapū and iwi there has to be genuinely proactive consultation at the local level. Dispersal thus needs to be discussed with the mana whenua through meaningful partnerships. Regionally, this may be achieved through discussions with regional councils or Regional Tourism Organisations, but there is currently no obvious way to engage in this conversation nationally – which is the level from which the dispersal strategy is being promoted.

Value not volume

The mantra of promoting value instead of volume as a solution to over-tourism begs interesting questions – what sort of value and whose values?

As mentioned earlier, manaakitanga, kaitiakitanga and tino rangatiratanga are key concepts in te ao Māori. However, it is not clear that either the industry or government agencies have dug below the generalities of these guiding principles and thought about what it means in regard to tourism and engagement with Māori. Indeed, working with Māori, at the central and local level, to use these principles as a foundation on which to inform tourism strategies and initiatives could be the most effective way to avert the worst environmental pressures of a business-as-usual trajectory.

Such an approach may favour a strategy based around 'high-yield' tourists,[122] which, with limited numbers of tourists visiting different rohe, could facilitate manaakitanga in a way that emphasises a more meaningful experience. This sort of encounter is also compatible with demonstrating and sharing the essence of kaitiakitanga (see box 5.4).

[122] I.e. measures that demonstrate value in higher per capita expenditure.

Box 5.4: The drive for value over volume

Operated by one of the whānau that settled on Kapiti in 1820, Kapiti Island Nature Tours has been welcoming visitors to the island for generations.[123] They offer accommodation at their lodge, which is on Māori land and adjacent to Kapiti Island Nature Reserve.[124] They work closely with DOC to ensure the island is not impacted by unwanted pests and predators and that the biodiversity is thriving.

Kapiti Island Nature Tours' philosophy is based on manaakitanga of their guests, which they express by having a personal interaction with their visitors, providing the history of the land and their whānau. Managing director John Barrett takes pride in providing guests with a quality experience based on manaakitanga, kaitiakitanga and tino rangatiratanga, among other tikanga.[125]

Kapiti Island Nature Tours recently received funding from the Provincial Growth Fund to develop a business case to improve – but not expand – their infrastructure on the island. A number of factors contributed to this decision, including considering other whānau on the island, their approach to having a very personal experience with their guests, striving for a quality product by providing greater comfort, meeting international and domestic expectations, and expanding their season to ensure they continue to only accommodate smaller capacities.

The funding will enable them to replace existing infrastructure with innovative technology and provide sustainability-centred manaakitanga.

Barrett says, "The other very important consideration for us in choosing to temper our growth-size aspiration, is the very special nature of the environment and cultural values that form a very significant part of our kaupapa approach … Our view is – for our whenua, more is not necessarily best."[126]

These values seem intuitively easier to manage with smaller numbers than anonymous crowds, but it would be unwise to conclude that a welcome on Māori terms is necessarily limited by numbers. For example, Ngāi Tahu is invested in commercial tourism, having acquired a number of iconic tourist businesses including Shotover and Hukafalls jetboats and Rainbow Springs Nature Park among others.

[123] Kapiti Island Nature Tours website (https://www.kapitiisland.com/).

[124] Māori land is communally owned by the shareholders established under Te Ture Whenua Maori Act 1993. Some Māori land is administered by a trust or can be administered by the shareholders themselves. No individual can make a decision without the trust or the other shareholders' permission.

[125] John Barrett, pers. comm., 8 August 2019. The other guiding kaupapa are ūkaipōtanga (sense of sustenance), whanaungatanga (sense of family connection) and kotahitanga (unity, togetherness).

[126] John Barrett, pers. comm., 8 August 2019.

They are now turning to consider the environmental responsibilities regarding their businesses, and in November 2018 they released their climate change strategy Te Tāhū o te Whāriki. This will require their commercial companies to meet the targets set by the iwi. Ngāi Tahu is also seriously considering exiting from parts of their businesses that generate significant emissions, as well as transitioning to cleaner energy sources such as electrification of the jetboats and buses used in their tourism ventures.[127]

Value rather than volume is not without its trade-offs, however. If tourism brings higher-end consumers to an area but the tangata whenua do not see the economic benefits being returned to their rohe, they may question its value. Furthermore, going for volume could be an attractive, less capital-intensive way of creating economic opportunities, particularly in low-income, provincial areas.

Treaty settlements and shared management

The future of the Treaty settlement process could well determine how iwi and hapū grapple with projected growth in the tourism sector.[128] The declarations of legal personhood status for areas of natural significance pioneered for the Whanganui River and Te Urewera may not be the last.

For the Whanganui River, engagement procedures are clearly acknowledged and enacted and have been developed between iwi and the Crown.[129] Not only will this change the way decisions are made about natural assets, but it also allows tangata whenua to exercise tino rangatiratanga in areas for which they are kaitiaki.

The same cannot be said for some other pressure points. The Tongariro Crossing traverses a place to which iwi have a deep physical and spiritual connection, but faces already unsustainable tourist numbers. The outcome of current negotiations between the Crown and Ngāti Tūwharetoa and other iwi in respect of Maunga Tongariro will determine on whose terms a growing number of visitors arrives.

To date, Tūwharetoa has struggled to influence how DOC manages visitors at Tongariro National Park, even though the Conservation Act requires DOC to interpret and administer the Act to give effect to the principles of the Treaty of Waitangi. Reaching an agreement that is in genuine partnership could enable manaakitanga and kaitiakitanga to be exercised as a real force for environmental sustainability. Without such agreement, the values of iwi and hapū are likely to be further strained.

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[127] Gorman, 2019.

[128] As of July 2019, most historical settlements have been completed (81% of land claims). There are 13 kaupapa inquiries still to be processed; six of these inquiries may have an effect on the future of the tourism system in Aotearoa. With the push from government to settle and progress all inquiries (Waitangi Tribunal, 2014), there is significant potential for more iwi authorities to invest in tourism. Settlements include decision-making powers and economic redress, which can be reinvested in tourism.

[129] See Whanganui River Deed of Settlement (Ruruku Whakatupua – Te Mana o Te Awa Tupua), 5 August 2014 (https://www.govt.nz/treaty-settlement-documents/whanganui-iwi/).

The response of Māori in these settings is unlikely to endorse business as usual. Ngāi Tūhoe have made that point very clear. Unlike iwi that have a long history of engagement with tourism, Tūhoe have only recently started to consider what sort of impact they are prepared to accept from tourism. Their opposition to a tar-sealing proposal suggests they will not simply fall in with status quo thinking. The idea of a green road is forward looking and much more in tune with a world that is increasingly aware of its impact on the planet.

Conclusion

Tourism activity in Aotearoa New Zealand is driven by a variety of factors. International demand is determined primarily by income growth, the cost of travel and New Zealand's attractiveness relative to alternative destinations. The determinants of domestic demand are less well understood, but demographic trends (e.g. population size and the proportion of the population who are retired) are probably relatively important.[130]

A number of model-based assessments have attempted to translate the drivers of tourism activity into quantitative business-as-usual forecasts. Although typically short-term in character, these models suggest that tourism activity in New Zealand is likely to continue growing over the next decade. Extrapolating the results of these models into the more distant future under the assumption that all else remains equal indicates that tourism activity in New Zealand could increase by a factor of two to four by 2050.

But clearly not all else will be equal. The historical relationship between tourism activity and its underlying drivers will be subject to change, and so will the future evolution of the drivers themselves. There are good reasons to believe that growth projections could be overly optimistic, or overly pessimistic.

On the one hand, continued economic growth, ageing and urbanisation in Asia will create a larger pool of travellers with the means, time and desire to visit nature-based destinations like New Zealand. These factors probably hold the greatest growth potential for New Zealand's tourism industry. On the other hand, climate change, and the increased use of emissions pricing and other types of climate policies by governments, probably poses the greatest long-term risk.

[130] In contrast, it may be that domestic income growth actually reduces demand for domestic tourism as people increasingly choose to travel abroad.

Any deterioration in the quality of New Zealand's natural environment will also act as a drag on demand for New Zealand's tourism offering. Further, the analysis undertaken in this chapter suggests that tourism growth itself – if it continues unchecked – is likely to contribute significantly to this deterioration. In summary:

- **Greenhouse gas emissions:** modelling undertaken for this report indicates that New Zealand's tourism sector could generate 11.6 million tonnes of carbon dioxide equivalent in 2050 – a seven per cent reduction relative to 2017 levels. While the implementation of the Zero Carbon Act (and supporting policies) will trigger a significant reduction in the emissions tourists generate while in New Zealand, this will be largely offset by growth in emissions resulting from international aviation.
- **Solid waste generation and management:** increased waste generation will be an unavoidable consequence of business-as-usual tourism growth. Assuming that waste generation scales linearly with visitor numbers, projected growth in international arrivals would result in the generation of an additional 3–13 million tonnes of solid waste by 2050.
- **Water quality degradation:** continued tourism growth will impose additional pressure on wastewater infrastructure that is already under significant stress. In concert with the increased likelihood of extreme rainfall events resulting from climate change, the probability of spills such as that which took place recently in Taupō will only increase. Investment in improved wastewater systems will help, but in many cases, those districts most in need are those least able to finance it.
- **Visitor density and loss of natural quiet:** visitor numbers at emerging tourism destinations will continue growing, both for organic reasons and in response to the current management focus on dispersal. The net result will be a greater number of places operating at or close to full capacity, and the loss of tranquillity and isolation that made those places worth visiting in the first instance.
- **Infrastructure development and landscape modification:** investment in new infrastructure will be supported by population and tourism growth, as well as the view that infrastructure is a key tool for encouraging greater regional dispersal. The development of new airports, ports, roads and car parks, when considered collectively and in the long term, will result in significant landscape modification and ecosystem fragmentation. These impacts are, to a large extent, self-reinforcing: infrastructure development facilitates visitor arrivals, which requires further infrastructure development.

- **Biosecurity risk:** a greater number of travellers crossing New Zealand's borders will inevitably increase the risk of foreign species being introduced. Further, shifts in the geographic origin of international visitors will change the types – and risk profile – of the organisms most likely to be 'piggybacked' in. Once introduced, the twin effects of a warmer climate and more widespread visitor dispersal are likely to make eradication increasingly difficult.
- **Challenges for Māori:** significant growth in visitor numbers will pose challenges for Māori. Policies designed to disperse visitors or pursue high-value visitors will not sit well with Māori if these visitors have no sense of manaakitanga, kaitiakitanga and rangatiratanga. As kaitiaki, Māori have an obvious stake in averting the environmental pressures of a business-as-usual trajectory. However, if whānau, hapū and iwi are unable to engage as partners at some of the key sites where tourist growth may be focused, Māori values will be placed under further strain.

6

Adiantum cunninghamii, puhinui

Environmental vulnerabilities facing the tourism sector in New Zealand

Chapter summary

- The tourism sector is vulnerable to the dynamic of its own growth, but its vulnerability could increase due to wider acute and systemic risks. Simply put, tourism can impact the environment, but changes in the environment can also impact tourism.
- Potential acute vulnerabilities that could erode the viability of international tourism include the impact of a biosecurity incursion and the reputational damage that an environmental disaster could bring.
- More systemic vulnerabilities can alter the attractiveness and viability of international tourism in Aotearoa New Zealand over the longer term and include the physical effects of climate change and the breakdown of the environmental management system under a range of biophysical and human stresses.
- While most vulnerabilities can be managed or mitigated to some degree with effective policies, management and insights, climate change represents a more troubling challenge that could have a significant and long-term effect on New Zealand's tourism sector.

Tourism's footprint is starting to become a source of environmental concern in New Zealand. Key players and responsible bodies in the tourism sector acknowledge the risks and have been responding. However, current policies for tourism are not likely to be sufficient to fully mitigate these pressures. In some cases, they may even be exacerbating them. This is a key message from chapter four.

Chapter five concluded that unabated tourism growth following a business-as-usual path over the next three decades is likely to intensify environmental pressures. These pressures, in turn, are likely to impact on tourism, as New Zealand's natural environment is what attracts visitors. In effect, tourism growth and its impact on the environment could 'kill the goose that lays the golden egg', where the economic opportunities from tourism degrade as its impact on the environment intensifies.

In other words, the tourism sector is vulnerable to the dynamic of its own growth. And if that growth pays no respect to Māori values held in respect of that same natural environment, then important opportunities for Māori development will be lost. This could mean a significant part of what many visitors seek in terms of authenticity will be compromised.

But these vulnerabilities could also be exacerbated by wider shocks to the economy (e.g. increasing international climate policy action) and to the environment (e.g. climate change impacts). Tourism, like many sectors, is also heavily exposed to disruptive changes in technology, culture and global consumer preferences.

A case has been made that the tourism sector is vulnerable to its own growth because of the pressures tourism imposes on the very landscape and environment it seeks to attract people to visit. With this underlying vulnerability in mind, this chapter looks at wider environmental vulnerabilities, both acute and systemic, that could potentially further erode the viability of tourism in New Zealand over the longer term.

Acute vulnerabilities

Acute vulnerabilities to the New Zealand tourism sector are those that could precipitate swift changes to international travel patterns or visitor preferences for New Zealand.

Potential acute vulnerabilities include the impact of a biosecurity incursion and the reputational damage that an environmental disaster could bring. How these risks might affect New Zealand's tourism sector is complex. However, past experiences can shed light on future vulnerabilities.

Spread of pests and diseases

A key vulnerability for the New Zealand tourism sector is the scale of impact that an acute biosecurity emergency could create. As more people and goods arrive in this country, 'leakage' through the borders is inevitable. Sealing the borders is unrealistic because it would stop trade and tourism. Most responses to unwanted arrivals can be managed without major disruptions to the economy.[1] But in a small number of cases they could demand extremely disruptive measures.

[1] This is regularly reported in *Surveillance* magazine, which reports on the Ministry for Primary Industries' biosecurity surveillance, and the health status of New Zealand's animal and plant populations (in terrestrial and aquatic environments).

Pests and diseases are not only carried through trade and tourism but can also simply arrive through vectors like wind dispersal.[2] This may cause key tourism areas to be declared off limits, resulting in immediate financial impacts on tourism businesses, or longer-term reputational costs as international visitors cancel trips and domestic visitors choose to stay home.

When foot-and-mouth disease struck the United Kingdom in 2001, it took nine months for the Government to get it under control. It was impossible to trace exactly how it arrived there, with the most likely vector being catering waste or illegally imported meat from South Africa.[3]

Despite the disease directly impacting the agricultural sector, the impact on the United Kingdom's tourism sector during the outbreak was ten times greater than that inflicted on the agricultural sector.[4] Within the first few months of the outbreak, there was a substantial drop in the number of holiday bookings reported by regional tourist boards. Many international visitors were reportedly deterred by media images at the time of burning animal carcasses, fears about food safety and the possibility of spreading the disease to other countries.

Estimations after the incident put the total tourism revenue loss for the United Kingdom at £7.7 billion in 2001. This resulted in a decline of the United Kingdom's gross domestic product of £1.93 billion, due to the reduction in tourism expenditure.[5]

Outbreaks like foot-and-mouth disease would significantly affect tourism, as well as business confidence and the long-term economic output of the economy.[6]

Environmental disasters

It is not difficult to imagine the New Zealand tourism sector being vulnerable to an environmental disaster. There is evidence that human-induced environmental incidents are already affecting tourism in certain places around the world.

For example, in 2018, the Philippine island of Boracay was temporarily closed to clean up dumped sewage and upgrade a drainage system. In 2017, the Indonesian tourism hotspot of Bali declared a 'garbage emergency' in parts of the island. This was in response to the amount of rubbish littering its beaches and waters, seriously threatening the largest single industry on which the livelihoods of its people depend – tourism.[7]

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[2] Biosecurity Council, 2003, p.35.

[3] Scudamore, 2002; Bates, 2016.

[4] Biosecurity Council, 2003, p.37.

[5] The fall in GDP as a result of tourism expenditure reductions is approximately one quarter of the size of the fall in tourism revenue because some primary factors previously employed in industries satisfying tourism demand are reallocated to other parts of the economy. For example, reductions in employment in the tourism sector, such as hotels and other forms of accommodation, are offset by increases in employment in other sectors. See Blake et al. (2003) for more details.

[6] Biosecurity Council, 2003.

[7] UNEP, 2019.

Despite being a developed country, New Zealand is not immune from such disasters, thanks in part to seriously deficient regulation and enforcement in the past. The *Rena* oil spill in 2011, where a container ship grounded on a coral reef off the coast of Tauranga, spilling oil and containers into the sea, has been described as New Zealand's worst maritime environmental disaster.

In March this year, a powerful storm washed out a closed landfill on the country's West Coast, spilling buried waste, much of it plastic, into the river and carrying it 21 kilometres through Westland Tai Poutini National Park and into the Tasman Sea.[8] The Minister of Conservation noted that the sight of rubbish strewn all over the riverbed hardly matched New Zealand's 'clean, green' reputation (figure 6.1).[9] It took almost six months and thousands of volunteers to clean up the riverbed and affected coastline.

Source: DOC

Figure 6.1: Volunteers picking up rubbish from a log jam in the Fox River.

[8] DOC, 2019c.

[9] Sage, 2019.

Systemic vulnerabilities

More systemic vulnerabilities can alter the attractiveness and viability of international tourism in New Zealand over the longer term. Systemic vulnerabilities and risks include both the regulatory response to climate change and its physical effects, and the breakdown of the environmental management system under a range of biophysical and human stresses.

Of the long-term risks for the New Zealand tourism system, climate change represents the most troubling. Other long-term risks represent an ongoing evolution of the tourism system, and their impacts can ultimately be managed or mitigated to some degree with effective policies, management and insights.[10] By contrast, the direct impact of climate change could have a significant and long-term effect on New Zealand's tourism sector.[11]

Flight shame and international climate policy

Aviation transport is emissions intensive, and there is limited potential for any technological solutions to mitigate these emissions in the short-to-medium term. New Zealand, like every other far flung tourist destination, is vulnerable to its global reliance on fossil fuels to move people and goods by air. The absence of a technological solution, together with a growing realisation that aviation offsetting schemes are of questionable benefit, has led some people to reduce air travel or even stop flying. This phenomenon started in Sweden and is called *flygskam*, or flight shame – shame for the carbon dioxide emitted when flying.

Flygskam does not appear to be confined to Sweden, where train travel has increased by a third this summer, correlating with a drop of nearly four per cent in air passenger traffic year-on-year (although there are other factors at play, such as a slowing economy).[12] The Swiss bank UBS carried out a survey in July and August 2019 which found that among the 6,000 people surveyed in the United States, Germany, France and the United Kingdom, 21 per cent had reduced the number of flights they had taken over the last year because of environmental concern. UBS also predicted that reductions in flying could affect flight increases in the European Union, revising annual growth estimates down by half of what Airbus had previously estimated.[13]

At the same time, some countries are actively taking steps to promote alternatives to air travel. In July 2019, the German government announced a 10-year investment package to modernise the country's rail network to provide a foundation for "active climate protection".[14] And in August 2019, Swedish leaders followed suit by announcing new investment in their own national rail company.[15]

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[10] For example, see Peeters et al. (2018).
[11] MBIE and DOC, 2018, p.11.
[12] Birnbaum, 2019.
[13] Berton, 2019.
[14] DW, 2019.
[15] Birnbaum, 2019.

Although increasing social pressure to restrict the use of air transport might be regarded as a phenomenon associated with a small (but potentially growing) group of potential consumers, New Zealand's particularly distant location could make it more vulnerable to shifts in sentiment like *flygskam* than other markets.

Beyond consumer sentiment, increased aviation regulation in response to climate change is likely to increase the cost of travel for the average person. Schemes like CORSIA,[16] the planned "eco-tax" on flights originating from French airports,[17] or a suggested European Union-wide tax on aviation,[18] all have the potential to pass these costs on to consumers and limit their ability or willingness to travel.

This all makes New Zealand, and the New Zealand tourism sector, vulnerable to increasingly stringent climate policy. How can the New Zealand tourism sector continue to attract the international visitors on which it is reliant in the face of increasing policy and societal pressure to decrease and eliminate global carbon emissions? And what will be the effect if the international community decides to take action and impose greater costs on emissions, thereby increasing the cost of international travel?

Such points appear to have been long acknowledged as a concern for the New Zealand tourism sector, although attempts to address these concerns have been limited.[19] It appears to be a potentially existential risk that is being fatalistically run on the basis that for the moment there are no practical solutions and no imminent sign of concerted and stringent policy action.

The effects of climate change

Tourism cannot escape the direct effects of climate change on many of the attractions and locations that visitors come to see. These include the loss of wildlife, flooding and the susceptibility of infrastructure and attractions on the coast to damage from sea-level rise.[20]

A stark example of the impact of climate change is the fate of our glaciers. In New Zealand, glaciers have retreated significantly in the last 50 years, with climate change being a significant contributor.[21] The retreat is likely to continue into the future. Globally, scientists predict that mountain glaciers could almost disappear by 2100.[22] In the case of the Franz Josef Glacier, research suggests that a loss of 38 per cent of its mass and a retreat of five kilometres by 2100 will leave only remnants of the glacier in the head of the valley.[23]

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[16] See chapter 5, box 5.2.

[17] BBC, 2019.

[18] Kirwin, 2019.

[19] For example, see Ministry of Tourism (2007, p.12).

[20] Changes to, and loss of, natural attractions can have a twofold effect. On the one hand, it can decrease the attractiveness of a location as the site people came to see is no longer present or available. On the other, there can be an increase in tourism at some locations as people exhibit a 'last chance to see' mentality.

[21] Between 1977 and 2016 New Zealand glaciers lost 24% of their volume (from 54.02 km^3 to 40.72 km^3), with just under half of this (5.59 km^3 or 10%) attributable to changes in climate (Willsman, 2017).

[22] Zemp et al., 2019.

[23] Anderson et al., 2008.

Losing the opportunity to fully experience New Zealand's two most famous glaciers – Franz Josef and Fox – will have significant economic impacts on tourism. Even minor retreat of the Franz Josef Glacier has already had a significant impact on access and tourism opportunities (figure 6.2).[24] Furthermore, earlier this year when access to both glaciers was limited, it was reported to be costing the West Coast economy up to $3 million per day.[25]

Source: Anthony Cramp, Flickr; Philip N Young, Flickr

Figure 6.2: Tourists' ability to access Franz Josef (pictured) and Fox glaciers is already being impacted by glacial retreat. Glacier guiding operations once able to walk onto the glacier from the valley floor are now restricted to taking tourists by helicopter. Continued retreat and loss of access to the glaciers due to flooding and landslides will further limit tourism opportunities on the West Coast.

[24] See Espiner and Becken (2014) and Stewart et al. (2016). Interestingly, the retreat of the Tasman and Mueller Glaciers in Aoraki/Mount Cook National Park has resulted in new tourism ventures making use of the large proglacial lakes for boating and kayaking (Purdie, 2013).

[25] One News, 2019.

There is also a risk that, in an attempt to adapt to changes triggered by climate change (such as glacial retreat), the sector could 'maladapt' to climate change. A maladapted response is one in which the impacts of climate change lead to increased investment in emissions-intensive activities, which in turn not only exacerbate climate change but entrench an unsustainable path dependency.

Examples of maladaptation are already to hand in Westland, where restricted walking access to the glaciers due to their retreat (and recently, all ground access to Fox Glacier) has led to a sharp increase in scenic flights and helicopter landings. Given predicted energy costs, 'acceptable' aircraft noise levels and emissions regulations, the long-term sustainability of these activities must be in doubt.[26]

Not all possible scenarios of the impacts of climate change will necessarily lead to reduced tourism arrivals in New Zealand. If climate impacts in New Zealand turn out to be relatively modest compared to many other countries, New Zealand could even become a more attractive destination than business-as-usual estimations. This could lead to further environmental pressures. Either way, we have no way of knowing what the shape of tourism will be in a world that is heavily impacted by climatic disruption.

Vulnerability to wider failings in the environmental management system

The New Zealand tourism sector is vulnerable to the potential for wider failings in the New Zealand environmental management system. As described in the last chapter, all indications are that if we continue with business-as-usual tourism growth, pressures from tourism on our environmental management systems will only increase. Some of these pressures in isolation may be manageable, but their incremental effect on an environmental management system that is already under pressure could be significant.

A recent report describing the pressures on New Zealand's environment – *Environment Aotearoa 2019* – highlights nine environmental issues that New Zealand's environmental management system remains unable to mitigate.[27] For example, the report highlighted that despite the management efforts of the Department of Conservation, the extinction risk has worsened for 86 species in the past 15 years, while the conservation status has improved for only 26 species in the last decade. Over half of these species require ongoing management to maintain the improvement.[28]

A real vulnerability for the tourism sector arises when poor management, or continuously declining environmental indicators, can indirectly affect the perception of New Zealand from both outside and within, and harm the reputational brand of the country in the longer term.

[26] Espiner et al., 2017, p.1394.
[27] MfE and Stats NZ, 2019a.
[28] MfE and Stats NZ, 2019a, p.21.

In 2011, when dairy was New Zealand's leading export, the Government established an advisory group to support the pursuit of 'green growth' in the dairy sector. It recognised the risks that failing to align environmental stewardship to economic performance could bring to New Zealand's 'clean, green' brand around the world, affecting global competitiveness.[29]

Today, tourism contributes 21 per cent of New Zealand's total exports in goods and services, overtaking the dairy sector in 2017. It will be essential for New Zealand to maintain and continue to build its credibility as a 'clean, green' destination in overseas markets. The tourism sector alone cannot be responsible for ensuring that our environmental management systems continue to function, but it must recognise the pressures it exerts, and be part of the solution.

Furthermore, if the sector intends to place more emphasis on growing domestic tourism in New Zealand in the future, it will be equally essential to minimise or even reverse environmental degradation. The natural environment is often the preferred setting and backbone of the Kiwi tourism experience.

[29]Office of the Minister for Economic Development and Office of the Minister for the Environment, 2011.

7

Gleichenia dicarpa, waewae kākā

Going beyond business as usual

This investigation set out to ask what the environmental consequences of projected growth in tourism might be. Looking at the specific environmental pressures selected as the focus for this inquiry, previous chapters have concluded that those consequences could be significant.

By mid-century, the tourism sector could plausibly be two to four times larger than it is today – but equally it might not be. So much depends on the evolution of global economic and environmental trends. And even if that growth occurred, its impact would depend very much on the composition of that growth – the numbers of visitors, the amount they spend and where they spend it.

To the extent that tourism's largely visual claim on resources has replaced physical extraction in many provincial parts of Aotearoa New Zealand, tourism has seemed to offer a more benign form of economic development. This, together with being so closely interwoven with the wider economy, has probably shielded tourism from the critical scrutiny attached to land-based industries such as agriculture.

But the scale of overseas visitor numbers and higher domestic consumption on leisure means that environmental pressures from tourism have been building and are likely to intensify.

There is a need for some far-sighted choices to be taken that ensure that the sector can be sustainable in the future. Tourism is vulnerable to the pressures it places on the environment. Any deterioration in the quality of New Zealand's natural environment will also act as a drag on demand for New Zealand's tourism offering. As such, promoting the natural environment can be a double-edged sword. Tourism operators and regulators might be expected to have aligned interests in being proactive about heading off the problem.

However, the history of tourism's development in New Zealand has been characterised by sustained public subsidies and support for growth. Dealing with its consequences has tended to be reactive. Notwithstanding the site-specific and systemic risks identified in this report, none of those interviewed in the course of this investigation saw any limits to growth. At most, a variety of ways to deflect those pressures were offered.

Deflection covers a wide array of strategies – from opening up new destinations and new attractions to discouraging certain types of tourists (e.g. freedom campers) in favour of others (e.g. so-called 'high-value' tourists with large amounts to spend in exclusive locations). The 'value versus volume' argument was often advanced as a 'solution' to gathering pressures, but the underlying narrative was almost always one of both value and volume. Having one's cake and eating it too is as alive and well in tourism as any industry.

If the future of tourism's environmental trajectory is to be different from its past, different strategies and policies will likely be needed. They will need to be based on a shared view of the challenges New Zealand faces. They will also need to internalise Māori connections with place and kaitiakitanga. Rather than press ahead and float ideas, I have decided to pause my investigation at this point and gauge feedback on whether this report identifies and understands some of the key challenges.

Building on that feedback, I hope to follow up with a second report that will elaborate some of the policy options we should at least be prepared to debate. Tourism doesn't need more general exhortations to sustainability. Its pressures need to be measured and then managed in a way that enables us to know whether we are containing its footprint. We should, of course, be doing this more generally. But tourism's rather direct reliance on the quality of the environment for its success makes it a good place to start.

I welcome any feedback or constructive criticism of the analysis laid out in this report and look forward to working with a wide range of stakeholders in bringing forward some practical suggestions for dealing with some of the environmental pressures for which the industry is responsible.

Sticherus cunninghamii, waekura

8 Appendices

Appendix 1: Media scan methodology

By understanding what environmental pressures from tourism currently exist in the New Zealand media, the relative importance of those issues to the social fabric can be partially assumed. This could affect the ultimate social licence underpinning the tourism sector to operate.

Occasionally, the media may write a swathe of articles on one topical issue, such as seven articles in January 2019 on the antics of one group of 'unruly tourists' from Britain, who were eventually deported. Nevertheless, a media scan provides a rudimentary gauge of the range of issues in the public consciousness.

A scan was made of articles and letters in newspaper media relating to the environmental and cultural effects of tourism during the period 1 July 2018 to 30 June 2019.

Newztext software was used in the media scan, with 18 searches using a variety of keyword strings. The keyword search strings were as follows:

- "Air travel" AND ("Carbon emissions" OR "Greenhouse gas emissions" OR "CO_2")
- "Air travel" AND "Climate change"
- Biosecurity AND (Tourism OR Tourist*)
- Crowding AND (Tourism OR Tourist*)
- Cruise AND (Emissions OR Energy)
- Cruise AND Pollution
- Cruise AND (Waste OR Dumping)
- Cruise AND (Berth* OR Dredging)
- Didymo OR "Rock snot" AND (Tourism OR Tourist*)
- "Freedom camp*" AND Fire
- "Freedom camp*" AND (Waste OR Litter OR Rubbish OR Faeces)
- "Kauri dieback" AND (Tourism OR Tourist*)
- Pollution AND (Tourism OR Tourist*)

- ("Touris* traffic") ~ 10 OR ("Touris* car park") ~ 10 OR ("Touris* parking") ~ 10
- ("Tourism" OR "Tourist*") AND ("Glac* retreat") ~20
- ("Tourism" OR "Tourist*") AND (Iwi or Hapu)
- ("Tourism" OR "Tourist*") AND ("National park" OR "Conservation area")
- ("Tourism" OR "Tourist*") AND (Waste OR Litter OR Rubbish OR Sewerage).

The search included national and regional newspapers and agencies, including press releases. Duplicate copies (the same article appearing in multiple papers) and off-topic articles were culled.

For example, all articles on national parks and conservation areas overseas were removed, plus articles simply describing or extolling various Aotearoa New Zealand parks and resorts. Similarly, articles about the distribution of regional development funds were excluded unless they mentioned issues being addressed. The media scan did not include radio and television news and, importantly, must be viewed as just a snapshot of the issues in the media over a year period, rather than an academic content analysis of the tourism literature.

A total of 822 articles were identified in the media scan, and these were clustered into seven general themes (figure 3.2 and figure A.1):

- emissions (greenhouse gases and/or particulate emissions from air, sea or land transport)
- waste at place (litter, rubbish or effluent)
- pollution (e.g. of rivers, lakes or oceans)
- visitor experience (altered experience of place from crowding and congestion of parks, rescue efforts and deaths in parks, through to fire damage)
- infrastructure (from building more public toilets through to airport or harbour development)
- biosecurity and biodiversity (efforts to prevent incursions or spread of weeds, pests and diseases)
- Māori rights and interests (covering issues like protection of heritage, and Māori tourism initiatives).

The primary subject of the article was used to categorise individual articles. As a result, the results represent the frequency of articles on a topic.

For example, articles categorised as having a Māori focus (n = 180) do not include all of the articles referring to iwi and hapū in relation to tourism. Iwi and hapū were also mentioned in relation to 32 other articles where other issues were the focus: biological issues (such as iwi concern and initiatives regarding the spread of kauri dieback) (n = 15); pollution (n = 6); waste (n = 5); infrastructure (n = 3); emissions (n = 2); and experience (n = 1).

In total, just over one quarter of all the relevant articles identified in the search included reference to iwi or hapū (figure A.1). Similarly, issues around freedom camping – rubbish, human waste, water pollution, inadequate infrastructure, crowding and fire risk – were mentioned in a total of 200 articles (24 per cent).

Other than a surge of articles in January 2019 about freedom camping issues, there was a fairly even spread of issues across the year (figure A.1) – on average 68 per month, just over two per day. Mention of experiential issues in national parks had a winter peak, due to mountain safety issues. Mountain visitors were being warned about dangers, and visitor management expenditure included avalanche control.[1] During August, there were a few articles about a coroner finding that DOC had not put up enough markers to prevent walkers straying and falling from tracks. The Gertrude Saddle in Fiordland National Park had claimed half a dozen lives in 15 years.[2]

[1] *Stuff*, 2018b.

[2] Nicoll, 2018.

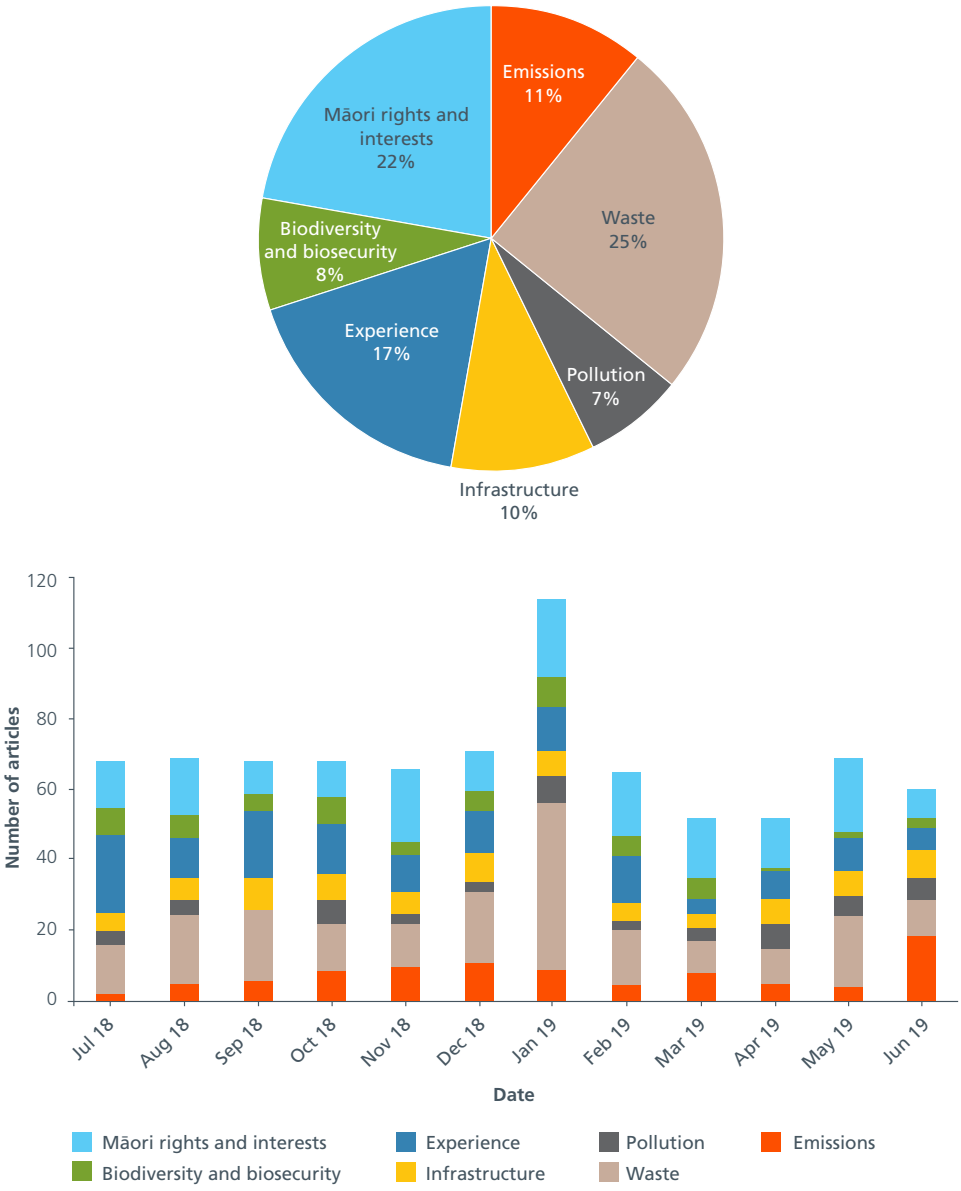

Figure A1.1: Articles on the environmental and cultural effects of tourism by month (n = 822).

Appendix 2: Factors that could significantly affect tourism activity in New Zealand

Uncertainty relating to global tourism growth

There are several emerging trends that could drive global tourism departures significantly higher than forecast. For example:

- Demographic changes: increased life expectancy and the transition of the post-war generation into retirement both have the potential to create a larger pool of individuals with the time available to travel. These factors are not always incorporated in existing forecasts of global tourism departures (e.g. published by the United Nations World Tourism Organization) or international arrivals to New Zealand (e.g. published by the Ministry of Business, Innovation and Employment).
- Shifting consumer preferences: an emerging desire for experiences rather than the ownership of products, or for international travel over domestic trips, will both tend to be supportive of global tourism growth. These trends will be amplified by the increased visibility of international tourism destinations that is likely to result from the continued rise of marketing via social media.[1]
- Technological shifts: the changing nature of work (e.g. increased flexibility) resulting from improved telecommunications technology will increase the pool of individuals able to travel. Similarly, any future improvement in aviation technology that reduced the time required to travel to New Zealand could increase international tourist demand.

On the other hand, there are a number of factors that could act as a drag on tourism growth. For example:

- Shifting consumer preferences: any increase in environmental awareness could lead to a greater number of travellers shunning air travel out of concern for the greenhouse gas emissions it results in. The no-fly movement and 'flight shame' represent two emerging examples of such behaviour. Flight shame is thought to have contributed significantly to the five per cent fall in Swedish passenger numbers observed during the first quarter of 2019.[2]
- Regulatory shifts: an increase in the coverage and stringency of carbon pricing policies would place upwards pressure on the cost of air travel. As a result, alternative transport modes will tend to become more competitive, and destinations closer to home more attractive. Existing empirical work suggests that the own-price elasticity of international leisure-related air travel is in the order of –1.50 to –1.04.[3] Put differently, a one per cent increase in airfares has resulted in a slightly more than proportional reduction in passenger demand at historically observed price levels.[4]

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[1] Chris Burkard – a photographer with 3.5 million Instagram followers – notes that "now you're less than 10 clicks away from seeing an image on Instagram to purchasing a ticket to go there" (Miller, 2017).

[2] Macheras (2019) notes that passenger numbers in Europe increased by 4.4% during the same period.

[3] Brons et al., 2000; Gillen et al., 2008.

[4] This literature also highlights differences between different types of travellers. In particular, business travellers tend to be much less responsive to changes in the price of air travel than leisure travellers. That makes sense given that business travel is less of a discretionary activity relative to leisure travel.

Unforeseen events – the outbreak of a global pandemic, regional conflict, the spread of protectionism or an economic downturn – could also detract from continued growth. That said, historical data has shown international aviation to be extremely resilient to such events. The absolute falls in passenger numbers following 9/11, the severe acute respiratory syndrome (SARS) outbreak and the global financial crisis lasted for less than one year in each case.[5]

Uncertainty relating to New Zealand's tourism offering

Several particularities of New Zealand's tourism offering will probably serve to support arrivals growth at levels above global trends.

- The visitor proposition offered by New Zealand is very much centred on nature-based experiences, access to wilderness areas and adventure. In this sense, New Zealand's tourism offering lends itself to a global population that is increasingly urbanised and in search of destinations that represent an escape from day-to-day life.
- Tourists are also attracted by the cultural experiences New Zealand offers. Survey data indicates that around one third of the international visitors that came to New Zealand between 2000 and 2007 did so (at least partly) for this reason.[6] Further, around 15 per cent of international tourists in 2019 visited a marae.[7] With continued globalisation abroad – and the homogenisation of visitor experience that goes with it – it may be that New Zealand's unique cultural heritage sits well with travellers that are increasingly in search of an authentic visitor experience.
- Relative to alternative destinations such as Europe and South America, New Zealand is no more distant from the emerging centres of economic and population growth in Asia.[8] Propensity to travel is strongly linked with household income, and the rapid economic growth forecast in China, India and Indonesia (among others) will enable many millions of individuals to travel abroad. Forecasting undertaken by Boeing and Airbus suggests that passenger numbers on the China–Oceania and Asia–Oceania routes will grow at annual average rates of around five per cent to 2037.[9]
- The persistent emphasis by successive governments on promoting New Zealand as a global tourist destination, through both international marketing and public funding for the development of tourist attractions, is likely to continue. Central government has developed a vision statement for the tourism industry (the *New Zealand-Aotearoa Government Tourism Strategy*) that seeks to actively promote further growth in the coming decade.

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[5] Airbus, 2018.

[6] Angus and Associates Ltd, 2008.

[7] Derived from International Visitor Survey and international travel and migration data, Stats NZ.

[8] For example, according to Great Circle Mapper (http://www.gcmap.com/dist), Shanghai is 9,286 miles from Paris, 9,347 miles from Auckland, and 18,816 miles from Santiago.

[9] Airbus, 2018; Boeing, 2019.

- New Zealand offers inverse seasonality to northern hemisphere destinations. In the context of climate change and the associated likelihood of more frequent heatwaves, this may serve to attract individuals trying to escape summer heat. Alternatively, in the context of continued income growth in Asia, and the change in leisure preferences that go with it, New Zealand's southern hemisphere location may attract individuals looking to engage in winter sports, provided these resist climatic change.

Other aspects of the New Zealand tourism offering could serve to reduce its attractiveness relative to alternative destinations (e.g. Chile, South Africa, Columbia and Argentina, among others). Perhaps most obviously, the nature-based experiences that are central to our tourism offering are heavily reliant on the existence of a high-quality natural environment. Any loss of amenity value, whether due to environmental degradation, visitor congestion or the consequences of climate change, will tend to act as a drag on future growth.

Appendix 3: Modelling the emissions footprint of the tourism sector

Modelling approach

The modelling commissioned had the following aims: (1) to quantify the carbon footprint of tourism, (2) to understand how significant tourism is within the context of the overall economy, and (3) to project the likely implications of growth within the tourism sector under a 'business-as-usual' scenario.

The modelling employed economic input-output life cycle assessment (EIO-LCA) as the primary analytical method. EIO-LCA calculates an emission factor per dollar, allowing both historical and forecasted tourism spending to be used to calculate tourism sector emissions.

For the calculation of transport emissions, sectoral emissions data was used due to the dominance of direct emissions[1] in the transport sector, which means that it is likely to be more accurate to model this separately rather than relying on emissions per dollar.[2]

EIO-LCA emission factors were calculated via matrix multiplication as follows:[3]

> Emissions per dollar per sector =
> (total emissions per sector ÷ total economic activity within the sector) ×
> Leontief inverse matrix

The first term (total emissions per sector ÷ total economic activity per sector) is a vector of the direct emissions from each sector per dollar. Multiplication by the Leontief inverse matrix accounts for the economic transactions that occur between sectors, representing both direct and indirect emissions[4] for each sector. This matrix has the economic sectors in both the rows and the columns, with the cells representing the direct and indirect transactions required to meet an additional one dollar of spend per sector. The difference between the two emissions factors is the indirect emissions.

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[1] Direct domestic emissions: Emissions that occur directly within the sector and within New Zealand's borders (e.g. combustion of fuels and release of methane from enteric fermentation in ruminant animals).

[2] Primary data sources used were:

- Road transport: Stats NZ (2019a) System of Environmental-Economic Accounts (SEEA), Figure 27, 'Emissions from households and international visitors using road transport for tourism, CO_2-e, 2007–17'.
- Rail and water passenger transport: Excluded from the analysis as it is difficult to separate freight from passenger transport. Total emissions are also small, as shown in New Zealand's Greenhouse Gas Inventory: 1990–2017 (MfE, 2019b).
- Domestic air transport: New Zealand's Greenhouse Gas Inventory: 1990–2017 (MfE, 2019b).
- International air transport: Calculated based on historical and expected visitor arrival numbers per region (Oceania, Europe, North America, etc) multiplied by current emissions using the most common route for that region (e.g. London to Auckland for Europe).

[3] Primary data sources used were:

- Total emissions per sector: Stats NZ (2019a) System of Environmental-Economic Accounts (SEEA), Table 6 'Carbon dioxide equivalent emissions by industry and households' for the 2012 calendar year.
- Total economic activity per sector: Statistics New Zealand National Accounts input-output tables, 'Total economy' column from Table 4 'Inter-industry transactions' for the year ended March 2013 (Statistics New Zealand, 2016a).
- Leontief inverse matrix: Statistics New Zealand National Accounts input-output tables, 'Table 5 'Industry by industry total requirements (direct & indirect)' for the year ended March 2013 (Statistics New Zealand, 2016a).

[4] Indirect domestic emissions: Emissions that occur in the upstream supply chain due to an increase in production within a given sector.

With emissions factors calculated, the emissions from the tourism sector were then calculated as follows:[5]

> Emissions from tourism = sum(spend by tourism category × emission factor per category)

Forecasts of how emissions change over time in the presence of an implemented Zero Carbon Act, which aims (amongst other things) to reach net zero carbon dioxide emissions, were based primarily on modelling results from the Energy and Transport New Zealand (ENZ) model. The ENZ model is a set of economic sub-models, where each sub-model represents a specific sector in the economy reliant on fossil fuels. Each sub-model aims to identify the least-cost means of meeting demand for a service, given underlying parameters that were assumed to change over time (e.g. input and technology costs, emissions prices, population).

Transport emissions are based on a combination of forecasted increases in tourist numbers multiplied by intensity per person, accounting for decarbonisation over time. Emission factors for all other categories were calculated by decarbonising each level of emissions in each sector to align with the ENZ model outputs, forecasting GDP per sector (based on the Treasury's long-term fiscal model and assuming uniform GDP growth per sector so the structure of the economy remains unchanged), and then reapplying the 2012/13 Leontief inverse matrix to account for indirect emissions.

Modelling assumptions

The following assumptions were made in modelling the emissions footprint of the tourism sector over time:

- The share of total tourism spend per category (on accommodation, food and beverages, etc) for both resident and non-resident tourists is assumed to remain the same over time. That is, it is assumed that tourists continue to follow current spending habits and that growth in total tourism spend is shared proportionately among the current categories of spending.
- Changes in tourism habits (e.g. a reduction in international tourist numbers due to the no-fly movement or higher carbon prices, changes in diet towards more plant-based protein, or changes in transport travel patterns toward ride-sharing) were deliberately not considered in the forecast.

[5] Primary data sources used were:

- Spend per tourism category: Statistics New Zealand tourism satellite account (TSA) (Stats NZ, 2018), most importantly Table 19 'Tourism expenditure by type of product and by type of tourist' for the year ended March 2017.
- Emission factor per category: An aggregate of the sectors from the input-output tables that contribute to each category from the TSA, calculated as the sum of each relevant emissions factor (in CO_2-equivalents per dollar of spend) multiplied by the corresponding 'Final consumption expenditure' (in dollars, covering domestic expenditure by households, non-governmental organisations and government) from Table 4 'Inter-industry transactions' of the input-output tables (Statistics New Zealand, 2016a) and then divided by total expenditure.

- The economy is assumed to remain structurally the same – with similar proportions of transactions between sectors over time. Decarbonisation is assumed to occur within sectors only (e.g. through decarbonisation of the electricity sector and the road transport sector) rather than through substitution of higher-carbon products/services for lower-carbon products/services. In the modelling, the ratios of transactions between sectors (the Leontief inverse matrix) have been assumed to remain constant over time. This approach also neglects relative changes in GDP per sector.
- Offshore emissions were assumed to decarbonise at the same rate as their domestic counterpart. In this regard, offshore emissions were calculated as a ratio between domestic and international based on the 2012 year based on the work of Chandrakumar and colleagues (in press) using the Eora multi-regional input-output database.
- International travel emissions include air travel only. No data was available for international cruise ship arrivals.

While many of the assumptions above are significant – e.g. that the structure of the economy remains unchanged and that spending habits remain the same – the intention of this work was to model a business-as-usual future.

Specific modelling assumptions for the ENZ model (e.g. population growth, rate of energy efficiency improvements over time) are detailed in table A2.1 of appendix two in a previous PCE report, *Farms, forests and fossil fuels: The next great landscape transformation?*[6]

[6] PCE, 2019, p.168.

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Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata
PO Box 10-241, Wellington 6143
Aotearoa New Zealand

T 64 4 471 1669
F 64 4 495 8350
E pce@pce.parliament.nz
W pce.parliament.nz

December 2019

ISBN
978-0-947517-18-2 (print)
978-0-947517-19-9 (electronic)

Parliamentary Commissioner for the Environment
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