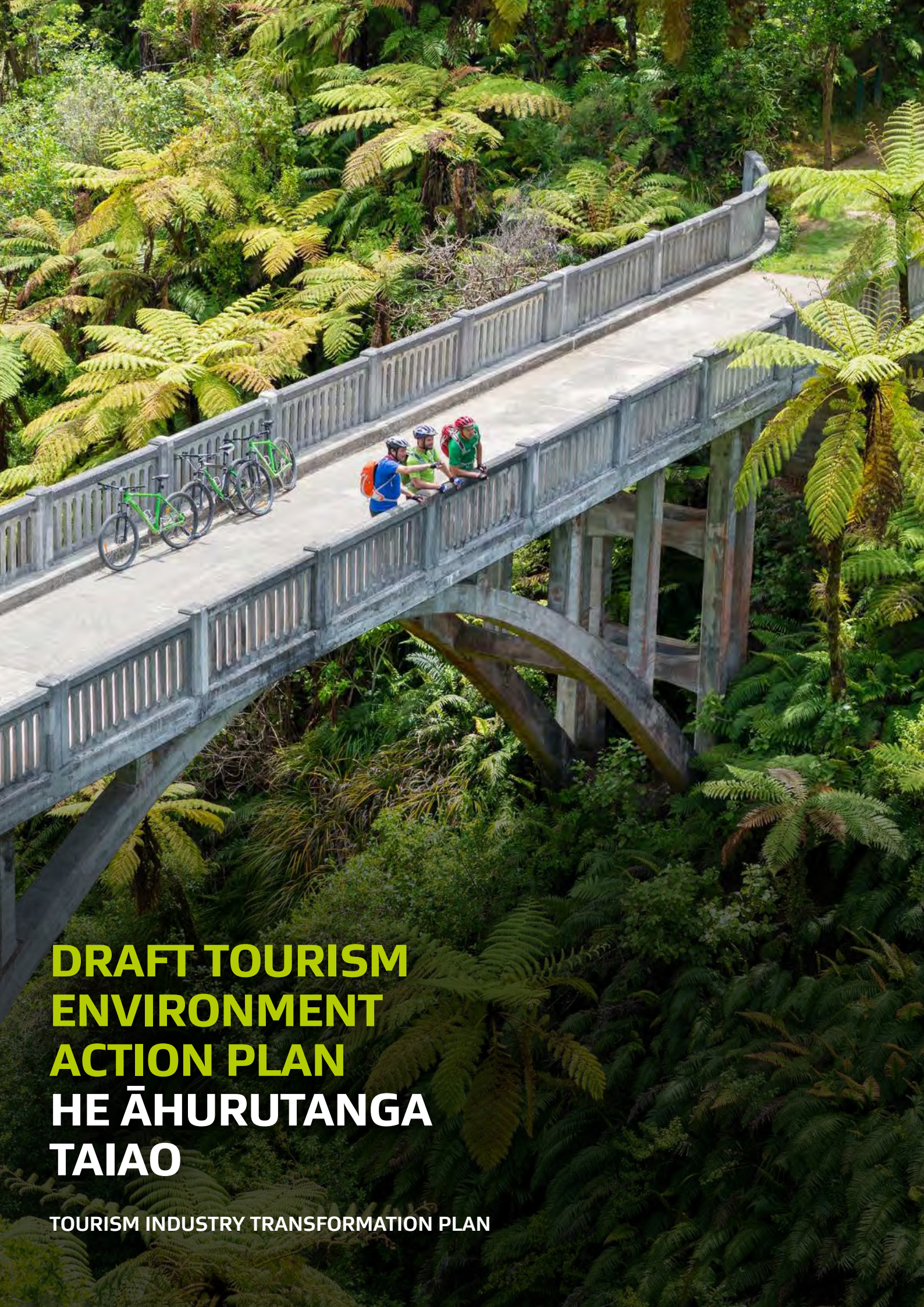

DRAFT TOURISM ENVIRONMENT ACTION PLAN
HE ĀHURUTANGA TAIAO

TOURISM INDUSTRY TRANSFORMATION PLAN

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Cover image: Bridge to Nowhere, Whanganui

Photo credits: newzealand.com, Unsplash

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INTRODUCTION

Mā mua ka kite a muri,
Mā muri ka ora ai a mua

Those who lead provide sight for those who follow,
Those who follow provide life for those who lead

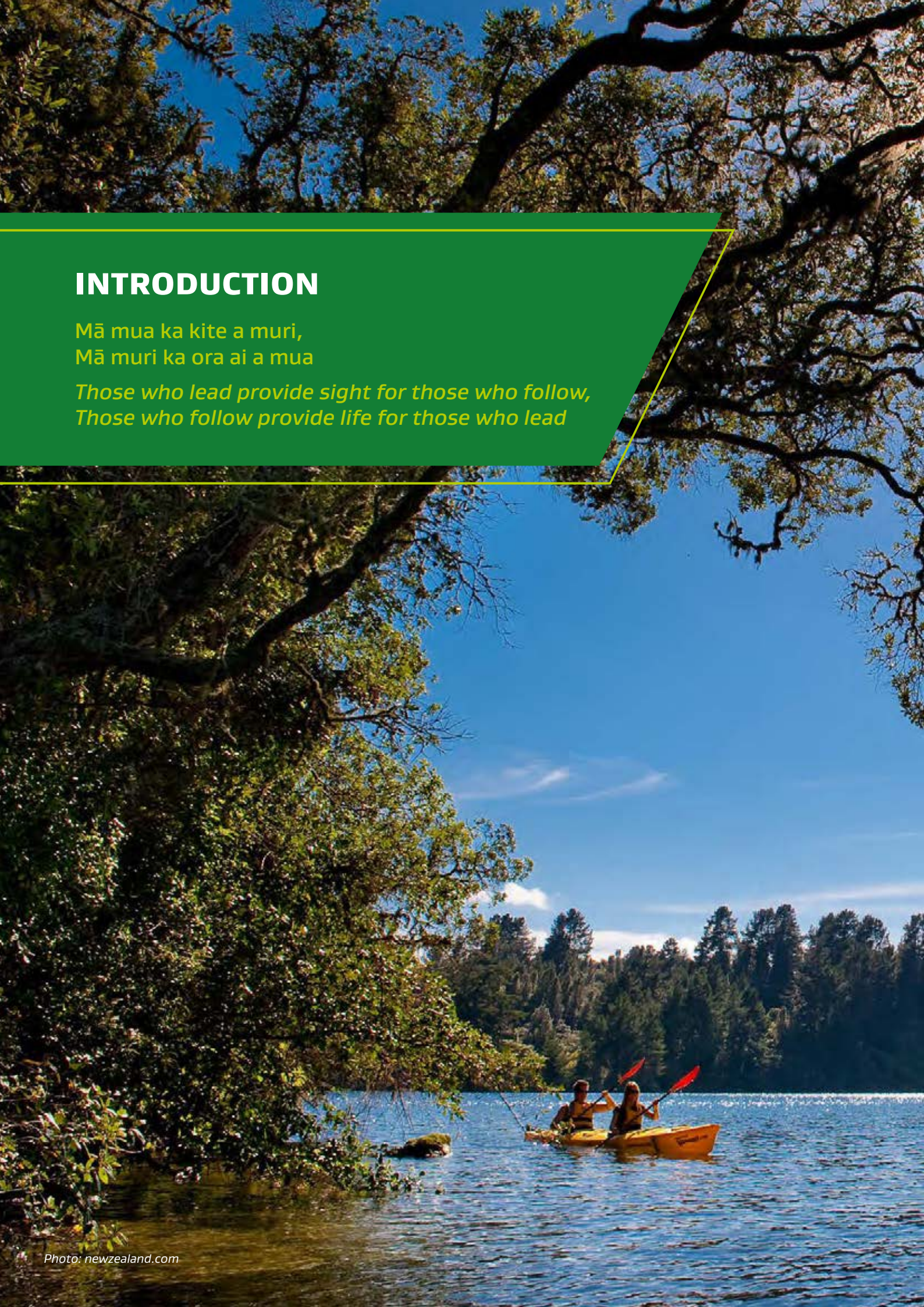

Photo: newzealand.com

MINISTERIAL FOREWORD

I am pleased to share this draft Action Plan for consultation from the Tourism Industry Transformation Plan's Environment Leadership Group (Tourism Environment Leadership Group).

The beauty that Papatūānuku displays in Aotearoa New Zealand attracts international manuhiri to our shores, and inspires New Zealanders to travel across the motu. Kaitiakitanga – taking responsibility to treasure, protect, and restore this beauty, the biodiversity that it harbours, and the stable climate that enables it – motivates many of those involved in tourism. This includes people who own and invest in tourism businesses, people who work in tourism, tangata whenua, local communities, and visitors. Tourism exemplifies two other closely held values: manaakitanga (being good hosts to our visitors) and whanaungatanga (forging and building connections with people in our communities and from around the globe).

Tourism can champion our economy-wide transformation to a regenerative way of living

We have a critical opportunity to take bold action now to reverse the decline of our unique biodiversity and to contribute to global efforts to create a balanced and sustainable climate. Tourism in Aotearoa New Zealand plays an essential role. Contributing to restoring our biodiversity and climate will require Aotearoa New Zealand's tourism system to be working in harmony with one vision, and our combined strengths and capabilities. The ideas, resources, and global connections that tourism brings can support us to face these challenges.

I have seen the Tourism Environment Leadership Group hard at work. They are not shying away from the challenge and responsibility. This kaupapa needs to be ambitious. Like the great navigator Kupe, we need to use the stars – our ambitious vision and closely held values – to guide us. The waves – challenges and obstacles we will face along the way – might crash on our heads. We might not succeed today, tomorrow, or next year, but we will keep getting closer.

This Plan should be ambitious enough that some of the actions challenge us right now. What is realistic could change over the next 20 to 30 years, so let's make sure we push for what's required, and do not limit ourselves by the constraints of 2023.

The tourism industry is resilient, adaptable, creative, and collaborative

Events of the last few years have demonstrated the strength and creativity of those who work and invest in welcoming our manuhiri. Some challenges the tourism industry has faced were unexpected, like COVID-19. Others, like the severe weather events from early this year, are becoming expected as we see the impacts of climate change increasing in frequency and intensity.

In light of the considerable stress that the industry has faced in recent years, I acknowledge that it may be difficult to discuss the change and disruption that will be an inevitable part of the transformative path set out in this plan. But we must start the rapid transformation now. We can't afford to miss the small window of opportunity available to us right now to avert greater costs in coming decades. We have navigated seemingly insurmountable challenges

with optimism, innovation, and camaraderie before; and I believe we can do it again.

Following the model set by other Industry Transformation Plans, and continuing to work in partnership across industry, workers, iwi, regions and government will be essential to delivering the future we seek.

We are all stakeholders in tourism, our environment, and our climate

Tourism affects us all. Many New Zealanders experience parts of the country as visitors and are involved in welcoming domestic and international visitors in their communities. Similarly, we are all investors and beneficiaries of our climate and natural environment.

New Zealanders have knowledge, perspectives, and values that, when shared, can help to create a future tourism system that is in harmony with our climate and environment. I encourage you to share your views by providing feedback on the proposed actions in this plan.

We have the privilege and responsibility to care for our climate and the biodiversity harboured in our forests, beaches, lakes, and mountains. Let's leave our land, plants, wildlife, and climate in a better condition than we found them.

The Honourable Peeni Henare
Minister of Tourism

TOURISM ENVIRONMENT LEADERSHIP GROUP

CO-CHAIRS' FOREWORD

Being a single industry in a small and geographically isolated country doesn't preclude us from making necessary changes.

Being small works in our favour; our industry is connected and collaborative and can move quickly to harness new opportunities. A key question that has stuck with us throughout our discussions is: *Can we do enough to become truly regenerative so that the impact that visitors and hosts have is overwhelmingly positive?*

The Group believes that by leading the way, Aotearoa New Zealand can charter the course for others to follow, which can in turn contribute to global environmental outcomes.

Tourism is the joy of connecting people and place. Those of us working in the industry are privileged to have a disproportionate influence on how our visitors interact with nature and impact this planet. We see no harm in aiming for the stars.

Mitigating climate change and protecting and restoring biodiversity matters to us all, but the risk of not doing so is particularly significant for the tourism industry. The health of the natural environment is integral to our tourism offering and value.

We can rise to the challenge of restoring our climate and biodiversity

There was no doubt that we needed to address these two interconnected challenges. The impacts of climate change are already resonating across the industry. Events during this process further confirmed the importance of this mahi. We met in early February 2023, when our Tāmaki Makarau Auckland colleagues contrasted their recent flooding with the tinder-dry conditions being faced by our colleagues from Tāhuna Queenstown and Wānaka. While we all face the challenge of climate change at large, the specific impacts each of us feel vary. The biodiversity crisis is often less visible than its climate counterpart but is no less important. Human-induced climate change and the challenge of preserving biodiversity are deeply connected, which may simultaneously be a challenge and an opportunity for us.

We are committed to facing these challenges bravely and boldly

We have an ambitious Leadership Group, and this is reflected in the ideas you will see in this draft Action Plan. We have representation from transport, attractions, accommodation, non-government organisations, unions, industry associations, Māori organisations and government.

The Leadership Group has canvassed some daunting topics. These conversations were necessary, because how can we put te taiao front and centre without realigning values? We need to articulate why tourism cares about the environment and face up to the challenges posed by the contribution our industry makes to climate change.

In Aotearoa, our values of mauri and kaitiakitanga will guide this realignment. Mātauranga Māori means we have a great place to start this journey. We already understand the importance of Papatūānuku and Ranginui, and take a multi-generational view to protect the planet for our mokopuna. Our role is to care for the mauri (the essential life force, the web of connections that sustain life) and in doing so we are cared for by it.

We are standing on the shoulders of others

Thankfully, plenty of thinking has been done in this area already. Strategies, plans, and policies, from Aotearoa and globally, were foundations for our progress and have helped us to avoid duplication.

Transformation will deliver a range of positive outcomes and there will be opportunity to export our success

Transformation will deliver positives not only for the environment, but also for our communities and tourism operators.

For example, there are actions in this Plan that envisage the tourism industry working with communities to create a picture of what healthy visitation looks like and engaging in regeneration projects that will deliver tangible benefits to local communities.

In terms of industry, the draft Action Plan proposes a range of measures that will support operators looking to adopt sustainable or regenerative practices: from toolkits, to personalised support, to peer-to-peer mentoring networks. At a broader level, the draft Action Plan as a whole will position the industry to meet changing consumer expectations and create a more climate-resilient tourism industry.

As Aotearoa develops and refines new ways of operating, there will be opportunities to export our success. By leading the way, we can charter the course for others to follow, which can in turn contribute to positive global environmental outcomes.

We now need to work through these challenges with you

The scale of the challenges we are discussing in this Plan is significant. Unsurprisingly, at times we have found it testing as a Group to reach a final position, due to the deep potential impacts of both action and inaction.

This is why it is vital for us to now work through these challenges with broader stakeholders.

We are deliberately treating this Plan as a 'draft' to reflect that there is a spectrum of views – and sometimes some divergence – within our Group. The feedback we are now seeking from you during the consultation period will form an essential input as we review and shape this draft into a final Action Plan in the second half of 2023.

This Plan and the actions we discuss will need to develop, change, stretch, and consolidate as we work through them together with you.

We look forward to your feedback challenging and strengthening our ideas. After that, we will work together with you to put them in place.

Laurissa Cooney
Independent Director
Industry co-Chair

John Crocker
National Secretary
of Unite Union
Union co-Chair

Heather Kirkham
General Manager
(Tourism) at MBIE
Government co-Chair

TOURISM ENVIRONMENT LEADERSHIP GROUP

Industry co-Chair

Laurissa Cooney
Ngāi Tai ki Tāmaki, Aotearoa Circle, Bay of Plenty Tourism, Air New Zealand

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James Dalglish
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Kauahi Ngapora
Whale Watch Kaikōura

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Mary-Liz Tuck
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René de Monchy
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Richard Capie
Forest & Bird

Robert Broughton
e Tū

Ruth Isaac
Department of Conservation

Trent Yeo
Ziptrek Ecotours

Kanika Jhunjnuwala
Sudima Hotels

Marguerite Fitzgerald
Carnival Australia

Kiri Hannifan
Air New Zealand

Molly Hope
Lake Wānaka Tourism

Benedict Ferguson
Public Service Association

John Barrett
Kāpiti Island Nature Tours

Rebecca Ingram
Tourism Industry Aotearoa

Miro Harré
NZ Māori Tourism

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- Te Papa Atawhai | Department of Conservation (DOC)
- Tourism New Zealand
- Te Manatū Waka | Ministry of Transport
- Te Tai Ōhanga | The New Zealand Treasury
- Manatū Mō Te Taiao | Ministry for the Environment
- Christchurch International Airport
- Wellington International Airport
- ThinkPlace
- Tīwaiwaka Inc
- Te Papa Tongarewa | Museum of New Zealand

Particular acknowledgement is given to the Tourism Futures Taskforce and to the Parliamentary Commissioner for the Environment whose respective reports were a core foundation for this mahi.

Finally, the Leadership Group wishes to thank the following individuals whose expertise informed our analysis:

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- Nadine ToeToe, Director, Kohutapu Lodge & Tribal Tours Ltd
- Claire Waghorn, Sustainability Transition Leader, Christchurch International Airport Limited
- Cormack Wallace, Event Cinemas
- Megan Williams, Sustainability Advocate, Tourism Industry Aotearoa

OVERVIEW

He huia kaimanawa,
Te manawa kai roa

The greatest treasure,
Is a heart that knows sustainable resource use

Photo: newzealand.com

TĪWAIWAKA PRINCIPLES

In developing this draft Action Plan, the Leadership Group acknowledges the influence of the Tīwaiwaka Principles, developed by Kaumatua Rob McGowan (known to many as Pā Ropata).

The Tīwaiwaka (New Zealand fantail, also called pīwakawaka) is a symbol of hope. Like the Tīwaiwaka, the Principles are a message of kotahitanga (unity), hope, survival, and learning to live in harmony with Papatūānuku (the Earth) and her many children as a family: connected and united so that all may thrive.

The Tīwaiwaka Principles are centred on the concept of mauri (the web of connections that sustain life) and are grounded in mātauranga Māori (Māori knowledge).

The Principles remind us that the answers we need for our future are already to be found in our surroundings. They offer a way to look to possible futures and imagine what they may mean for our collective mauri.

As a Leadership Group, we have used these Principles to guide our discussions and ensure that we are keeping te taiao – nature and the planet – at the heart of our work.

More information on Tīwaiwaka is available here: https://www.Tīwaiwaka.nz/

PRINCIPLE 1

Caring for the whenua is the first priority. Everything else must be measured against this.

PRINCIPLE 2

We are not the centre of the Universe, but we are part of it.

PRINCIPLE 3

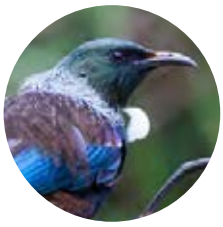
The Mauri is the web of connections that sustains life.

PRINCIPLE 4

Te Tangata, people, are not the masters of the Mauri; we are part of the Mauri and embraced by it.

PRINCIPLE 5

No individual person is more important than any other. Each must contribute what they have to offer, and receive what they need to be well.



PRINCIPLE 6

We give special care to the tiniest living creatures

Photo: newzealand.com

Photo: newzealand.com

MOEMOEĀ
OUR INTENTION

In this section, the Leadership Group outlines our intentions in developing this draft Action Plan and describes how we view our mission.

The Leadership Group recognises the importance of also developing a vision statement that can provide direction to industry members and key stakeholders as we work together to build a regenerative tourism system in the years ahead. Together we have already considered several possible statements but have faced some challenges in finalising a vision statement that balances our diverse views.

We now want to invite your input on how we should give voice to this vision. Questions to help gather your feedback on a future vision statement are included in the We want to hear from you section on page 16.

Ka huihui, ka ranea i te mauri tū, te mauri ora

Abundance comes from thriving mauri

Te Taiao | Nature exhibition, Museum of New Zealand Te Papa Tongarewa, 2019

Grounded in a distinctively Māori worldview, *whakataukī* (traditional proverbs) play a key role in te ao Māori (the Māori world). These sayings capture traditional wisdom, gained over many generations, about the characteristics, needs and relationships of people, plants, animals, the land, sea, and weather.

Ka huihui, ka ranea i te mauri tū, te mauri ora is one of many whakataukī that capture the intertwined relationship between the wellbeing of people and the wellbeing of the natural world. This relationship is embodied in the concept of *mauri*, which can be understood as 'energy' or 'essential life force.' The Tīwaiwaka Principles, outlined on page 10, define mauri as "the web of connections that sustains life." Mauri is often paired with the word *ora* which means 'alive', or 'in good health'. Therefore, *mauri ora* is the state of thriving, well-balanced, harmonious life.

"From a Māori perspective, mauri has a fundamental role in terms of health and wellness. The restoration of the mauri of a river or landscape, for example, involves much more than replanting appropriate species. It requires restoring the connections that enable life to thrive, including re-connecting the river or landscape to the people who care for it."

Pā Ropata, 2020

Abundance – *ranea* – reflects economic prosperity, strong communities, and flourishing biodiversity. A state of abundance means that all our needs are met as we need them to be. It is a state of balanced flow of energy and resources, rather than accumulation. This conceptualisation of abundance is reflected in our approach to destination management; whereby local communities collectively plan to ensure that the tourism they receive matches the experiences they can provide.

As this whakataukī illustrates, we believe that abundance is only possible when the mauri of our environment, climate and people are thriving.

We acknowledge Te Papa Tongarewa | Museum of New Zealand for sharing its whakataukī and supporting us to incorporate it into our vision.

TĀ TĀTOU ARA OUR ROAD TO GET THERE

OUR MISSION IS TO EMPOWER THE TOURISM INDUSTRY TO HELP TO RESTORE THE MAURI OF OUR CLIMATE AND ENVIRONMENT BY SWIFTLY ACHIEVING CARBON ZERO TARGETS AND EMBRACING A REGENERATIVE AND ADAPTIVE APPROACH.

The catalyst for the transformational change required to restore mauri and enable abundance is a deeper, connected relationship with *te taiao* – the natural world. Regenerative tourism has a key role to play in strengthening this relationship. Tourism connects people to each other, and to the environment. A truly regenerative tourism system will increase the mauri of our land, climate and people; and in doing so, support abundance for Aotearoa New Zealand's diverse communities, the visitors that we host, and our economy. We believe tourism can also play a significant role in raising awareness of regeneration among the people we host. This can then influence visitors' beliefs and actions, causing a ripple effect that lasts far longer than the visitors' stays.

Photo: newzealand.com

SUMMARY OF OUR TIROHANGA HOU AND ACTIONS

Tourism journeys are decarbonised

- Develop a Tourism Decarbonisation Roadmap
- Rapidly invest in low-carbon technologies for long-haul air and cruise travel
- Leverage tourism to advocate for rapidly decarbonising domestic transport that is used by visitors
- Assess the environmental impacts of the current mix of visitors and the impact of levers to shape demand and visitor behaviour

Tourism champions biodiversity

- Establish and support collaborative regional environmental projects for participation by tourism operators
- Develop measures for regenerative tourism
- Ensure green assessment schemes include criteria and standards related to biodiversity
- Advocate and educate on biodiversity matters at a local and national level

Visitor management is optimised for te taiao

- Give greater weight to environmental outcomes in tourism planning
- Highlight regenerative activities and options in marketing campaigns

Accelerated technology uptake and innovation enable regeneration

- Harness emerging technology within the tourism system
- Organise an in-person event showcasing existing and emerging technology
- Establish a tourism innovation lab
- Contribute tourism perspectives to economy-wide innovation programmes

Tourism businesses are incentivised and enabled for sustainability and regeneration

- Ensure online toolkits on sustainable and regenerative practices are widely available
- Determine the key components for inclusion in designing and delivering personalised support programmes to tourism operators
- Foster a collaborative approach between tourism operators
- Respond to research that deepens understanding of tourism operators' motivations, opportunities, and barriers to adopting regenerative policies

The tourism system and its levers are optimised and resourced to support regeneration

- Undertake a high-level assessment of the tourism system
- Refresh the MBIE Destination Management Guidelines
- Recommend a regular national tourism strategy
- Review current funding structures and mechanisms, ensuring this features resources for destination management planning

WE WANT TO HEAR FROM YOU

Purpose of this document

This draft Action Plan reflects the Tourism Environment Leadership Group's views on potential new pathways – Tirohanga Hou – and actions to: tackle the challenges of reducing tourism's carbon emissions, and to harness tourism to help restore our natural biodiversity and ecosystems.

While our Tourism Environment Leadership Group is representative of the wider visitor economy, for this Plan to successfully meet the challenges it addresses, it needs to reflect the views of a wide range of stakeholders. As such, we have deliberately framed this Action Plan as a 'draft'. It is a starting point. The draft Action Plan is designed to trigger discussion, and we invite you to provide feedback. We will refine the document and actions based on what we hear from you.

What we are proposing is a shift in the way the industry thinks about the relationship between tourism and the environment. This is why it is so important for us to get your views before we go further.

We want to hear from you

We want to hear from tangata whenua, tourism businesses, the people who interact with visitors, the people who travel to and within Aotearoa New Zealand, and from all those who care about biodiversity and the climate.

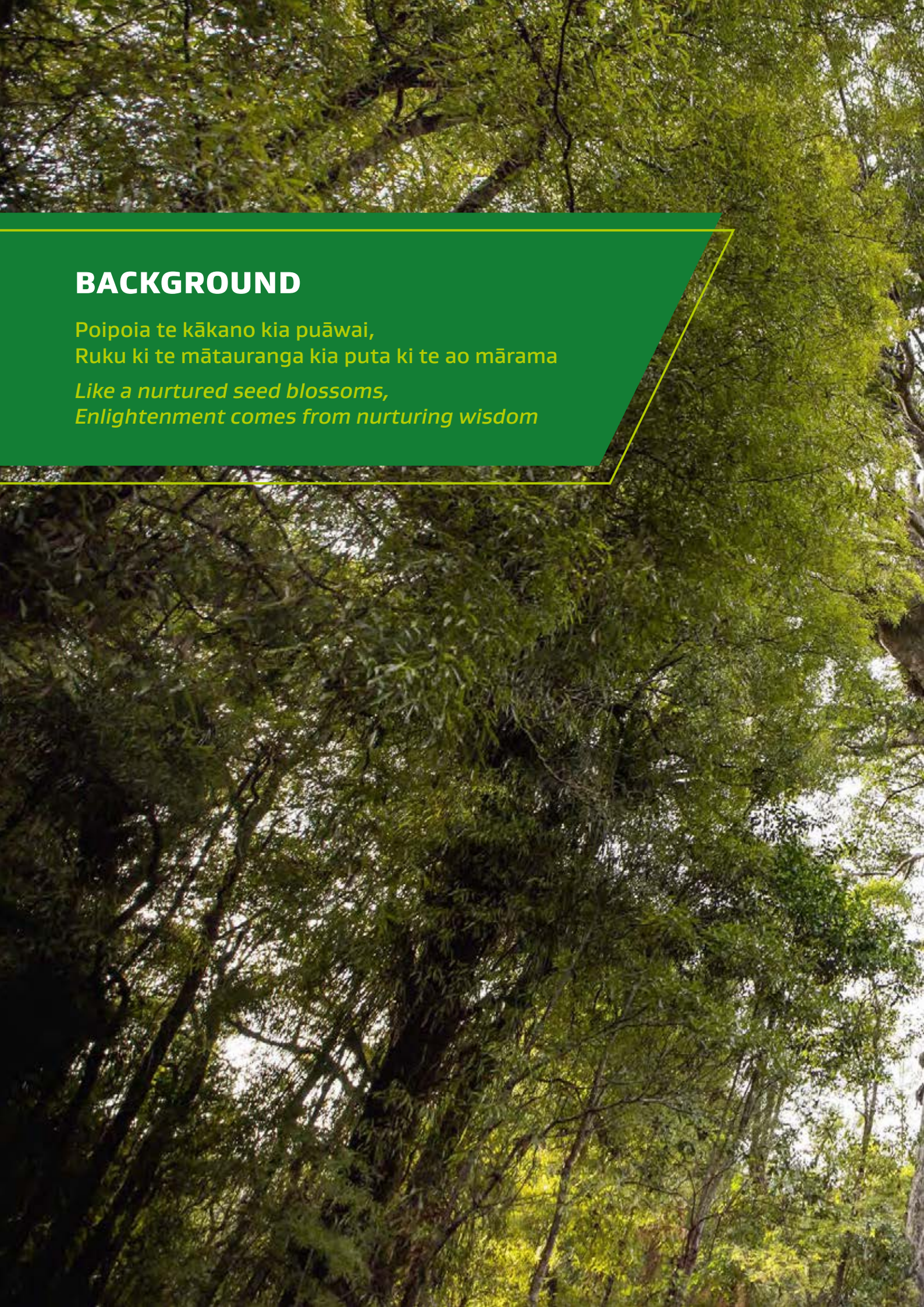
We want to hear about which actions in the draft Action Plan you believe are most important, how they should be prioritised, whether anything critical is missing, and whether the draft Action Plan correctly captures the opportunities and challenges.

We've listed some questions for you to consider as you read through the document.

- Do you think each of the Tirohanga Hou (new outlooks or ways of thinking or doing things) will lead to better environmental outcomes in tourism? Why?
- How can we improve each Tirohanga Hou?
- What do you think is the most important Tirohanga Hou?
- Are there any other Tirohanga Hou we are missing that you think should be considered for development?
- Do you have any other comments?

More information on how to have your say can be found on page 83.

Photo: newzealand.com



BACKGROUND

Poipoia te kākano kia puāwai,
Ruku ki te mātauranga kia puta ki te ao mārama

Like a nurtured seed blossoms,
Enlightenment comes from nurturing wisdom

THE JOURNEY SO FAR

Industry Transformation Plans are developed in partnership

Industry Transformation Plans (ITP) were created when the Government committed to a policy which sought to grow and transform industries with significant potential to contribute to a high-productivity, high-wage, low-emission, economy that offers resilience in good times and bad. All ITPs are created in partnership by industry, unions, Māori, and government. Together, the partners set a long-term vision for transformative change through near-term actions.

There are eight ITPs, which cover the following industries: Advanced Manufacturing, Agritech, Construction, Digital technologies, Fisheries, Food and Beverage, Forestry and Wood Processing, and Tourism.

Hīkina Whakatutuki | Ministry of Business, Innovation and Employment (MBIE) is the lead government agency for the Tourism ITP, supporting the Tourism Environment Leadership Group through secretariat services.

The Tourism ITP is taking a phased approach

The Tourism ITP is taking a phased approach to the problems and opportunities in the industry, allowing for deliberate focus on each phase. The first phase resulted in the Better Work Action Plan - He Mahere Tiaki Kaimahi (to care for people who work in our industry), released in March 2023. The Better Work Action Plan can be accessed here: https://www.mbie.govt.nz/assets/better-work-action-plan-march-2023.pdf

This document is the interim result of the second phase: Tourism and the Environment

Our Leadership Group was asked to focus on a scope centred around three pillars. These pillars will underpin the achievement of an environmentally regenerative and resilient tourism industry in Aotearoa New Zealand.

PILLAR 1:
Understanding and adapting tourism to the impacts of climate change

PILLAR 2:
Transforming Aotearoa New Zealand's visitor economy to a low carbon emissions industry

PILLAR 3:
Restoring our biodiversity and eco-systems through tourism

Figure 1: Three pillars of the Tourism Environment ITP

The first pillar, on climate change adaptation, has been taken forward by the **Aotearoa Circle**[1] (see page 32 for more information). This draft Action Plan focusses on the other two pillars: emissions reduction and biodiversity

In addressing these pillars, our thinking has encompassed the full traveller journey – including considering both emissions that are generated from international travel to Aotearoa as well as travel within in Aotearoa.

Our focus has been on addressing risks and opportunities that relate to the natural environment, rather than the built environment. The report does not consider some negative social impacts which may be caused by tourism activity such as loss of tranquillity, or issues related to congestion which may impact adversely on the visitor experience and social licence for tourism. In saying that, we have considered that where congestion damages the ecology of a particular place, this is within scope.

The Tourism Environment Leadership Group developed this draft Action Plan collaboratively

The Tourism Environment Leadership Group was established in late 2022 to discuss the opportunities and challenges for tourism and the environment.

We met several times, both in-person and online. Through the course of these meetings, we developed the package of actions presented in this draft Action Plan to optimise tourism's relationship with te taiao.

How are we thinking about the tourism industry for the purpose of this document?

Tourism is an industry that is defined by the consumer, rather than by the goods or services that are consumed. Most other industries are defined by the products that are manufactured and sold. For example, the forestry sector is defined by wood products, and the fisheries sector is defined by seafood. For tourism, the definition is based on who is buying the goods or services.

For this phase of the Tourism ITP, how we define tourism needed to be sufficiently broad to be transformative, yet also sufficiently narrow to allow the necessary depth of exploration. We have therefore drawn on the definition of tourism used in international Tourism Satellite Accounts.[2] This means a product will be considered tourism if at least 25% of production is purchased by tourists.

The Better Work phase of the Tourism ITP took a broader approach to the definition of tourism by including food and beverage services/products. This is because many of the systemic work-related challenges that needed to be addressed were common in food and beverage services. However, there are work programmes, such as the Food and Beverage ITP and (sections of) the Emissions Reduction Plan, focussed on improving environmental outcomes in the food and beverage sector.

1 The Aotearoa Circle is a voluntary initiative bringing together leaders from public and private sectors.
2 UN Stats (2008) *Tourism Satellite Account: Recommended Methodological Framework 2008* https://unstats.un.org/unsd/publication/Seriesf/SeriesF_80rev1e.pdf

What is a regenerative tourism system?

The overarching objective of the Tourism ITP is to contribute to building a regenerative tourism system.

A regenerative tourism system is one that leaves the environment and communities better than they were before. Regenerative tourism ensures that tourism gives back more than it takes from people and places.

Regenerative tourism is a transformational approach that aims to create a system which has a net positive impact. In this sense, regenerative tourism can be seen as an extension of sustainability.

A regenerative tourism system is the next generation of Aotearoa New Zealand tourism

Tourism can add more than just economic value; tourism can actively enrich our communities and help protect and restore our environment. In order to achieve this, a mindset shift away from a primary focus on economic growth towards a holistic approach is essential. This necessitates taking a long-term view, placing a high value on the natural environment, and acknowledging the interconnectedness between the tourism industry, people, and the environment. It also requires the benefits of productivity to be distributed and the ecological impacts identified and managed.

A regenerative tourism system will require local solutions

Conceptually, a regenerative tourism system will be achieved at an economy-wide level; however, to achieve this, we need to focus locally. Different locations across the motu will need their own responses that are unique to their natural environment, community and cultural eco-system.

Regenerative tourism is aligned with indigenous beliefs including te ao Māori

Regenerative tourism is aligned with indigenous values and knowledge systems that share the common belief that we are the stewards of the land, the animals, the oceans, and the air around us. From a te ao Māori perspective, te taiao is paramount and inextricably linked with human wellbeing. Humans have responsibilities and obligations to sustain and maintain the wellbeing of te taiao. Viewing tourism through a te ao Māori lens emphasises the imperative to shift to a regenerative tourism system as well as potentially contributing ideas for how this can be achieved through mātauranga Māori.

A regenerative tourism system that incorporates te ao Māori will promote visitors to Aotearoa New Zealand having a positive impact on our communities. It will have them leaving as storytellers able to share our unique culture and heritage with the world.

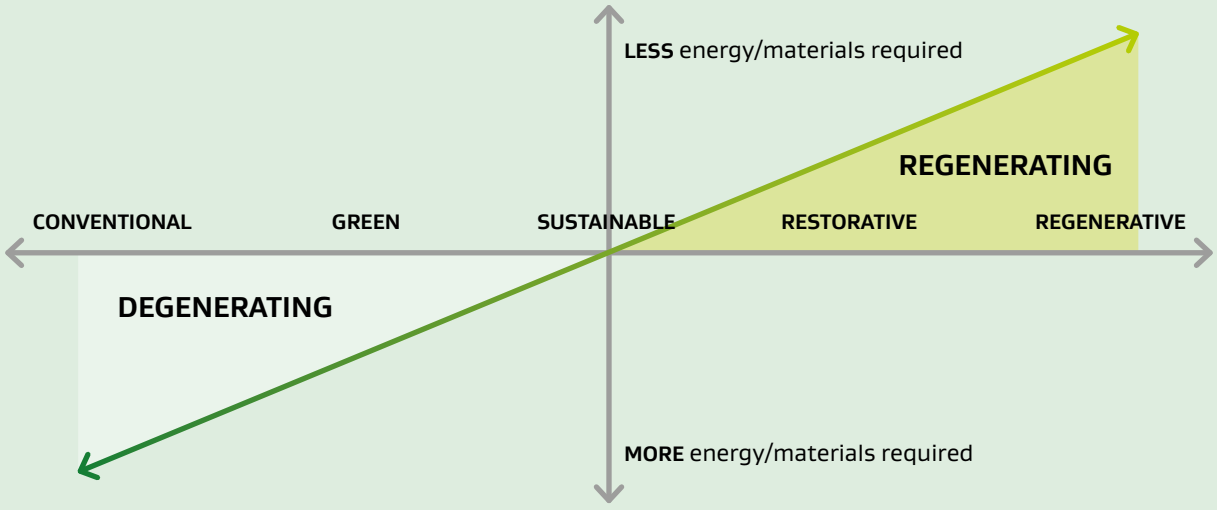


Figure 2: Sustainability And Regeneration on a Spectrum[3]

3 Diagram adapted from CBI Europe: https://www.cbi.eu/market-information/tourism/regenerative-tourism

This draft Action Plan is presented across six Tirohanga Hou

He Tirohanga Hou means a new outlook and way of viewing or thinking. The use of the term Tirohanga Hou in this Plan refers to each of the six central themes we have identified that will help optimise the relationship between tourism and the environment. It recognises that our aim for this draft Action Plan is to identify innovative ideas that tourism can pursue to reach a better future.

There are overlaps between the Better Work and the Tourism Environment Action Plans

The *Better Work Action Plan* and this draft Action Plan might focus on two different topics, but both address the overarching objective of transforming the tourism industry in Aotearoa New Zealand into a regenerative system.

Some of the actions in the two documents are linked. Thriving biodiversity and a stable climate are essential for our tourism workforce. Our tourism workforce can support restoration of our biodiversity and climate through their work and expertise. Efforts to improve work conditions and the environment both depend upon reliable data, technological innovation, adequate funding, access to investment, and a system structure that is aligned with these objectives.

Photo: newzealand.com

THE VALUE OF TOURISM

Tourism is complex. It is a networked ecosystem that touches the lives of all New Zealanders. Tourism has already contributed so much to our nation's prosperity; we see a future where the domestic and international visitor economy will further enrich wellbeing in all aspects of life in Aotearoa New Zealand.

Tourism Futures Taskforce, December 2020[4]

Tourism in Aotearoa New Zealand contributes to the wellbeing of New Zealanders now and in the future – socially, culturally, environmentally and financially. Tourism can enrich our visitors and our communities simultaneously through our unique expression of manaakitanga (hospitality) and whanaungatanga (connecting people to people), while acting as kaitiaki (guardians and stewards) of our people and places.

Tourism contributes financially across Aotearoa New Zealand

Prior to COVID-19, international tourism was our largest export sector. In the year ending March 2019, domestic and international tourism directly contributed six per cent of Aotearoa New Zealand's total value-added gross domestic product (GDP). Its export value totalled $17.2 billion in the year to March 2019, or 20 per cent of export earnings.[5]

The financial benefits of tourism (both domestic and international) have the potential to be distributed inclusively across the economy. Tourism can be an income source for regions that may be missing out on other economic development opportunities due to lower population, limited skill bases and job opportunities, or connectivity and infrastructure challenges (although accessibility and infrastructure are often critical to a successful tourism destination). Tourism enables Māori to gain direct financial value from leveraging their cultural and land-based assets.

In a truly regenerative system, there is a positive reciprocal relationship between the economy and the environment. In such a system, it may be beneficial for the volume and economic value of an industry to grow, as it would mean that the environment receives a reciprocal benefit.

Tourism provides meaningful work for many New Zealanders

Tourism is a labour-intensive industry and has been a significant employer. Prior to the pandemic in the year ending March 2019, tourism in Aotearoa New Zealand directly employed 230,000[6] people, making up over eight per cent of the total workforce[7]. Even during the pandemic in the year ending March 2022, the industry directly employed 145,032 people, or over five per cent of the total national workforce.[8] The tourism sector employs workers of many different skill levels across diverse regions. It provides an opportunity for skills development and a pathway for New Zealanders to enter the workforce. Aotearoa New Zealand's tourism offering also attracts workers from offshore, such as working

4 The Tourism Futures Taskforce interim report – We are Aotearoa https://www.mbie.govt.nz/immigration-and-tourism/tourism/tourism-recovery/tourism-futures-taskforce/tourism-futures-taskforce-interim-report/
5 Tourism Satellite Account: Year ended March 2019 https://www.mbie.govt.nz/assets/tourism-satellite-account-2019.pdf.
6 Tourism Satellite Account: Year ended March 2019 https://www.mbie.govt.nz/assets/tourism-satellite-account-2019.pdf.
7 Ibid.
8 Tourism Satellite Account: Year ended March 2022.

holidaymakers, who can contribute to the regional and seasonal labour force (i.e. grow our human capital) in sectors such as horticulture, agriculture and hospitality.

COVID-19 made evident the significance of the tourism sector to providing employment for New Zealanders. Despite the support available through the wage subsidy scheme, the reduced income from the lack of international visitors and domestic lockdowns meant that many tourism businesses had to reduce the hours and wages offered to staff. Northland and Canterbury experienced the most significant decrease in hours worked in the tourism sector. Some demographics, such as women and Māori, were more affected.

The Better Work Action Plan[9], which was published earlier this year and is the first phase of the Industry Transformation Plan, explores how to make the tourism employee experience better and, by doing so, build a stronger and more resilient tourism industry.

Tourism connects New Zealanders with each other and the world

Domestic tourism connects New Zealanders with our geography and history, and strengthens connections across the country socially and culturally. This promotes social cohesion and increases understanding and integration across communities. Tourism strengthens our cultural identity and provides an avenue for celebrating and sharing the unique Māori culture.

The international aviation links that are supported by demand to visit Aotearoa New Zealand play a critical role in freighting valuable exports and imports. For example, prior to COVID-19, it was estimated that 80 per cent of Aotearoa New Zealand's airfreight was carried in the belly-hold of passenger flights[10].

Passenger loading factors on aircraft also impact (and can lower) the cost of airfreighting these exports and imports. Cruise vessels can also highlight New Zealand produce and producers to their guests. For example, approximately 25 per cent of expenditure by cruise vessels in New Zealand in the year ending June 2020 consisting of local expenditure by vessels, including fuel and providoring (purchasing produce and other local supplies).[11]

Tourism demand also plays a significant role in maintaining and building airlines' and cruise operators' interest in the Aotearoa New Zealand market, which in turn creates choices and opportunities for New Zealanders seeking to travel overseas.

International tourism also grows our international social capital, by building people-to-people connections across the globe. These connections can be used to support our other export sectors. A positive international reputation fostered through tourism connections creates a 'halo' effect that also assists in attracting skilled migrants, investments and leveraging foreign policy. Tourism contributes positively to host communities.

Visitors, both domestic and international, also support infrastructure and services that help to make our cities and regions more liveable and attractive for locals. They bring social and cultural vibrancy to our communities and generate prosperity that flows into multiple sectors across our local economies. The events segment of the tourism industry can exemplify this, with a large event such as the upcoming 2023 FIFA Women's World Cup expected to generate significant social and economic benefits, as well as leave a lasting legacy for football and women's sport in New Zealand.

Photo: newzealand.com

9 He Mahere Tiaki Kaimahi – Better Work Action Plan https://www.mbie.govt.nz/immigration-and-tourism/tourism/tourism-projects/tourism-industry-transformation-plan/phase-1-better-work-he-mahere-tiaki-kaimahi

10 https://www.transport.govt.nz/area-of-interest/air-transport/government-support-for-the-transport-sector/ accessed 11 April 2023.

11 Cruise-ship-traveller-and-expenditure-statistics-year-ended-june-2020.xlsx (live.com).

WHY FOCUS ON THE ENVIRONMENT IN THIS PLAN?

The natural environment faces a climate and biodiversity crisis

In December 2020, Aotearoa New Zealand declared a climate emergency. Aotearoa New Zealand's National Adaptation Plan 2022, *Urutau, ka taurikura: Kia tū pakari a Aotearoa i ngā huringa āhuarangi*, is clear that our climate has already warmed by 1.1ºC in the last 100 years.[12] Events that can damage the tourism industry, such as extreme weather events, will occur more often and with greater intensity.

In its report *Inaia tonu nei: A low emissions future for Aotearoa*, the Climate Change Commission noted that Aotearoa New Zealand is not on track to meet its emission reduction targets.[13] In 2017, Aotearoa New Zealand's tourism industry emissions reached 12.5 MtCO2 equivalent.[14] This was produced across sectors in the industry, including transport and accommodation.

According to Te Papa Atawhai's *Te Mana o te Taiao*, Aotearoa New Zealand's biodiversity is also declining.[15] Many factors are contributing to this, including climate change, land use changes, and pollution.

There is an inextricable link between the climate and biodiversity crises. Climate change is one of the key drivers of biodiversity loss.[16] Biodiversity losses, such as the degradation of wetlands, can contribute to climate change by degrading natural carbon sinks.

What is biodiversity?

Biodiversity, or biological diversity, means the variability among living organisms from all sources, including land, marine and freshwater ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Te Mana o Te Taiao, 2020, page 9

12 https://environment.govt.nz/assets/publications/climate-change/MFE-AoG-20664-GF-National-Adaptation-Plan-2022-WEB.pdf page 13

13 https://www.climatecommission.govt.nz/public/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa.pdf page 12

14 https://pce.parliament.nz/media/mvud3vpb/report-pristine-popular-imperilled.pdf page 110

15 https://www.doc.govt.nz/globalassets/documents/conservation/biodiversity/anzbs-2020.pdf page 13

16 https://ec.europa.eu/research-and-innovation/en/horizon-magazine/climate-change-and-biodiversity-loss-should-be-tackled-together and https://www.un.org/en/climatechange/science/climate-issues/biodiversity#:~:text=How%20is%20climate%20change%20affecting,of%20all%20ice%2Dfree%20land

Our wellbeing is inextricably linked with te taiao

There are strong connections between nature and people. Nature is essential for our health, cultural, and economic wellbeing – as expressed in the Tīwaiwaka Principles: *Papatūānuku is the source of all life*. Aotearoa New Zealand's nature is unique and makes a significant contribution to global biodiversity.

Aotearoa New Zealand's natural environment is central to Māori culture. Whānau, hapū, and iwi Māori have strong connections with whenua (land), awa (rivers), and moana (the sea). As kaitiaki for the natural world, whānau, hapū, and iwi Māori have a strong interest in its management and wellbeing.

Nature also provides the foundation for many incomes and opportunities in our regional communities –not only in tourism, but across our primary industries. Not protecting and restoring te taiao is a strategic risk to the health of the future tourism industry.

Ko au ko te awa, ko te awa ko au (I am the river, the river is me).

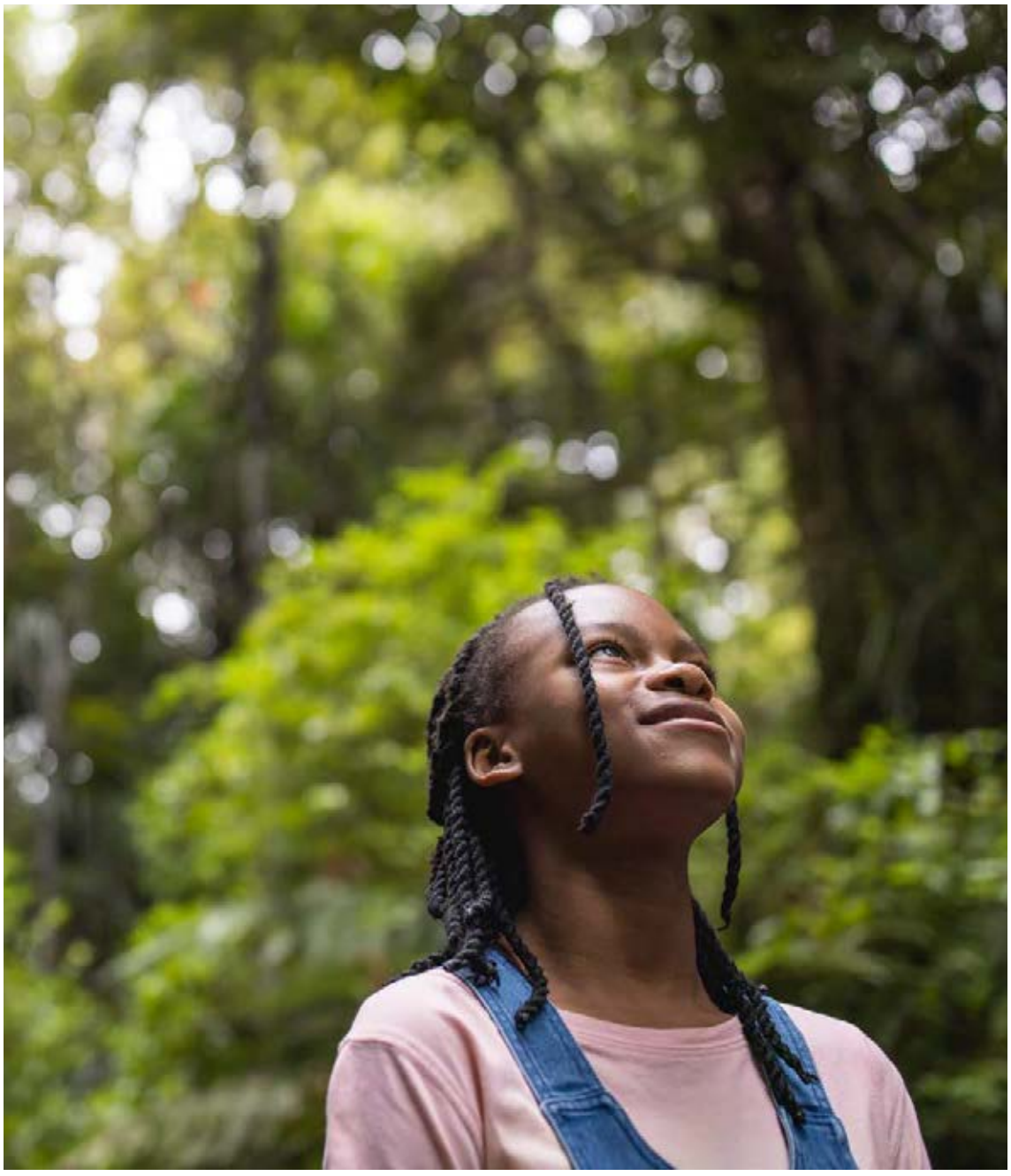


Photo: newzealand.com

There is a strong economic imperative for action on climate change

In early 2023, Deloitte released a report[17] that considered the economic impact of two climate scenarios on Aotearoa New Zealand:

- Decisive global climate change action – limiting global warming to as close to 1.5ºC above pre-industrial levels as possible by 2050, and
- Inadequate global climate change action – the planet warming by 3ºC by the end of the century.

The modelling suggests that inadequate global climate change action will result in a reduction of $4.4 billion in Aotearoa New Zealand's GDP between 2023 and 2050. By 2070, the losses could grow to $48 billion.

By comparison, decisive global action could add $64 billion to Aotearoa New Zealand's GDP by 2050 through a combination of avoided climate damage, the emergence of new sectors that drive growth and employment, and transition support.

Although decisive global action has clear long-term economic benefits, there is a short-term cost associated with this course of action. Over the short-term, GDP growth is stronger in the inadequate global climate action scenario, but GDP growth in the decisive climate action scenario eventually overtakes as shown in Figure 3.

This analysis makes a clear economic case for decisive global action on climate change. Our view is that the tourism industry should play its part in this action.

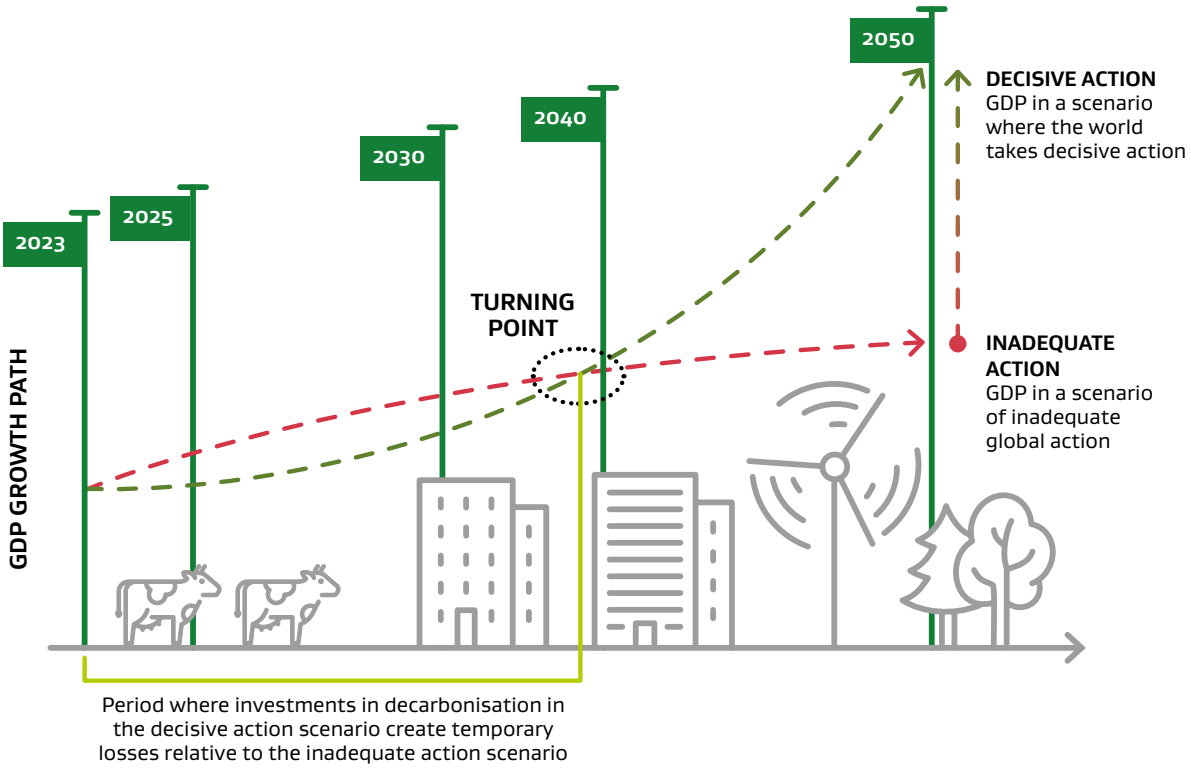


Figure 3: Economic benefits of decisive action to globally decarbonise (Deloitte, 2023)

17 https://www2.deloitte.com/content/dam/Deloitte/nz/Documents/about-deloitte/nz-turning-point-report.pdf

The negative impacts of tourism on the environment are well-recognised

In recent years, some commentators have highlighted the negative impacts that tourism can have on Aotearoa New Zealand's natural environment. Rapid growth in tourism volumes prior to COVID-19 highlighted and exacerbated many of these impacts.

One example of commentary is that of the Parliamentary Commissioner for the Environment (PCE) in his 2019 report *Pristine, popular. . . imperilled: The environmental consequences of projected tourism growth?*[18] The PCE noted that, while describing all tourism-related pressures on the environment was neither feasible nor practical, demonstrable place-based examples included:

- Tourist-generated waste and need for management at place
- Congestion and loss of natural quiet
- Development of infrastructure for visitor needs
- Wastewater pollution and degraded water quality
- Introduction of pests, weeds, and diseases
- Greenhouse gas emissions associated with travel (especially long-haul travel).

The PCE has also outlined how these impacts can be graded, from site-specific to general/dispersed impacts (see figure below). This demonstrates that our response and actions to these threats need to vary – some responses will be site-specific and regional, and others will need to be applied nationally.

Limitations on the available evidence and data can sometimes make it difficult to define precisely where tourism's impact starts and finishes, as distinct from that of other types of activity.

But tourism also makes a positive contribution to the environment

At the same time, it is important to acknowledge that tourism can also have a positive relationship with the environment. As so much of Aotearoa New Zealand's visitor appeal is based on nature-based experiences and activities, tourism has a unique opportunity to reinforce both Kiwi and international visitors' connection with the environment, and to use this to raise awareness, inform, and advocate for restoration and protection of our climate and biodiversity. Manuhiri can complete their visitor experiences better equipped and more motivated to protect te taiao on their return home.

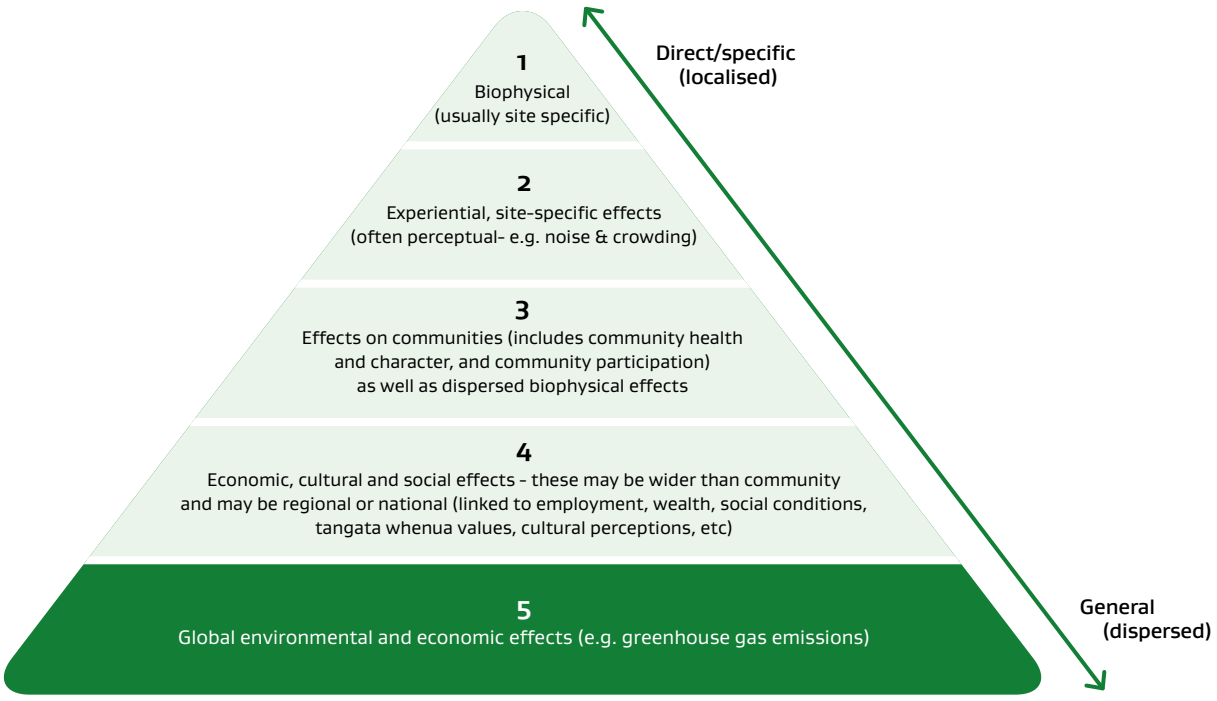


Figure 4: Gradation of the effects associated with tourism (Parliamentary Commissioner for the Environment, 2019)

18 https://pce.parliament.nz/media/mvud3vpb/report-pristine-popular-imperilled.pdf

The Tiaki Promise is an example of how the tourism industry works to deepen visitors' connection and understanding of the natural environment. A collaborative kaupapa between seven public and private tourism organisations[19], the Tiaki Promise invites visitors to share a connection to the natural world and aims to inspire and help them to travel safely and conscientiously. The initiative also encourages tourism operators to demonstrate their support for the principles of kaitiakitanga, including through activities that give back to the environment and their local communities.

In the spirit of the Tiaki Promise, many tourism firms are committed to giving back to the environment. For example, by engaging in regenerative activities such as native planting and trapping programmes. Others offer our visitors 'voluntourism' opportunities related to the environment.

Aotearoa New Zealand's tourism industry should play its part to protect and enhance te taiao

Mitigating climate change and protecting and restoring biodiversity matters to us all, but the risk of not doing so is particularly significant for the tourism industry as the health of the natural environment is so integral to our tourism offering and value.

As domestic and international consumers become increasingly aware of the environmental impacts of travel, competitor destinations are responding to this demand by developing new offerings and ways of demonstrating the green credentials of their tourism operators and destinations. If we want to continue to be a prominent choice for consumers who value te taiao, now and into the future, we too need to demonstrate our industry commitment to addressing environmental challenges.

Tourism's positive impact can be amplified

As a 'cross-cutting industry', the positive action that tourism takes has the potential to spill over into other parts of Aotearoa New Zealand's economy. For example, decarbonising air transport would impact other sectors that rely on air freight. Likewise, encouraging electrification of the rental vehicle fleet will ultimately have a resulting impact on the domestic car fleet when those rental vehicles are sold locally as ex-rentals.

Conversely, we can also learn from other industries that are grappling with the same challenges and encourage each other.

Further to this, innovative and practical solutions that we deploy to improve our environmental impact may be picked up by other destinations. Despite being a small country, Aotearoa New Zealand solutions can be exported around the world.

It's the right thing to do

Last but not least, taking steps to protect and enhance te taiao is the right thing to do.

It was clear from the outset that there was consensus in our Leadership Group that something must be done – and that that something requires more than offsetting our emissions. It needs to be transformational change.

19 The seven organisations/companies that collaborate on the Tiaki Promise are Air New Zealand, Department of Conservation, Local Government New Zealand, New Zealand Māori Tourism, Tourism Holdings Limited, Tourism Industry Aotearoa and Tourism New Zealand. For more information see: https://www.tiakinewzealand.com/en_NZ/.

The Whadjuk Declaration[20]

The Whadjuk Declaration is a climate change statement from the World Indigenous Tourism Summit (WITS) 2023. It exemplifies the deep connections between indigenous tourism and regenerative values. The Declaration, released at the 2023 WITS, highlights the role of indigenous values and wisdom in building tourism to be better equipped to survive in the future. It calls for the tourism industry to take urgent action to reduce carbon emissions and for governments to consult and partner with indigenous people on climate change policies and decisions. Key extracts include:

"As proud descendants of Indigenous people from around the world, we, the 2023 WITS Delegates, recognise and accept our inherent social and cultural obligation gifted to us from our 'Old People' (Ancestors) to protect, heal and preserve our lands; or in essence "look after country". We are concerned with the real and ever-increasing threat climate change poses to our way of life; and as custodians(kaitiaki) and knowledge holders of boodjar (country), we have a deeply vested responsibility and interest to protect it.... We are hereby resolved to adopt the following principles; that...

- Respective authorities immediately place urgent priority on development and implementation of policies to assist in the reduction of carbon emissions to at least meet the targets of the Paris agreement.
- Tourism organisations, tourism peak bodies, tourism operators take urgent action to reduce carbon emissions, and take whatever other opportunities present, to lower emissions and slow climate change.
- Respect for customary law and lore, land and water, traditional knowledge, traditional cultural expressions, cultural heritage will appropriately underpin all planning tourism decisions related to emissions reduction policy development.
- Indigenous peoples will determine the extent and nature and organisational arrangements for their participation in climate change policy development and that governments and multilateral agencies will support the empowerment of Indigenous people.
- That governments have a duty to consult and accommodate Indigenous peoples before undertaking decisions on public policy and programs designed to foster the development of climate change policy.
- That equitable partnerships between the tourism industry and Indigenous people will include the sharing of cultural awareness and skills development which support the well-being of communities and enable enhancement of individual livelihoods."

  Whadjuk is one 14 groups of the Noongar Bibbulmun Nation. The city of Perth and its surrounding suburbs are on Whadjuk Boodja (country/lands). The 2023 WITS was held in Perth, Australia.

20 Source: John Barrett, member of the Leadership Council of the World Indigenous Tourism Alliance and the Environment ITP Leadership Group. More information can be found here: https://nit.com.au/12-04-2023/5557/world-indigenous-tourism-summit-in-boorloo-inspires-first-nations-climate-statement

OUR FOUNDATIONS AND INPUTS

This draft Action Plan sits within a rich foundation of initiatives and is informed by previous strategies

This draft Action Plan does not sit in isolation. The Leadership Group has been conscious throughout the process of previous work undertaken and related government workstreams that are in train. The goal is to ensure that the Plan builds on previous work and enhances existing initiatives.

Aotearoa New Zealand is party to several climate- and environment-related agreements

In recognition of the need to mitigate greenhouse gas emissions and protect our biodiversity, as a nation we are party to agreements including the:

- Paris Agreement under which Aotearoa New Zealand has a commitment to reduce greenhouse gas emissions. Our Nationally Determined Contribution (NDC) is to reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030.
- United Nations Convention on Biodiversity.
- In addition, Aotearoa New Zealand passed the Climate Change Response (Zero Carbon) Amendment Act in 2019. This sets a target to reduce long-lived greenhouse gases to net zero by 2050.

The reports of the Parliamentary Commissioner for the Environment and the Tourism Futures Taskforce are valuable whakapapa

The PCE published two reports in 2019 and 2021 on the relationship between tourism and the environment in Aotearoa New Zealand. As previously referenced, the first report Popular, Pristine, Imperilled: The environmental consequences of projected tourism growth outlined the pressures that tourism can impose on the environment.[21] The second report Not 100% - but four steps closer to sustainable tourism listed possible interventions.[22]

See report-pristine-popular-imperilled.pdf (pce.parliament.nz) and https://pce.parliament.nz/publications/not-100-but-four-steps-closer-to-sustainable-tourism/

In 2020, the Tourism Futures Taskforce published its We Are Aotearoa report which advised on changes that could be made to the whole tourism system to improve its environmental, economic, social, and cultural impact. The recommendations related to a variety of areas that align with our mahi, including addressing carbon emissions through offsetting, new aviation fuels, other modes of transport, restoring landscapes and biodiversity, funding environmental projects and data collection, certification and standards, and innovation.

See the Tourism Futures Taskforce interim report – We are Aotearoa (https://www.mbie.govt.nz/assets/the-tourism-futures-taskforce-interim-report-december-2020.pdf)

21 The environmental pressures the PCE identified included: loss of natural quiet, water quality degradation, solid waste generation and management, infrastructure development and landscape modification, biodiversity loss and biosecurity risk and greenhouse gas emissions.

22 The PCE's second report proposed four policy proposals: a departure tax that reflects the environmental cost of flying internationally; making any future central government funding for tourism infrastructure conditional on environmental criteria; clarifying and if necessary, strengthening the tools that the Department of Conservation can use to address the loss of wilderness and natural quiet; and improvements and strengthening of requirements around freedom camping.

A range of other reports and initiatives have formed key inputs

Other reports and kaupapa that have informed our work include:

- the New Zealand Aotearoa Government Tourism Strategy (2019)
- the Tourism Industry Aotearoa Tourism 2025 and Beyond report
- the Department of Conservation Heritage and Visitor Strategy
- Te Mana o te Taiao, the Aotearoa New Zealand Biodiversity Strategy
- Te hau mārohi ki anamata, Aotearoa New Zealand's first Emissions Reduction Plan
- Urutau, ka taurikura: Kia tū pakari a Aotearoa i ngā huringa āhuarangi, the National Adaptation Plan
- Predator Free 2050
- the Financial Sector (Climate-related disclosures and other matters) Amendment Act 2021
- the Circular Economy and Bioeconomy Strategy
- the Equitable Transitions Strategy
- the National Policy Statement for Indigenous Biodiversity
- Destination Management Plans from a number of Regional Tourism Organisations
- the Milford Opportunities Project
- Tourism Industry Aotearoa's Tourism Sustainability Commitment and Tourism Carbon Challenge
- the Aotearoa Circle Tourism Sector Climate Change Scenarios and Tourism Sector Climate Change Adaptation Roadmap

Environmental challenges with tourism are universal, and we borrow and share best practices internationally

Throughout the process, we have also been inspired by innovation and action happening outside of Aotearoa. We sought to learn from the different approaches adopted by other destinations seeking to achieve similar transformative goals.

The Aotearoa Circle has taken the lead on supporting the industry to adapt to climate change

Supporting the tourism industry to adapt to climate change is closely related to our mahi on climate change mitigation and enhancing biodiversity.

With funding from the Tourism ITP budget, the Aotearoa Circle has explored how the tourism industry may be impacted under different climate change scenarios.

See: https://www.theaotearoacircle.nz/reports-resources/tourism-sector-climate-change-scenarios.

The Aotearoa Circle is now finalising a Tourism Sector Climate Change Adaptation Roadmap of actions to support the industry to develop resilience to the impacts of climate change.

There are strong linkages between our Leadership Group, the Aotearoa Circle, and our respective outputs. A number of our Leadership Group have led, or been major contributors to, the Aotearoa Circle work. There is alignment between our recommended actions, and we are committed to working closely together as we progress towards implementation.

Photo: newzealand.com

TIROHANGA HOU

Ka ora te whenua, ka ora te tāngata

When the land is well, the people are well

INTRODUCING THE TIROHANGA HOU

We propose six Tirohanga Hou – new outlooks or ways of thinking and doing things. The Tirohanga Hou have potential to enhance the relationship between tourism and the environment in Aotearoa New Zealand.

The Tirohanga Hou, and the actions that sit under each one, are deliberately light on details of implementation at this stage, as we want to allow space for others to shape the ideas and direction of this Plan. All Tirohanga Hou are intended to be driven in partnership through our ITP partners: the tourism industry, workers, government, Māori, regions, and non-governmental organisations. Following consultation, consideration will be given to prioritisation, sequencing, and implementation.

The six Tirohanga Hou are:

- **Tourism journeys are decarbonised**
- **Tourism champions biodiversity**
- **Visitor management is optimised for te taiao**
- **Accelerated technology uptake and innovation enable regeneration**
- **Tourism businesses are incentivised and enabled for sustainability and regeneration**
- **Tourism system and its levers are optimised and resourced to support regeneration**

Photo: newzealand.com

TOURISM JOURNEYS ARE DECARBONISED

Summary

This Tirohanga Hou explores how Aotearoa New Zealand can achieve net zero emissions tourism by 2050, to uphold our commitments under the *Paris Climate Agreement* in efforts to limit global warming to 1.5°C and avoid the severe climate change impacts, such as more frequent and severe droughts, heatwaves, and rainfall.

This Tirohanga Hou identifies four focus areas to decarbonise tourism journeys. These are:

A. **Create a Tourism Decarbonisation Roadmap** which proposes emissions reductions targets, identifies actions required to meet these, and calculates the energy requirements of a net zero-carbon tourism system.

B. **Rapidly invest in low-carbon technologies to enable long-haul air and cruise travel** including the development and deployment of low-carbon fuel and fuelling infrastructure for aviation and cruise. The immediate actions are for government and Air New Zealand to co-fund feasibility studies for the domestic production of Sustainable Aviation Fuel, and to ensure tourism representation on Sustainable Aviation Aotearoa, the public-private leadership body focused on decarbonising aviation.

C. **Leverage tourism to advocate for rapidly decarbonising the domestic transport that is used by visitors.** This might include (for example) exploring avenues for scaling up inter-regional passenger rail and coaches; incentivising electrification of the visitor vehicle fleet and using tourism to explore innovative public transport systems.

D. **Assess the environmental footprint of our international visitors** so that we have a greater understanding of what kind of visitors are optimal for te taiao, the economy, and Aotearoa New Zealand as a whole; and can use this information to inform our activities to shape the demand and behaviour of visitors.

One of the Tīwaiwaka Principles (refer page 10 for more information) has been particularly resonant for identifying a pathway to tourism that produces net zero carbon emissions:

Principle 2: We are not centre of the universe, but we are part of it

The carbon that we use for energy is the gift of trees, plants, and micro-organisms that have lived and died over hundreds of millions of years. The Tīwaiwaka principles encourage us to treasure this gift and use it with care and respect. The greenhouse gas emissions of tourism in Aotearoa New Zealand play a role in affecting the climate of the whole planet. The climate of our whole planet, and the actions of people in other countries and industries, affects us. We must play our part in supporting global efforts to restore our climate to a state of balance.

Why are we decarbonising tourism?

This Tirohanga Hou underpins the second pillar of the scope of the Tourism Environment ITP:

Transforming Aotearoa New Zealand's visitor economy to a low carbon emissions industry

Te taiao and ngā tangata need us to decarbonise urgently

In recent reports, Deloitte[23] and Aotearoa Circle[24] have demonstrated the personal, social and economic risks of not taking significant decarbonisation action across the economy immediately. Deloitte has shown that decisive global action on climate change that succeeds in limiting global warming to as close

23 Deloitte (2023), *New Zealand's Turning Point*, https://www2.deloitte.com/nz/en/pages/about-deloitte/articles/new-zealands-turning-point.html

24 Aotearoa Circle (2023), *Tourism Sector Climate Change Scenarios*, https://www.theaotearoacircle.nz/reports-resources/tourism-sector-climate-change-scenarios

to 1.5°C above pre-industrial levels as possible, could add $64 billion to Aotearoa New Zealand's economy by 2050. Inadequate action could cost $4.4 billion over the same period. If urgent action is taken, there is an opportunity for the economy, communities, and people to thrive.

We have committed to net zero carbon emissions by 2050 and tourism has an important role to play

Through the Climate Change Response (Zero Carbon) Amendment Act 2019, the New Zealand Government has committed to net zero greenhouse gas emissions in Aotearoa New Zealand (except for methane from agriculture and waste) by 2050. This Act upholds our commitments under the *Paris Climate Agreement.*

The tourism system must feature prominently in any efforts to reduce Aotearoa New Zealand's carbon footprint. In his 2019 report on the impact of tourism on the environment, the Parliamentary Commissioner for the Environment (PCE) found that visitors to Aotearoa New Zealand are responsible for approximately 9% of the country's domestic emissions.[25] These calculations do not include the emissions produced from international transport (such as from people flying to and from Aotearoa New Zealand and the emissions from the transport of goods that are imported and exported). In 2024, the Climate Change Commission will recommend whether emissions from international shipping and aviation should be included in Aotearoa New Zealand's 2050 carbon targets.[26] If international transport emissions are included, then tourism may make up a greater proportion of Aotearoa New Zealand's carbon footprint.

Photo: newzealand.com

25 Parliamentary Commissioner for the Environment (2019), Popular, Pristine, Imperilled: *The environmental consequences of projected tourism growth,* https://pce.parliament.nz/publications/pristine-popular-imperilled-the-environmental-consequences-of-projected-tourism-growth/

26 Climate Change Commission (accessed 1 May 2023), *Our upcoming work: Review of inclusion of emissions from international shipping and aviation in 2050* target, https://www.climatecommission.govt.nz/our-work/our-upcoming-work/#review-of-international-shipping-aviation-emissions

A tourism lens can highlight opportunities to accelerate transport decarbonisation

Although long-haul emissions are not included in 2050 targets, Stats NZ calculates that tourism transport – including air, space, and household use of vehicles and commercial transport, totalled 5,212 kilotonnes of carbon-dioxide equivalent emissions in 2019; and that these transport emissions represented 89.2 per cent of the emissions related to tourism.[27] As the PCE wrote in his 2021 report on the impact of tourism on the environment, due to our remote distance "New Zealand's tourism offering is reliant on long-haul aviation."[28] Carbon emissions from international transport must be addressed as a top priority.

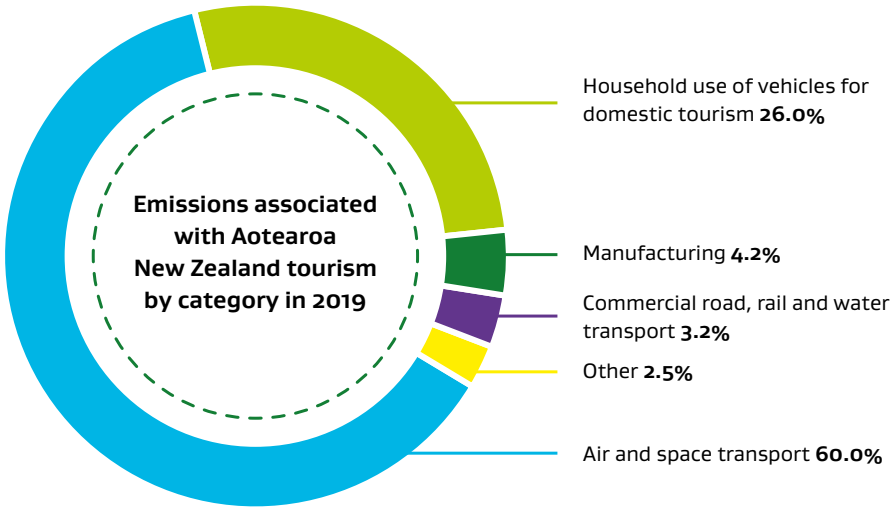


Figure 5: Emissions associated with Aotearoa New Zealand tourism by category in 2019[29]

FOCUS
A

Tourism Decarbonisation Roadmap

The first recommended action of this Tirohanga Hou is to **create a Tourism Decarbonisation Roadmap.** This could:

1. Propose emissions reduction targets
2. Identify the energy requirements of a decarbonising tourism system
3. Develop data, measures, and indicators for demonstrating the current and projected emissions profile of tourism
4. Identify some of the actions that could be taken to achieve the proposed targets using the energy we are likely to have available Emissions reduction targets

The Tourism Decarbonisation Roadmap could forecast Aotearoa New Zealand's tourism emissions if no decarbonisation action is taken to create a baseline. Stakeholders and experts could then be consulted with the aim of agreeing overarching targets for the decarbonisation of Aotearoa New Zealand tourism. These overarching targets could be supported by specific targets for the decarbonisation of international

27 Stats NZ (2021) *Greenhouse gas emissions (industry and household): Year ended 2019*, https://www.stats.govt.nz/information-releases/greenhouse-gas-emissions-industry-and-household-year-ended-2019/#:~:text=For%20the%20year%20ended%20December,30%20kilotonnes)%20in%20household%20emissions.

28 Parliamentary Commissioner for the Environment (2021), *Not 100% - but four steps closer to sustainable tourism*, https://pce.parliament.nz/publications/not-100-but-four-steps-closer-to-sustainable-tourism/

29 Stats NZ (2021) *Greenhouse gas emissions (industry and household): Year ended 2019*, https://www.stats.govt.nz/information-releases/greenhouse-gas-emissions-industry-and-household-year-ended-2019/#:~:text=For%20the%20year%20ended%20December,30%20kilotonnes)%20in%20household%20emissions.

tourism transport, and for the decarbonisation of tourism within Aotearoa New Zealand. Alternatively, the decarbonisation targets for tourism could be by sub-sector such as aviation, maritime, land transport, accommodation, and activities.

The Tourism Decarbonisation Roadmap could consider the variety of decarbonisation targets and methodologies that have already been proposed and committed to across the economy, at local, national, and international levels. Our aspiration is for tourism to decarbonise ahead of global and economy-wide targets.

2020
- Carbon neutral aviation emissions growth on 2019 levels (International Civil Aviation Organisation)

2030
- Queenstown Lakes will have a carbon zero visitor economy (Queenstown NZ Destination Management Plan)
- New Zealand is a leader in trialling and adopting low-emissions flight alternatives and developing their supporting infrastructure (Draft New Zealand Aerospace Strategy)

2035
- New Zealand's domestic transport emissions are reduced 41% of 2019 levels (Decarbonising Transport Action Plan)
- 30% of New Zealand's light fleet are zero-emissions vehicles (Decarbonising Transport Action Plan)

2050
- New Zealand achieves a net-zero economy (Zero Carbon Act)
- International Air Transport Association Airlines produce net-zero emissions (Fly Net Zero)

Figure 6: Selection of targets and commitments relating to the decarbonisation of Aotearoa New Zealand tourism

Energy requirements for decarbonising tourism

The transformation of tourism towards electrification and other forms of sustainable energy may provide several case studies that could offer insight into the scale and distribution of energy requirements for decarbonising the wider economy. The decarbonisation of Aotearoa New Zealand's transport system in particular is likely to require the largest shift in energy that the country has ever seen. There are concerns that the demand for renewable electricity will far outstrip what the country is currently able to supply.

The *Tourism Decarbonisation Roadmap* could identify the energy requirements of decarbonising tourism in New Zealand at each stage between now and 2050. This could include estimating the renewable electricity, hydrogen and biofuels that will be needed to decarbonise tourism effectively and efficiently. This may also identify the trade-offs and opportunity costs between different approaches to fossil fuel replacement. The potential for the tourism industry to leverage their land and resources to generate renewable electricity could also be included.

This information will support the development of the *New Zealand Energy Strategy*, the second *Emissions Reduction Plan*, and other economy-wide decarbonisation initiatives; as well as guiding investment decisions for major tourism businesses and the energy sector.

In addition, the *Tourism Decarbonisation Roadmap* could identify some of the actions that could be taken between now and 2050 to ensure an effective, efficient, and equitable transition to net zero carbon tourism in Aotearoa New Zealand. Some of these actions may relate to shifts in: technology, visitor and business behaviour, investment and pricing, or regulatory levers. These levers are explored across all the remaining Tirohanga Hou.

The remainder of this Tirohanga Hou specifically explores decarbonising international and domestic visitor transport, with a focus on technology and visitor behaviour levers. Other Tirohanga Hou explore in detail the levers for decarbonising tourism, including those relating to visitor management, technology and innovation, business incentivisation and enablement, investment and pricing, and regulation and system-structure.

FOCUS
B

Decarbonising international visitor transport

International transport produces a large portion of Aotearoa New Zealand's tourism emissions

Due to our remote geographic location, all international visitors travel more than 2,000km to Aotearoa New Zealand. This international passenger air and sea travel accounts for a substantial proportion of the country's tourism-related emissions.

The majority of international tourism travel occurs by air

More than 90 per cent of international arrivals to Aotearoa New Zealand travel by plane, as flying is faster and often more affordable than the alternative options. Left unchecked, global long-haul aviation is expected to quadruple its emissions by 2050 and will reach 41 per cent of total tourism emissions globally.[30] Aviation is one of the hardest industries to decarbonise, and so action to begin this journey should be taken immediately. Decarbonising aviation requires coordination and investment between airlines, airports, aircraft manufacturers, the energy system, and a wide range of government actors.

Decarbonising international travel for tourists has flow-on benefits

The tourism system is not alone in trying to solve the issue of decarbonising long-haul international transport. All of Aotearoa New Zealand's export and import industries for physical goods and services such as international education rely upon either international aviation (for fast freight and passengers) or shipping (for slow freight). Our immigration, defence, and foreign affairs systems, alongside many others, also depend upon international air and sea transport.

Tourism must be a part of this conversation, as international tourism is essential to the economics of international aviation. During COVID-19 the halt in international tourism resulted in severe disruption to our trade routes. Given the centrality of international travel to tourism, and the necessity of international tourism to enable a sizeable proportion of international trade, tourism must play a central role in the decarbonisation of long-haul transport.

Additionally, decarbonising international aviation will have the benefit of reducing the emissions of outbound tourism of New Zealanders who are flying to and from Aotearoa New Zealand to visit other parts of the world. New Zealanders are avid travellers, with offshore holidays accounting for $9 billion per year expenditure pre-COVID-19.[31]

30 The Travel Foundation (2023) *Envisioning Tourism in 2030 and Beyond*, http://www.thetravelfoundation.org.uk/envision2030/
31 Tourism New Zealand (2021) *Annual Report 2020/2021*, https://www.tourismnewzealand.com/assets/about/publications/annuals/tnz-annual-report-fy21.pdf

There are also economic considerations for decarbonising

Deploying low-emissions fuels, aircraft, and cruise ships will come at a short-term cost. Airfares are likely to increase for those airlines that decarbonise sooner, resulting in a competitive disadvantage (unless airlines can charge a premium for a low-carbon service). For this reason, the system must incentivise all airlines – both domestic and international – to decarbonise. Swift implementation of an enabling and supportive policy and regulatory regime will enable this. As most international flights to and from New Zealand are from overseas-based airlines, decarbonisation efforts will require partnering with and incentivising long-haul providers to decarbonise. The Climate Change Commission is currently determining whether emissions from international aviation and maritime should be included in our Emissions Reduction Plans. The commission will advise Government by the end of 2024. If these emissions are included, there may be subsequent policy adjustments such as including aviation in the Emissions Trading Scheme, which could significantly affect the pricing and economics of the aviation and maritime sectors.

CASE STUDY

ROLE OF AIRPORTS IN SUPPORTING AVIATION DECARBONISATION

Christchurch Airport is a global leader in decarbonisation, having been the first in the world to reach the top of the Airport Council International's airport carbon accreditation scheme.[32] vSince 2015, Christchurch Airport has permanently removed 90% of its Scope 1 and 2 emissions (the emissions that an organisation is directly responsible for) through a number of key projects, including replacing all diesel and LPG boilers, converting the entire corporate vehicle fleet to EVs, and replacing all terminal lighting with LEDs.

Abating the airport's Scope 3 emissions (the emissions that an organisation is indirectly responsible for) is a major challenge, as for airports this includes aviation emissions, but Christchurch Airport is committed to doing so. The vast majority of the mahi that Christchurch Airport's sustainability team now undertakes is focused on enabling sustainable aviation to succeed in Aotearoa.

Major projects include developing a 400-hectare renewable energy precinct, Kōwhai Park[33], to power the low- and zero-emission aircraft of the future; working as part of the Hydrogen Consortium[34] to design a green hydrogen ecosystem for aviation; and installing electric ground power units at aircraft stands so that pilots can use renewable energy to power planes' systems when they are at the airport. The latter would be instead of using fuel to do so.

You can find out more on the airport's website: www.christchurchairport.co.nz/about-us/sustainability.

32 Christchurch Airport (2020) *Christchurch Airport gains world first recognition*, https://www.christchurchairport.co.nz/about-us/who-we-are/media/2020/christchurch-airport-gains-world-first-recognition/

33 Christchurch Airport (accessed 2 May 2023) *Kōwhai Park*, https://www.christchurchairport.co.nz/about-us/sustainability/kowhai-park/

34 Christchurch Airport (2023) *Green hydrogen aviation taking off*, https://www.christchurchairport.co.nz/about-us/sustainability/kowhai-park/

Decarbonising aviation requires a combination of biofuels, hydrogen, and electric energy

Since the 1990s, progress has been made in increasing the efficiency of aircraft while still using conventional jet fuel and without restricting the availability of travel. These increases in fuel efficiency have occurred through changes to the fleet, operational efficiencies, and changes to networks. As a result, Aotearoa New Zealand's domestic aviation emissions have remained almost flat over the last 30 years despite many more people traveling. However, these changes to efficiency are less effective for long-haul aviation. Emissions increased by 66 per cent for Aotearoa New Zealand's international aviation from the 1990s until 2020.

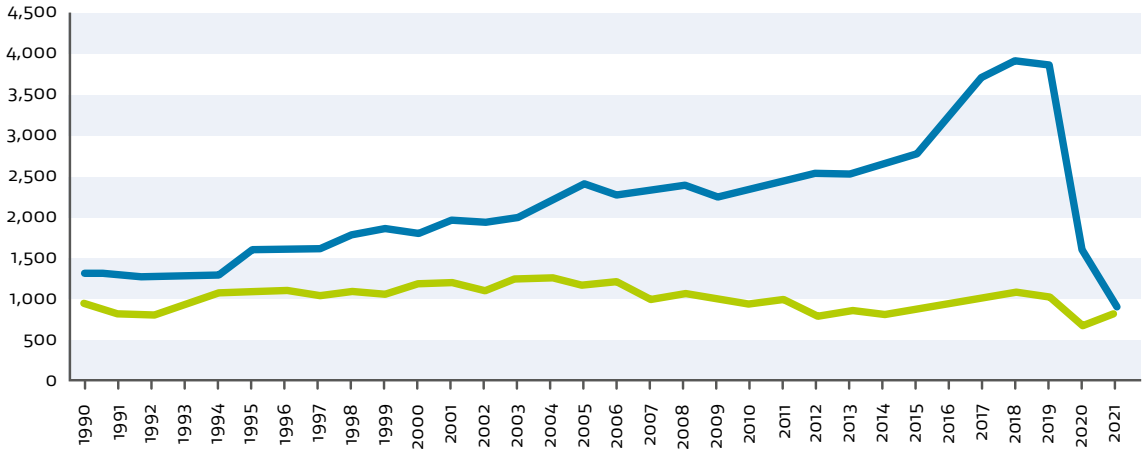


Figure 7: Comparison of emissions from Aotearoa New Zealand's domestic and international aviation (kt CO2-e)[35]

There are three primary candidates for decarbonising aviation: sustainable aviation fuels (SAF), green hydrogen, and electricity. The opportunities and barriers to achieving uptake of these technologies are explored in Appendix 1.

Decarbonising international maritime requires access to shore power

In 2019, approximately 9% of international tourists visiting Aotearoa New Zealand travelled by cruise ship.[36] While the total annual volume of visitor arrivals via cruise is small, the community perception of the environmental impact of cruise ships is large due to their visibility in cruise destinations.

As with aviation, a combination of biofuels, hydrogen, and electric power could provide the pathway for decarbonisation of cruise ships.[37] Hydrogen can be used to generate electric power and is being deployed in some cruise ships for this purpose. While in port, cruise ships can draw on land-based energy sources – referred to as 'shore power' to provide electricity to their operations. Cruise companies are working with destinations to create a green source of shore power, to enable net-zero operations while in port. Almost all cruise ships that operate in Aotearoa New Zealand can receive shore power, but they are not currently able to use it due to a lack of infrastructure in the ports.

A small portion of travellers arrive to Aotearoa New Zealand by yacht, and an even smaller number in passenger rooms of cargo ships. However, these options are unappealing to most travellers due to the much longer period of travel, the high cost compared to aviation, and the lack of comfort compared to cruise ship travel.

35 Ministry for the Environment *New Zealand's greenhouse gas inventory* https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-1990-2021/

36 Stats NZ (2019) *Cruise ship numbers and spend swell*, https://www.stats.govt.nz/news/cruise-ship-numbers-and-spend-swell

37 McKinsey & Company (2023) *Charting fuel choices as the shipping industry sails towards net zero*, https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/charting-fuel-choices-as-the-shipping-industry-sails-toward-net-zero

Actions for decarbonising international tourism travel

The Government and other members of our Group have begun taking a range of actions to support the decarbonisation of international travel.

- The Government and Air New Zealand are co-funding feasibility studies into the domestic production of SAF.
- A tourism representative will be nominated for Sustainable Aviation Aotearoa's strategy working group. Sustainable Aviation Aotearoa is a public-private leadership body focused on decarbonising aviation. Its work includes identifying opportunities to increase operational efficiencies, infrastructure improvements, and frameworks to encourage research, development and innovation in sustainable aviation.[38]
- The Government is exploring the introduction of a SAF mandate, whereby airlines departing from or within Aotearoa New Zealand would be required to use a certain percentage of SAF in their aircraft, with the percentage increasing incrementally over time.

Further actions to decarbonise international tourism travel would be informed by the Tourism Decarbonisation Roadmap, the recommendations of Sustainable Aviation Aotearoa, and feedback from the public on the highest-impact ways to decarbonise international travel. This may also include actions relating to cruise ship travel, such as exploring the feasibility of constructing green shore power infrastructure.

FOCUS
C

Decarbonising domestic visitor transport

There is an opportunity to leverage tourism to decarbonise domestic transport in Aotearoa New Zealand

International and domestic tourism both result in visitors travelling within Aotearoa New Zealand. A tourism lens can highlight opportunities to leverage tourism to accelerate domestic transport decarbonisation.

Firstly, a tourism lens can highlight visitor perspectives, needs, trends, and preferences, ensuring that government and industry actions to decarbonise are effective for this portion of transport users.

Secondly, a tourism lens can ensure that the influence and purchasing power of the tourism transport systems are harnessed to accelerate the transition of the wider transport system. This is because tourism covers a range of transport sectors (such as airlines, airports, tour companies, coach companies, rental vehicle companies and public transport) and because tourism is a large industry.

Thirdly, the introduction of low-carbon technologies (such as electric vehicles in the rental car industry) can help to normalise these technologies for New Zealanders. They may be initially exposed to technologies while holidaying domestically and become more comfortable incorporating them into their daily life.

Te Manatū Waka / Ministry of Transport has launched the *Decarbonising Transport Action Plan 2022-2025*,[39] which builds on the Transport chapter in the Emissions Reduction Plan[40] and aims for a 41 per cent reduction of Aotearoa New Zealand's transport-related emissions by 2035.

38 Te Manatū Waka Ministry of Transport (2022) *Mahere Hohenga kia Whakakorea te Waro ā-Kawenga 2022-25 Decarbonising Transport Action Plan 2022-25*, https://www.transport.govt.nz/assets/Uploads/MOT4716_Emissions-Reduction-Plan-Action-Plan-P04-V02.pdf

39 Te Manatū Waka Ministry of Transport (2022) *Mahere Hohenga kia Whakakorea te Waro ā-Kawenga 2022-25 Decarbonising Transport Action Plan 2022-25*, https://www.transport.govt.nz/assets/Uploads/MOT4716_Emissions-Reduction-Plan-Action-Plan-P04-V02.pdf

40 Ministry for the Environment (2022) Chapter 10: *Transport, of Aotearoa New Zealand's first emissions reduction plan*, https://environment.govt.nz/publications/aotearoa-new-zealands-first-emissions-reduction-plan/transport/

Some of the focus areas in the *Decarbonising Transport Action Plan 2022-2025* that overlap with the tourism system include:

- accelerating the uptake of low-emission vehicles
- supporting the rollout of electric vehicle-charging infrastructure
- Improving the reach, frequency, accessibility, and quality of public transport
- accelerating the decarbonisation of the public transport bus fleet
- working to decarbonise domestic aviation
- progressing the decarbonisation of maritime transport including cruise ships

Analysis of the sections of the visitor journey can highlight specific opportunities

Analysis of the individual sections of the visitor journey can demonstrate the transport options that already exist and how they compare, and the obstacles that have prevented further decarbonisation across the system. We have divided domestic transport into three sections to support this analysis:

- Inter-regional travel between destinations
- Travel from urban centres to remote destinations
- Travel within urban centres

Inter-regional travel between destinations

Domestic and international visitors need to travel between regions, towns, and cities to reach their destinations. This is usually done either by road using our roading network or by air using regional airports. Ferry travel between Wellington and Picton is a core connecting component of inter-regional travel.

Compared to other countries, tourism transport between destinations in Aotearoa New Zealand depends on aviation to a greater extent, due to the distances and complex geography between our major cities. As discussed earlier, a combination of electrification, green hydrogen, and SAF can support domestic aviation decarbonisation.

There are also regulatory levers to support the shift away from aviation for inter-regional travel. For example, France has banned domestic flights on routes that could be travelled via train in under two and a half hours, a decision which affects 12% of domestic flights.[41] Austria has also included a condition on Austrian Airlines that domestic flights are eliminated when there is an alternative train journey shorter than three hours. Mass transit, such as trains and coaches, can require much lower energy per passenger and produce fewer emissions. While Aotearoa New Zealand has a small number of inter-regional passenger trains and one inter-regional passenger coachline, infrastructure and availability of passenger routes are less prevalent than in comparable global tourism destinations.

41 Airport Technology (2022) *France bans domestic flights in a bid to reduce carbon emissions*, https://www.airport-technology.com/comment/france-bans-domestic-flights/

CASE STUDY

USING TECHNOLOGY TO INCREASE INTER-REGIONAL CAR-POOLING

Carpooling in Aotearoa New Zealand is mainly achieved through social media or in-person agreement.

However, overseas a number of online platforms exist to support carpooling. BlaBlaCar is an online marketplace (app and web-based) for carpooling that specifically focuses on connecting drivers and passengers who plan to travel between cities and wish to share the cost of the journey. It is available in 22 countries (but not yet in Aotearoa New Zealand).[42]

Roadtrip is an Aotearoa New Zealand-based app that calculates the cost of fuel and the emissions profile of vehicle journeys, using vehicle number plates to calculate the fuel source and fuel efficiency. Roadtrip supports carpooling arrangements by accurately calculating the fair cost contribution of each passenger on a journey.[43]

Photo: newzealand.com

42 BlaBlaCar (accessed 1 May 2023), *Carpool to thousands of destinations at low prices*, https://www.blablacar.co.uk/carpool
43 Roadtrip (accessed 1 May 2023), *Magic fuel cost calculator*, https://www.roadtrip.nz

Most inter-regional tourism travel in Aotearoa New Zealand is done by light vehicles (cars and vans) – both privately owned (most domestic tourism) and rented (more common for international visitors). The options for reducing emissions from light vehicles include:

- Switching from private vehicle usage to mass transit, car-sharing, or carpooling
- Switching from internal combustion engine (ICE) vehicles to hybrid and electric vehicles (EV)
- Replacing high-emitting fossil fuels with lower-carbon biofuels.

The obstacles to switching to electric vehicles are the higher up-front cost of purchasing an EV, fewer options for vehicles, and a lack of EV charging infrastructure (intended to be addressed through the *EV Charging Strategy*).[44] The Energy Efficiency and Conservation Authority found that public EV chargers are being used primarily for long distance travel. 75% of survey respondents said that they typically use public chargers during long weekend and holiday trips.[45]

As the transition to EVs accelerates, a further obstacle may become increasingly evident: limited electricity capacity. The electricity grid, transformers and distribution network will need to be able to support a substantial increase in demand for renewable electricity. We intend to explore the renewable electricity needs through the creation of the Tourism Decarbonisation Roadmap, in support of the *New Zealand Energy Strategy.*

The obstacles to using biofuels are similar to SAF: they are more expensive and less readily available than fossil fuels; they still produce some carbon emissions due to the combustion required; and there is a risk that a growing market for biofuels could result in unsustainable land use practices, such as deforestation. Due to the limited availability, it may be effective to reserve biofuels for hard-to-abate sectors with no other options, such as international aviation.

Travel from urban centres to remote tourism destinations

Many of Aotearoa New Zealand's popular tourism destinations are in remote locations that lack substantial transport infrastructure and are not on any arterial transport routes. Examples include the journey between Queenstown and Milford Sound (shown in the graphic) or the journey between Taupō and the Tongariro Crossing. Local governments (councils) lead strategies for decarbonising transport within their territories, with support from Regional Tourism Organisations and Waka Kōtahi.

CASE STUDY

ELECTRIFYING FERRIES TO AOTEAROA NEW ZEALAND'S ISLANDS

Aotearoa New Zealand is famous for our islands and sounds, a core attraction for many domestic and international visitors. Transport to these islands and sounds is usually by diesel ferry. However, there are opportunities to decarbonise these in the near term.

One example is East by West Ferries, which operates transport between Wellington City Central, the conservation island of Matiu Somes, and the Wellington suburbs of Days Bay and Eastbourne. In March 2022 the company launched the first fully electric, high speed passenger ferry in the southern hemisphere. East by West Ferries has partnered with energy company Meridian to show their support for 100% renewable energy generation.[46]

Electric vehicle users can face particular challenges due to the lack of charging stations in remote areas. *The EV Charging Strategy* sets a target to provide public charging at community facilities for all settlements with 2,000 or more people. The strategy does not specifically identify the needs of remote popular tourism destinations with smaller permanent populations.

44 Hīkina Whakatutuki Ministry of Business, Innovation and Employment (2023), *Electric Vehicle charging strategy: Charging our future*, https://www.mbie.govt.nz/about/news/electric-vehicle-charging-strategy-charging-our-future/

45 EECA (2023) *Electric vehicle charging strategy* https://www.eeca.govt.nz/insights/eeca-insights/electric-vehicle-charging-survey/

46 East by West (accessed 1 May 2023), *Southern hemisphere's first electric ferry launched in Wellington*, https://eastbywest.co.nz/electric-ferry

The effectiveness of different transport options for accessing a remote location varies substantially depending on the local geography and infrastructure. Decisions need to be made locally and supported nationally to enable a transition to low carbon transport systems.

CASE STUDY

COLLABORATIVELY CREATING 'BETTER BUS', A COLLECTIVE SHUTTLE BETWEEN NELSON AND ABEL TASMAN

In 2022, three tourism businesses in the Nelson Tasman region started a new shared shuttle service called 'Better Bus' that has quickly grown to be supported by over 20 businesses. Together, the businesses pooled their vehicles to enable a daily bus service between Nelson and Abel Tasman, stopping at Richmond and Motueka. This collective solution replaced the previous model of each business individually transporting people who had booked on their tours. In one day, there were clients from 13 different companies on the same shuttle – a great result in terms of reduced vehicle movements and emissions reduction.

The introduction of Better Bus for the 2022/23 summer season resulted in an estimated 1,502 fewer bus and shuttle movements between Nelson and the Abel Tasman National Park. This is equivalent to 75,000 fewer kilometres travelled over the five months, saving approximately 16,000kg of carbon dioxide emissions. It would require growing 264 tree seedlings for ten years to sequester the same amount of carbon.

In addition to reducing emissions, Better Bus has resulted in a better experience for visitors and for locals. Locals now have a low-emission, affordable option for travelling between Nelson and the Abel Tasman if they are unable or prefer not to drive. Other businesses in Abel Tasman and Nelson have also benefited from the Bus, saying that they are seeking fewer cancellations as visitors now have a reliable way to travel between the town destinations.[47]

Travel within urban centres

Low-carbon transport within towns and cities can be made more visitor-friendly.

Visitors travel within the regions, towns, and cities that they visit. Local transport plans are often developed for residents first and foremost, which can overlook impacts on visitors. A tourism lens emphasises the need for low-carbon public transport between central business districts and transport hubs such as airports and train stations, and the need for public transport to be accessible for visitors.

Private vehicles, taxis, and app-based ridesharing remain popular in towns and cities. Local public transport systems (including buses, trams, trains, gondolas) are a critical feature of low-carbon transport systems internationally.

When it is well-functioning and easily accessible, local public transport systems can support visitors to transition away from private vehicle usage. However, most towns and cities in Aotearoa New Zealand have limited public transport networks, and each town requires different apps, information sources and payment systems. This can be impractical for visitors.

The National Ticketing Solution[48] roll-out, which seeks to make the fares for all public transport in Aotearoa New Zealand payable via contactless card and digital payment by 2026, will increase the uptake of public transport by visitors.

47 Stuff NZ (2022) *Tourism operators create a 'better bus' service to Abel Tasman,* https://www.stuff.co.nz/national/130784471/tourism-operators-create-better-bus-service-to-abel-tasman

48 National Ticketing Solution https://www.nzta.govt.nz/walking-cycling-and-public-transport/public-transport/national-ticketing-solution

CASE STUDY

INCENTIVISING VISITOR UPTAKE OF URBAN PUBLIC TRANSPORT

Many major cities in Switzerland provide free unlimited use public transport passes to all hotel and hostel guests. For example, in Bern, everyone who stays in visitor accommodation gets the 'Bern Ticket', which is valid for the duration of their stay and enables them to use the central public transport for free.[49] This includes buses, trams, and the Gurten cable car.[50] The Bern Ticket is funded by a levy on visitor accommodation within the city of Bern.

'Free' public transport passes for visitors are effective at driving behavioural change because visitors are incentivised to maximise their use of public transport in order to get the most value out of the pass. The passes raise awareness of the public transport system and may incentivise use by visitors who would not have initially chosen to use public transport.

Public transport passes for visitors benefit residents too. By increasing usage of urban public transport, routes are likely to become more frequent and the per-passenger cost of delivering transport is likely to decrease. The cost to residents of using public transport can be made stable or decreased by funding the scheme from tourism and tourists, such as through the accommodation levy applied in Bern.

Other low- and zero-carbon transport options within towns and cities could be considered through a visitor lens to ensure that they are user-friendly and accessible for temporary visitors. Examples include, cycle infrastructure (cycle lanes, secure bicycle storage, signage and public education) and rental systems for cycles and electric scooters.

Many visitors make use of shuttle transport provided by activity providers, accommodation providers, airports, ferry companies, and rental car companies. There is an opportunity to decarbonise these shuttles, but electric shuttle vehicles are not yet readily available. However, there are some promising domestic technological solutions.

The effectiveness of different transport options within a town or city varies substantially depending on local geography, infrastructure, and population size. Decisions need to be made locally on how to increase public transport uptake by visitors, with wide enough support to ensure that there is a degree of consistency between towns and cities.

Actions for decarbonising domestic travel

There is a range of actions that would support tourism decarbonisation, which the tourism system can help to advocate for. In addition to the recommendations relating to aviation in the previous section, actions to decarbonise domestic travel might include:

- Exploration of avenues for scaling up our mass land-based transport systems, including inter-regional passenger rail and coaches
- Incentivisation for the electrification of the visitor vehicle fleet, including rental vehicles, coaches, and shuttles (this would also have flow-on effects for the wider second-hand vehicle fleet in Aotearoa New Zealand)
- Using tourism as a test group to explore alternative public transport systems, such as above-ground subway systems or cable transport such as gondolas; on-demand or autonomous public transport, 'last mile' options and integrated transport solutions.

49 Bern (accessed 16 May 2023) *Bern Ticket* https://www.bern.com/en/bern-ticket
50 Gurten Park (accessed 16 May 2023) *Gurten funicular* https://www.gurtenpark.ch/en/gurten-funicular/

Photo: newzealand.com

FOCUS

D

Influencing the visitor mix

The way that we attract visitors should be aligned to our desired outcomes for te taiao

Visitors will always come from different markets and for different purposes, including leisure, visiting friends and family, business and study. Some visitors come for longer periods, travel into our regions, do more and spend more. Others come for a quick visit, visiting only our cities or key attractions. Different visitors bring different benefits and have varying impacts. When we consider this mix of visitors, we include both domestic and international travellers.

Tourism businesses, inbound tour operators, regional tourism organisations, and government agencies have a range of destination marketing levers to influence the mix of visitors. The Travel Foundation's *Envisioning Tourism Report*[51] identifies the important role that marketing can play in changing travellers' behaviour and shaping demand. A significant proportion of central government's investment in tourism goes towards visitor attraction and marketing. It could be possible to increase alignment between the outcomes sought through marketing activities with our objectives to create a regenerative tourism system.

Shorter transport distances generally produce fewer greenhouse gas emissions

The Climate Change Commission is due to provide advice to the Government in 2024 on whether international aviation and maritime emissions should be included within Aotearoa New Zealand's emissions reduction targets. In general, more carbon is emitted the further a person travels. Flying from Brisbane to Christchurch and back generates 430kg of CO2. By comparison, flying from Munich to Christchurch and back generates 2,500kg of CO2. New Zealanders travelling domestically generally produce the least carbon when travelling to and from their destination.

However, this does not necessarily mean that a traveller from one of our distant markets, such as Europe, is less optimal than a traveller from one of our nearer markets, such as Australia and the Pacific. Other factors affect the environmental footprint of visitors. Factors include the fuel efficiency of their transport (explored under Focus B of this Tirohanga Hou), the length of time that they stay in Aotearoa New Zealand, the way they spend their time and money while in Aotearoa New Zealand, and the counter-factual of their likely carbon footprint had they stayed at home.

Longer stays can improve the daily 'carbon productivity' of tourism

A significant factor affecting average carbon footprint is the period that a person stays in Aotearoa New Zealand. Although total tourism-related emissions increase the longer a visitor stays in Aotearoa New Zealand, international visitors who stay longer generally produce lower average emissions per day. This is because the bulk of a visitor's emissions are generated during the travel to and from Aotearoa New Zealand. For example, when averaged across the number of days of their stay, the international travel emissions of the average visitor from India to Aotearoa New Zealand in 2019 were 55.8kg CO2 per day, whereas for the average visitor from the United States of America the international travel emissions were 111.5kg CO2[52] per day. This difference is because the median length of stay in 2019 for visitors from India was 14.5 days, whereas the median length of stay in 2019 for a visitor from the USA was 9.1 days. This comparison does not account for emissions produced while in New Zealand.

Encouraging 'slow tourism' may be an effective mechanism for helping to reduce international aviation emissions associated with tourism, while maintaining the wellbeing, socio-cultural, and economic benefits of tourism. Slow tourism emphasises slower, lower emitting modes of transport to and from destinations, and highlights devoting time and attachment to a place. A desire to attract more long-stay visitors is also one of the reasons why some of Aotearoa New Zealand's competitor destinations have recently implemented, or are considering implementing, digital nomad visas.

51 The Travel Foundation (2023) *Envisioning Tourism in 2030 and Beyond*, http://www.thetravelfoundation.org.uk/envision2030/

52 These figures have been calculated using the median length of stay per market in January 2019 and the average CO2 emissions of a return journey from that market's capital city.

The activities undertaken while in Aotearoa New Zealand also affect visitors' environmental footprints

Visitors decide the type of activities, accommodation, amenities, domestic travel modes, and food consumed during their travel. Different activities have different environmental impacts. Decreasing the carbon footprint and improving the environmental impacts of visitors' travel within Aotearoa New Zealand could be achieved by increasing awareness of environmentally friendly tourism activities and accommodation, and by seeking to attract visitors who will deliberately choose environmentally friendly activities, accommodation, amenities, transport, and food. This is explored more detail in Tirohanga Hou 3.

There are broader implications of seeking to influence our mix of visitors

Aotearoa New Zealand's remoteness from many major visitor and trade markets brings with it complexities. There are strong linkages between tourism, and the international connectivity that enables trade and international relations.

The tourism industry is integrated into a host of other industries, and any secondary impacts on those industries need to be considered. Aviation capacity is often raised in relation to any potential changes to Aotearoa New Zealand's visitor mix, though this Tirohanga Hou does not assume any changes to Aotearoa New Zealand's aviation networks. Passenger flights to and from Aotearoa New Zealand also bring import goods into Aotearoa New Zealand and carry our exports. Prior to the COVID-19 pandemic, 80 per cent of Aotearoa New Zealand's airfreight was carried in the hold of passenger aircraft.[53] The connectivity between tourism and other industries also highlights the opportunity that exists to work with other industries to support system changes towards regeneration.

Actions for influencing the visitor mix

Improving our understanding of how visitors (both domestic and international) impact the environment and climate throughout their journeys, and the effectiveness of the levers available will make us better equipped to use our destination management and marketing levers to shape demand and influence visitor behaviour.

The proposed action for Focus D of this Tirohanga Hou is to undertake an assessment with the objective of deepening our knowledge and data regarding what constitutes optimal visitation from the viewpoint of carbon intensity and biodiversity impacts. The assessment could include analysis of:

- The impacts of the current visitor mix on carbon emissions and the environment more broadly, including the comparative impact of visitors from different international markets, domestic visitors, market segments, and purposes of travel.
- the levers that could be used to encourage low carbon/environmentally-friendly visitation to/within Aotearoa New Zealand and how different levers would impact different types of visitors
- the extent to which prioritising visitors according to environmental measures would align with other more traditional priorities for the visitor mix such as regional dispersal, off-peak travel, and spend.
- the impacts that a shift in Aotearoa's visitor mix to reflect environmental priorities may have on other wellbeing dimensions of the 'four capitals'[54], such as the economy (including tourism sector resilience and trade) and our host communities, including any trade-offs.

Depending on the insights gained from the above assessment, the government, regional tourism organisations, tourism businesses, and inbound tour operators could give greater weight to environmental outcomes when seeking to shape the demand and behaviour of visitors, as well as other aspects of planning for environmental outcomes across the sector. This will be viewed alongside other levers, such as technology and infrastructure investment and air services agreements. The metrics used to develop strategies and measure outcomes would need to be dynamic, because carbon emissions from transport may reduce as technology and innovation advances.

53 https://www.transport.govt.nz/area-of-interest/air-transport/government-support-for-the-transport-sector/ accessed 11 April 2023.

54 The four capitals under Treasury's Living Standards Framework are natural capital, human capital, social capital and financial/physical capital.

Photo: newzealand.com

TOURISM CHAMPIONS BIODIVERSITY

Summary

This Tirohanga Hou seeks to make Aotearoa New Zealand's tourism industry a champion for our unique biodiversity, both through active measures to improve biodiversity outcomes, and by raising awareness of its importance. It seeks to elevate the importance of the biodiversity crisis in the minds of tourism operators and visitors, and to have the industry act as a national advocate for biodiversity. The goals are that tourism operators will understand their own impact on biodiversity, act to minimise that impact, and look for opportunities to contribute more broadly.

Creating a future where:

- Tourism businesses are empowered to take action to restore and protect Aotearoa New Zealand's environment.
- Aotearoa New Zealand's biodiversity thrives, and the tourism industry, including visitors, help restore landscapes and protect flora and fauna for the benefit of future generations.
- Aotearoa New Zealand's tourism industry advocates for improved biodiversity outcomes and educates those within and outside the industry on the importance of our species and habitats.

All of the Tīwaiwaka Principles (refer page 10 for more information) provide guidance on how to achieve a tourism system that supports biodiversity to thrive. In particular, the principle below captures our intention:

Principle 4: Te Tangata, people, are not the masters of the mauri; we are part of the mauri and embraced by it.

Our role is to care for the mauri; and in doing so, we are cared for by it. We are stewards, with the responsibility to ensure that life continues to thrive. Tourism has a special role to play in championing biodiversity restoration across the motu.

Why?

We are in the midst of a biodiversity crisis

The *World Economic Forum Global Risks Report 2023* puts natural ecosystem decline as one of the top risks for the future.[55] The report states that "over half of the world's economic output is estimated to be moderately to highly dependent on nature" and that ecosystems have an "undervalued contribution to the global economy as well as overall planetary health".[56]

Climate change and biodiversity are interdependent and cannot be addressed independently from one another. Climate-related consequences are already negatively impacting biodiversity, causing mass mortality events and extinction of species. Further, damage to carbon sinks can release the carbon stored and exacerbate climate change.

Aotearoa New Zealand's unique biodiversity is at risk, with more than 75 per cent of indigenous reptile, bird, bat, and freshwater fish species groups already threatened with extinction or at risk of becoming threatened.[57] Te Mana o te Taiao (the *Aotearoa New Zealand Biodiversity Strategy*) sets the strategic direction for biodiversity restoration in Aotearoa New Zealand for the next 30 years. It notes that we have a duty of care to ensure all our unique animals, plants, fungi, and microbes are healthy and thriving.[58]

The threat to our biodiversity is extremely important to the tourism industry, which relies on abundant nature to attract and host visitors. It is difficult to imagine Aotearoa New Zealand's tourism industry without our unique flora and fauna. This gives the industry an impetus to act to protect Aotearoa New Zealand's environmental wealth, while advocating and educating others to do the same.

55 https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf Accessed 12 April 2023. Page 31.
56 https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf Accessed 12 April 2023. Page 31-32.
57 Our indigenous species are at risk of extinction | Stats NZ Accessed 12 April 2023.
58 https://www.doc.govt.nz/globalassets/documents/conservation/biodiversity/anzbs-2020.pdf Accessed 12 April 2023. Page 12

Nature-positive actions are making headway in Aotearoa New Zealand and internationally

The role that nature plays in the global economy and reducing the impact of climate change is coming to light both globally and in Aotearoa New Zealand. Several mechanisms are being adopted to reflect this.

For example, in December 2022, Aotearoa New Zealand adopted the Kunming-Montreal Global Biodiversity Framework. This framework commits countries to the '30x30' initiative to protect 30 per cent of land and ocean globally by 2030.[59]

In September 2023 the global Taskforce on Nature-Related Financial Disclosures (TNFD), an international cross-sector initiative, is due to release the first version of its full risk management and disclosure framework for adoption by businesses and financial institutions. The framework will challenge participants to recognise, assess, respond to, and disclose nature-related issues.[60] In Aotearoa New Zealand, this could include awareness of the impact of kauri dieback[61] and associated site closures on tourism businesses.[62]

Aotearoa New Zealand has already passed legislation to make climate-related disclosures mandatory for some organisations. A legal opinion released early in 2023 by law firm Chapman Tripp has also advised that "New Zealand company directors' duties to exercise reasonable care require them to ensure that their businesses are identifying foreseeable, and potentially material, nature-related risks that could affect their companies. As well as identifying nature-related risks, directors should also be taking nature-related risks with material impact into account in their decision making."[63]

One of the objectives of the current reforms to the resource management system is likewise focused on the natural environment: "to protect and where necessary restore the natural environment, including its capacity to provide for the wellbeing of present and future generations."[64] Within the proposed Natural and Built Environment Bill there will be a system of environmental outcomes, limits, and targets that must be applied in planning. Outcomes will include significant biodiversity areas being protected, and reduction of greenhouse gases. The limits will prevent further degradation of the ecological integrity of the natural environment, and the targets will drive improvement and restoration.[65]

We know tourism operators want to act, but there is a missing piece

Many tourism businesses are already engaging in activities to protect and restore biodiversity in their regions and enhance the unique flora and fauna of Aotearoa New Zealand.[66] However, we have also heard that many want to do more but find it challenging to know where to start. How do they build their own awareness or discover their own impact? How do they boost the activities they already have underway? Who should they work with? Which project will have the lasting impact? Is it better to volunteer time or contribute financially? The diversity and complexity of ecosystems, and the pressures they face, across Aotearoa New Zealand mean that the answers to these questions may be different in each region and in different environments.

We know there is an appetite to take up this opportunity to restore the environment, but in many cases it is a question of helping operators understand how to take action to first reduce their negative impact, and then restore biodiversity losses.

59 https://www.mfat.govt.nz/en/environment/biodiversity-and-species-conservation/#bookmark0, accessed 1 April 2023.
60 https://framework.tnfd.global/introduction-to-the-framework/executive-summary/v04-beta-release/ Accessed 12 April 2023.
61 https://www.doc.govt.nz/nature/pests-and-threats/diseases/kauri-disease/, accessed 10 May 2023.
62 https://chapmantripp.com/media/dvwlamnh/tac_biodiversitylegalopinion_summary.pdf Accessed 12 April 2023.
63 https://chapmantripp.com/trends-insights/the-business-of-nature-emerging-expectations-on-directors-to-manage-nature-related-risk/ Accessed 12 April 2023.
64 https://environment.govt.nz/assets/publications/rm-reform-an-overview-v2.pdf Accessed 12 April 2023.
65 https://environment.govt.nz/assets/publications/rm-reform-protecting-the-environment.pdf Accessed 12 April 2023.
66 An example of these activities is the Princess Local Partnerships' Bay Bush Action project, which has resulted in more than $100,000 being donated by cruise passengers and being used to increase pest control work in Ōpua State Forest, in the Bay of Islands.

Many tourism businesses also trade on, or directly benefit from, Aotearoa New Zealand's biodiversity. Nature is a key attraction for many visitors. From October to December 2022, more than 65 per cent of international visitors went for a walk, hike, trek, or tramp while in Aotearoa New Zealand.[67] Further to the ethical responsibility to protect our remaining biodiversity and restore the damage that has already been caused upon our ecosystems, it is in the financial interests of these businesses to take action to enhance the biodiversity from which they derive significant benefit. This is true whether damage has been inflicted by visitors, locals, or our ancestors.

Examples of tourism directly damaging Aotearoa New Zealand's biodiversity are not always obvious. The Parliamentary Commissioner for the Environment noted in the 2019 report Pristine, popular. . . imperilled? The environmental consequences of projected tourism growth that "we have no systemic way of quantifying the environmental and cultural impacts of tourism,"[68] but that "the temporary movement of people to, and around, Aotearoa New Zealand is creating a wide range of pressures on the environment."[69] Tourism impacts the environment, both directly and indirectly. This includes infrastructure development associated with tourism, which impacts ecosystems and biodiversity. There are also biosecurity risks – such as visitors spreading kauri dieback or cruise ships bringing unwelcome biofoul (unwanted small plants and animals on surfaces such as ship hulls) to Aotearoa New Zealand's waters.

How does the Department of Conservation already help businesses restore nature?

Te Papa Atawhai, the Department of Conservation (DOC), partners with businesses around the motu to pursue conservation outcomes and provide advice to those wanting to help nature. DOC provides links to projects already underway, such as through Conservation Volunteers New Zealand, predator-free focussed groups, and environment hubs. It also provides guides for a range of restoration activities, including bush, dune or native plant restoration, stream protection, trapping, and controlling weeds.

Some tourism businesses already partner with DOC on conservation projects, including:

- Pure Salt – restoring Dusky Sound
- RealNZ – conservation in Fiordland
- Southern Discoveries – conservation in Milford Sound
- Air New Zealand – stemming species loss and increasing understanding of our natural environment.

DOC has also worked with several operators through its Jobs for Nature programme.

67 International Visitor Survey, 3 March 2023. https://teic.mbie.govt.nz/teiccategories/datareleases/ivs/?_gl=1*qrme4v*_ga*MTg4MjY4NTg1NS4xNjUwNDg3MTM3*_ga_QRPHK061NL*MTY4MDEzMzMxMS4xNTQuMS4xNjgwMTMzODE3LjAuMC4w accessed 30 March 2023.

68 Parliamentary Commissioner for the Environment. Pristine, popular. . . imperilled? *The environmental consequences of projected tourism growth*. December 2019. Page 55.

69 Parliamentary Commissioner for the Environment. Pristine, popular... imperilled? *The environmental consequences of projected tourism growth*. December 2019. Page 75.

What?

Examples of related actions that could be taken to give effect to the goal that tourism champions biodiversity include:

Establishing and supporting collaborative regional environmental regeneration projects for tourism operators.

These projects would provide a tangible way for tourism operators to contribute collaboratively to biodiversity outcomes in their regions and make it easier to act. It would allow contributions from businesses which may not have the expertise or resources to initiate their own projects. The sector mostly consists of micro- and small-businesses. These projects will allow those businesses to contribute to an existing project, rather than setting up a new venture, to minimise the time-burden on those businesses. Individual action is important, but it is not possible or desirable for every business to start their own biodiversity restoration project. Bringing businesses in a region together to work on a high-impact project offers both the benefits of scale and the opportunity to create communities of practice (groups of operators that work together). This would build a shared understanding and appreciation of the unique biodiversity of each region and what is required to protect and restore it. These projects could support existing national biodiversity goals, such as *Predator Free 2050.*

A tourism biodiversity kāhui (group) could be created, if required, to provide advice on how tourism operators can foster positive biodiversity outcomes. This group could be made up of stakeholders from the tourism industry, biodiversity subject matter experts, scientists, researchers, educators, representatives from mana whenua (those with rights over the land), and government.

Regional Tourism Organisations can play a key role in collaborative environmental regeneration projects, including building awareness among operators and visitors. For example, Lake Wānaka Tourism shares upcoming restoration days on its website, and provides a way for visitors, operators, and others to provide funding for such projects.

This initiative could also act as an anchor to encourage and facilitate visitors to take action in restoring nature in each region, whether that is volunteering ('voluntourism') or making financial donations. These projects would need to be promoted to visitors to ensure awareness of these opportunities.

Such highly visible biodiversity action would also provide an opportunity to share Aotearoa New Zealand tourism's biodiversity story and showcase what the tourism industry is doing to champion biodiversity. This action could link to marketing environmentally-friendly and/or regenerative activities in the *Visitor Management is optimised for te taiao* Tirohanga Hou.

Developing one or more measures for regenerative tourism, where consumers and/or operators can measure their carbon and biodiversity impact.

While tools for assessing carbon impact already exist, development of a measure focusing on tourism operators' impact on biodiversity could be explored. This could serve several purposes, including motivating tourism operators and providing them with a means of demonstrating commitment to biodiversity to their visitors and communities. The new measure could look at both biodiversity indicators and assessing the impact on mauri (the life force inherent in all living things) consistent with assessment by tangata whenua. In the future, these measures could be used in other ways, such as linking tourism operators' impact on biodiversity to conditionality, for example as a prerequisite to DOC concessions.

Measuring biodiversity is difficult and could be done through measuring *effort, direct results*, or broader *outcomes*. Existing biodiversity measures are likely not well suited to provide a robust and comparable assessment of the net impact of a specific business to ecosystem health and biodiversity.

Tools and methods could be developed to measure impacts at a small scale in a range of contexts in a way that can provide an objective and comparable indicator.

An example of the types of results that could be measured is the predator thresholds below which Aotearoa New Zealand's biodiversity is known to improve.

Depending on the chosen measures, once this system is functioning, it may be possible to use the aggregate information from this measurement to create a picture of the industry's overall impact on, and contribution to, restoring biodiversity. This would also enhance tourism's ability to advocate and educate on biodiversity matters at a local and national level (see below).

Ensuring green assessment and certification schemes used by Aotearoa New Zealand tourism operators include criteria and standards related to biodiversity and climate change.

Aotearoa New Zealand tourism operators work with a variety of assessment and certification schemes. One example is Qualmark, which has recently intensified its focus on sustainability, including working with the Global Sustainable Tourism Council. Given the importance of biodiversity to tourism, operators should be encouraged to work only with assessment and certification schemes with standards and criteria that take account of contribution to biodiversity, as well as climate change mitigation and adaptation activities. This will provide a means of recognising tourism operators who are committed to protecting and restoring their local ecosystems and will help eco-conscious consumers to identify which operators are taking action.

Advocating and educating on biodiversity matters at a local and national level.

The tourism industry can actively advocate on the importance of protecting and restoring Aotearoa New Zealand's natural capital. It can highlight to local and national governments, visitors, other industries, and the general public the role our biodiversity plays in preventing further climate change impacts, and biosecurity's centrality to Aotearoa New Zealand's economy.

CASE STUDY

CARIBBEAN RESTORATION PROGRAMME

A Caribbean coral reef restoration initiative is an example of how science including social science, economics and philanthropy can be brought together to achieve regenerative tourism outcomes at scale.

Coral reef-associated tourism generates about USD$8 billion annually from more than 11 million tourists in the Caribbean. But reefs in the region have been degrading.

Research showed that the Caribbean tourism industry could play a key role in expanding reef conservation. By doing so, the industry provides benefit in terms of values fit for those who want to give back and protect the reef on which their businesses depend.

The Nature Conservancy (TNC) partnered with Caribbean tourism leaders and the United Nations Environment Programme (UNEP) to develop coral restoration best practice guidelines.

The guidelines set out best practices for the tourism industry to implement coral reef protection and restoration efforts. TNC stated: "the industry can be a powerful ally . . . tourism businesses often have facilities near reef sites that can host restoration projects; nature enthusiasts on staff...who can serve as 'conservation ambassadors'; communications tools, like airport signage, that reach millions of people; and relationships with local governments and communities that garner support for sustainable ocean use."[70]

70 Dr Rob Brubaugh, Executive Director of TNC's Caribbean Division, as quoted in The Nature Conservancy (2022) *Scientists Create First-Ever Guidelines to Help Caribbean Tourism Sector Conserve Coral Reefs* https://www.nature.org/en-us/newsroom/caribbean-guidelines-coral-reef-tourism/

Photo: newzealand.com

CASE STUDY

PURE SALT

Pure Salt takes mostly New Zealand visitors on multi-day journeys through Aotearoa New Zealand's World Heritage Area, Fiordland National Park, as well as Stewart Island. Pure Salt works with Te Papa Atawhai, the Department of Conservation, on the restoration of Tamatea Dusky Sound. They share a vision "for Tamatea/Dusky Sound to be one of the most intact ecosystems on Earth, and New Zealand's largest 'bio-bank' – a source of endangered native species that can be sent to pest-free locations throughout the country."

Pure Salt has initiated a number of projects arovund the Tamatea/Dusky Sound. In 2018, Pure Salt started to remove rats from Mamaku/ Indian Island in Tamatea/Dusky Sound, as part of its vision for full ecosystem restoration. Through undertaking three dedicated conservation excursions per year, it has since grown into the installation and upkeep of over 600 traps, 60 tracking tunnels, and 12 cameras across Mamaku/Indian Island, Long Island, and Pickersgill Harbour. Background tracking of rats at the start of the project was over 30 per cent and has consistently dropped to between 0 – 5 per cent since October 2021. 5 per cent is seen as the threshold for our native species to strive.

Pure Salt funds, plans, and carries out the work, reporting back to DOC to ensure action is meaningful and within the local strategy. The work is made possible by countless volunteer hours, business donationssuch as helicopter time with Te Anau Helicopter Services, and client contributions of funds or time onboard.

Aside from the physical work on the ground for the islands, further projects have evolved:

- The TamateaART project allows artists to connect people to the vision and generate further funding.
- the TamateaLEARNZ project seeks to inspire the next generation through virtual field trips with the help of the Ministry of Education and CORE Education
- TamateaBLUE works to look after what is below the water's surface running underwater clean-ups and promoting sustainable fishing, full utilisation, and biosecurity.

Pure Salt offers several ways for visitors to get involved, including:

- booking conservation adventures, where fares go towards the project and visitors can take part in practical action
- buying a trap or trap line directly through Pure Salt
- for every charter run, a trap goes on the ground
- purchasing a TamateaART piece or becoming involved as artists
- making donations
- becoming volunteers.

Pure Salt exemplifies how operators can assist in restoring Aotearoa New Zealand's unique biodiversity. Projects like this could be scaled up to include more operators and to raise awareness and educate those within and outside the tourism sector of the importance of restoring our unique ecosystem.

VISITOR MANAGEMENT IS OPTIMISED FOR TE TAIAO

Summary

This Tirohanga Hou seeks to reduce tourism's impact on te taiao by shaping Aotearoa New Zealand's management of visitor volumes at particularly sensitive sites and highlighting environmentally-friendly activities through marketing. It links with the actions in the Tourism Journey are Decarbonised Tirohanga Hou around undertaking an assessment of visitor impact and factoring this impact into tourism planning. This Visitor management is optimised for te taiao Tirohanga Hou seeks to mitigate and/or prevent negative environmental impacts from international and domestic tourism in Aotearoa New Zealand.

Creating a future where:

- Te taiao is prioritised when considering the visitor-carrying capacity at high-risk destinations and specific attractions.
- Environmentally-friendly and/or regenerative tourism activities are highlighted when marketing Aotearoa New Zealand, to attract visitors with environmentally-friendly values

In envisioning a future where the visitor volumes match what our environment can provide, we have given prominence to this Tīwaiwaka Principle (refer page 10 for more information):

Principle 1: Caring for the whenua (land) is the first priority. Everything else must be measured against this.

Everything depends on the health of Papatūānuku (the Earth), including our tourism economy. This principle provides guidance that tourism should occur in a way that helps the land more than it hurts it. When considering how we manage visitors, the health of the whenua should be a priority.

Why?

Our natural environment is Aotearoa New Zealand's most significant visitor attraction

Both international and domestic visitors in Aotearoa New Zealand seek out our natural spaces. However, growth in visitor numbers degrades those natural spaces. Consequences can range from the building of infrastructure, to increased waste, pollution, biosecurity risk, and carbon emissions.[71] A 1997 report by the Parliamentary Commissioner for the Environment (PCE), cited again by the current PCE in 2019, highlights several negative environmental as well as social, economic, and cultural impacts from visitors. Many of the impacts are ecological and physical, including wildlife disruption, loss of habitat, vegetation damage, soil contamination, and erosion.[72] However, the 2019 report acknowledged "understanding the effects of tourism separately from those of the resident population becomes problematic".[73]

Prioritising growth in visitor numbers, or economic returns, over te taiao will damage the industry's ability to connect our manuhiri (visitors) to te taiao. Unsustainable numbers of visitors can have damaging effects on our biodiversity. Unsustainable visitor numbers can also negatively affect a visitor's experience while in Aotearoa New Zealand, especially if the motivation for that visit includes Aotearoa New Zealand's landscapes or connecting with nature.

71 The Parliamentary Commissioner for the Environment. *Pristine, popular... imperilled? The environmental consequences of projected tourism growth*. December 2019. Pages 55-75.
72 The Parliamentary Commissioner for the Environment. *Pristine, popular... imperilled? The environmental consequences of projected tourism growth*. December 2019. Pages 20-21.
73 The Parliamentary Commissioner for the Environment. *Pristine, popular... imperilled? The environmental consequences of projected tourism growth*. December 2019. Page 19.

Photo: newzealand.com

Photo: newzealand.com

When attracting visitors to Aotearoa New Zealand, it is important to consider more than carbon emissions. Some visitors may be more likely to choose environmentally-friendly operators or pay a premium for a product they know improves the local environment. Such visitors may choose to recycle, to eat local produce, or to travel around one region for a longer time rather than swiftly travel across the country to main attractions.

Tourism New Zealand and MBIE have commissioned research into tourism consumers and how sustainability is factored into decision making. The results of this research will be used to shape this Tirohanga Hou and assist the industry in understanding consumer views on sustainability. This Tirohanga Hou seeks to explore these factors and discover how to give priority to environmentally-friendly visitors. A number of the actions proposed in this document will make it easier for visitors to make these choices, for example by providing low-carbon transport, or supporting operators to adopt environmentally-friendly practices.

What?

A range of actions related to visitor management which could help to deliver our vision of a regenerative tourism sector. These actions would need to be implemented in conjunction with actions in the Tirohanga Hou Tourism businesses are incentivised and enabled for sustainability and regeneration (see page 72), to ensure the experience in Aotearoa New Zealand is in line with visitor expectations.

New visitor management approaches introduced to prioritise the environment have the potential to impact both domestic and international visitors. However, the impact on domestic visitors may need to be further explored, including any limits placed on traditional rights of access.

Examples of related actions that could be taken include:

- Introducing visitor parameters
- Promoting sustainable activities and operators

These possible actions are explored below in more detail.

Visitor parameters

- Using an environmental lens, undertaking assessments to set ideal parameters on visitation. This could be either at a regional level or at specific sites that experience high or problematic levels of visitation.
- Developing and promoting a suite of levers to maintain visitor numbers within these parameters.

These parameters would reflect what is 'healthy' for Aotearoa New Zealand's environment at the sites concerned to prevent negative environmental impacts and allow regeneration. The parameters could give effect to a "doughnut economics" approach to visitor management.[74]

The first steps would be to collect data on the number of visitors in each region and/or site, assess which sites/regions need management, and undertake an impact analysis. Destination Management Plans may be of assistance where consideration has already been given to healthy levels of visitation for regions. Drawing on the expertise of mana whenua (those with rights over the land), and local communities would be essential.

The parameters would function as early warning indicators to identify when visitor volumes are trending outside a healthy level. This could trigger levers being pulled to either encourage or discourage visitation.

Setting parameters will involve assessing and weighing up complex factors and consulting with a wide range of stakeholders. For example, it is possible the parameters would result in pressures shifting from one location to another. Local businesses could also be affected. To manage these impacts, parameters could be expected to differ between regions and between different times of the year. It may be useful to start by running pilots at specific sites or regions.

74 Doughnut economics is a framework for sustainable economic and social development. It demonstrates where humanity overshoots its ecological ceiling or comes short of providing social needs. More information is available at https://doughnuteconomics.org/

There are several levers that could be used if visitor volumes trend outside the healthy level indicated by the designated parameters. Examples could include:

- marketing strategies that encourage visitors to choose other sites/attractions
- implementing booking systems to manage numbers
- pricing tools, e.g., DOC's differential pricing of international visitors on Great Walks and managing visitor demand at the most popular facilities with weekend pricing and seasonal pricing
- using real-time data technology to redirect tourists
- charging levies to encourage visitors to consider other regions, thereby reducing numbers
- closure for cultural reasons and/or restricting access when visitor numbers are nearing a maximum threshold

We note that there are also existing mechanisms to encourage responsible visitation, especially the Tiaki Promise, where visitors make several promises, including the following relating to the environment:

- care for land, sea, and nature, treading lightly and leaving no trace
- travel safely, showing care and consideration for all
- respect culture, travelling with an open heart and mind.

Highlighting environmentally sustainable/regenerative activities and operators in marketing campaigns.

Tourism-related marketing could showcase more environmentally sustainable/regenerative activities, including cultural perspectives on te taiao of tangata whenua and local communities, or even focus exclusively on such activities.

To ensure credibility and mitigate the risk of 'greenwashing', this approach may need to be introduced once sector-wide measures for businesses to demonstrate their carbon footprint and/or impact on biodiversity have been developed and agreed (See Tourism Champions Biodiversity Tirohanga Hou on page 53).

This would achieve two key functions:

- attract travellers that actively seek to reduce their impact on the environment
- encourage other tourism operators to achieve the standard of those seen in the marketing, and thereby expand the regenerative tourism offering in Aotearoa New Zealand. This links to the Tirohanga Hou Tourism businesses are incentivised and enabled for sustainability and regeneration – and would help to shape visitors' experiences by creating eco-conscious experiences, which in turn would attract eco-conscious visitors.

Some destinations, including Nelson-Tasman, are already doing this with multiple tourism operators collaborating to create green and/or zero-carbon itineraries.

There is a risk that overrepresenting Aotearoa New Zealand's regenerative tourism offering in marketing, and not matching marketing to the situation on the ground, could impact the industry's reputation. Visitor expectations would need to be kept realistic as the industry becomes increasingly regenerative.

CASE STUDY

TONGARIRO ALPINE CROSSING

In partnership with Ngāti Hikairo ki Tongariro, a hapū of Tūwharetoa, the Department of Conservation (DOC) has explored the use of several visitor management tools to better protect Tongariro Alpine Crossing from impacts associated with high visitor numbers. Issues experienced include a lack of understanding of the special cultural significance of Tongariro, resulting in behaviours such as recreating in areas considered sacred, littering and toileting outdoors. Another issue has been a lack of preparedness of visitors leading to injuries and, in some cases, death.

To address these issues, DOC has focused on better managing Tongariro Alpine Crossing through agreements with commercial operators which provide services to visitors, such as guided tours and transport into the Crossing. By using concessions strategically, DOC is seeking to align concessionaire operations with conservation goals.

A new DOC booking system enables the updated concessions approach and supports monitoring of visitor numbers and concessionaire activity. In this first phase of the project, no visitor number limits have been set. The project's monitoring programme will provide data to enable any decision to be made at the appropriate time.

This work has been progressed collaboratively by DOC and Ngāti Hikairo ki Tongariro, with both parties working to achieve protection outcomes within the current legislation.

Through this approach, DOC and Ngāti Hikairo ki Tongariro are looking to achieve multiple objectives, including better protecting the park's unique ecosystem, improving the visitor experience, promoting visitor safety, attracting a higher quality visitor who is prepared to stay longer in the National Park, and enhancing cultural awareness and behaviours.

Collaboration with concessionaires and stakeholders will further refine the management tools so that they are most effective in reaching the desired outcome.

By focusing on managing the visitor impacts at the source, the goal is to ensure that future generations can continue to enjoy this unique and special place.

Information provided by the Department of Conservation

Photo: newzealand.com

ACCELERATED TECHNOLOGY UPTAKE AND INNOVATION ENABLE REGENERATION

Summary

There is an opportunity to lift technology uptake and embed a culture of innovation to enable tourism operators and the industry to shift more rapidly to a regenerative model. Key barriers to the uptake of new technology are firm-size, capability, and capital availability.

Key characteristics of tourism are people and place. It may seem counterintuitive to consider the role of technology in delivering tourism experiences, but technology and innovation simply represent tools and a way of thinking. We need to use these tools and apply more creative ways of thinking about how to utilise tourism to deliver positive outcomes for nature.

Creating a future where:

- tourism operators understand, and have access to, the available technology that will reduce their emissions and contribute positively to biodiversity in Aotearoa
- tourism operators are innovating, and the broader innovation system is aligned to support the tourism industry to achieve its goals
- the Aotearoa New Zealand tourism industry is at the forefront of innovation and technology which enables the transition to net-zero carbon.

In envisioning a future where our tourism system has a culture of innovation that enables it to rapidly shift to a regenerative model, we have given prominence to this Tīwaiwaka Principle (refer page 10 for more information):

Principle 5: No individual person is more important than any other. Each must contribute what they have to offer and receive what they need to be well.

The kinds of technological developments that have resulted in transformational shifts across our history have rarely been the creation of individuals by themselves. Developments, such as the steam engine, the internet and artificial intelligence, required complex networks of people with diverse expertise, resources and inspiration to collaborate. With our guiding principle of improving our climate and environment, we are all working towards the same aspirations. Our vision for technology and innovation in the tourism system is that it will enable transformational shifts through people coming together to share their expertise, insight, and resources.

Defining technology and innovation

Technology and innovation are not the same but can complement each other. For the purposes of this Tirohanga Hou, we have defined the terms as follows:

- **Technology** means the use of existing products, services, processes, and methods (including apps, devices, online systems) to improve environmental outcomes, boost efficiency, and deliver stronger business performance. The uptake of existing technology is not innovation in and of itself, but it can be a catalyst for innovation.
- **Innovation** means new ideas, products, processes, or ways of doing things. Innovation is more ground-breaking and often involves taking a risk. For the purposes of this Tirohanga Hou, we refer to three broad categories of innovation:
  - product innovation – the development of new products
  - process innovation – new or different business processes
  - business-model innovation – new or different business models, for example models that place greater emphasis on purpose-driven business.

Photo: newzealand.com

Why?

Technology and innovation are critical enablers to achieve a net zero carbon transition for the tourism industry

Technology adoption and innovation are fundamental building blocks that enable operators to reduce their carbon emissions and eventually transition to net zero carbon. If we fail to capitalise on these opportunities, then this transition will be delayed.

Some technology which will enable this transition exists today and its rapid deployment should be encouraged. However, it may be some time before other technology solutions are commercially viable, such as sustainable aviation fuel where cost and availability may impact the existing viability. Where potential solutions are in development, the tourism industry has a role to play in either progressing these solutions itself as quickly as possible or advocating for others to prioritise their development.

To be a world-leading destination, which can claim with integrity that we place the environment at the heart of our offering, it is essential that we are at the forefront of technology and innovation.

Business-model innovation can promote business models that put te taiao at the heart of their operations and where the goal is to deliver positive environmental outcomes, while maintaining commercial viability. Product innovation can also develop new tourism offerings that are lower carbon or otherwise have a positive environmental impact.

As Aotearoa New Zealand develops and refines these new ways of operating, there will be opportunities to export our success. By leading the way, Aotearoa New Zealand can chart the course for others to follow, which can contribute to global environmental outcomes.

But some tourism operators don't have the access

Key barriers to the uptake of new technology are enterprise size and capital availability. In March 2020, 87 per cent of tourism operators were small and medium enterprises with fewer than 20 employees.[75] This may mean that many operators have limited time, resources, capability, and awareness of technological developments, which can limit their ability to adopt new technological solutions. Even larger tourism operators in Aotearoa New Zealand are relatively small compared to their global counterparts.

The same challenges are present regarding innovation. Small businesses, low levels of capital and a dispersed industry are barriers to generating the new, game-changing ideas that will shift the dial.

We need to be thinking about how we can overcome these barriers to ensure the tourism industry is at the frontier. Solutions are needed to empower small and medium enterprises to continue the journey to a regenerative tourism model. These solutions also need to be specific to the tourism industry, or address opportunities or challenges faced by particular sub-sectors.

What?

Actions that could be taken to drive technology uptake and innovation in the tourism industry include:

Harnessing emerging technology within the tourism system.

This could include using virtual reality (VR) or augmented reality (AR), possibly supported by Aotearoa New Zealand's film studios, to create new tourism offerings. The utilisation of VR/AR could enable people to experience unique places without having to visit them, which may be useful if access to a place has been restricted for environmental protection or due to the impacts of climate change. This may also allow visitors to experience what places were like in the past. One example is gaining a greater appreciation for how the environment is changing because of climate change. In addition, harnessing these technologies could diversify income sources and build resilience against future disruptions and shocks. Leveraging other emerging technologies such as artificial intelligence, automation, and big data could also improve environmental outcomes.

75 Service IQ (2021) Hinonga Kōkiri Tourism Industry Skills Summary, Ringa Hora, https://www.serviceiq.org.nz/about-us/wfd/headstart

Organising a regular (annual or biennial) in-person event showcasing a wide range of existing and emerging technology to help improve environmental outcomes for businesses.

This event could have the added benefit of operators being able to communicate existing problems they are facing so that the technology sector can try to address them. This could take place alongside existing events in the tourism calendar, such as TRENZ, the Tourism Industry Aotearoa Summit or other industry body conferences. *The Better Work Action Plan* proposes a similar event and the two could be run in conjunction. Alternatively, to ensure inclusive participation, this event could take the form of a roadshow to enable participation of small enterprises across the motu.

Establishing an innovation lab where tourism firms can co-locate and develop, test, and commercialise innovative ideas that could help the shift to a regenerative model.

This could be organised in sub-sectors or be mission-focused (i.e. concentrated on a particular problem). An innovation lab is also proposed in the *Better Work Action Plan*, which presents an opportunity for collaboration. Consideration will need to be given to how small operators are encouraged to participate. One way would be to focus on a mission particularly relevant to smaller operators. In addition, it may be advantageous to hold the innovation lab during off-peak season or in particular regions.

Contributing tourism perspectives to economy-wide innovation programmes, including highlighting gaps.

This would aim to produce solutions to issues that are relevant to multiple sectors of the economy. Advances in this space will not necessarily be progressed by the tourism industry itself, but the industry does have a perspective that should be considered. For example, energy production innovation will not be led by tourism, but it is important that the tourism industry's current and future energy needs are considered.

The Innovation Programme for Tourism Recovery is a $44 million contestable fund for projects that will have meaningful impact across the tourism system. There may be lessons from this programme, such as the nature of the barriers to innovation and existing opportunities, which will inform the final actions in this Tirohanga Hou.

Other actions related to technology and innovation in transport are discussed in the Tourism journeys are decarbonised Tirohanga Hou on page 36 and in Appendix One on page 85.

CASE STUDY

OHMIO

Ohmio is an Auckland-based company that manufactures 3D-printed autonomous electric shuttle vehicles. These small, driverless shuttles use a combination of advanced sensors and GPS to navigate.

This type of technology has the potential to be deployed in a tourism context. For example, shuttles could be used on vineyard tours, to transport people between terminals at an airport, or to access certain attractions.

Electric vehicles produce less emissions than traditional internal combustible engine vehicles. In addition, the fact that the vehicles are driverless has the potential to reduce labour costs.

Ohmio vehicles have been showcased in New Zealand (Christchurch International Airport, and Wellington and Queenstown waterfronts) and deployed in South Korea and Luxembourg.

TOURISM BUSINESSES ARE INCENTIVISED AND ENABLED FOR SUSTAINABILITY AND REGENERATION

Summary

There is a significant opportunity to lift awareness and accelerate tourism operator adoption of practices that protect and enhance the natural environment.

Taking a systemic approach, this would involve:

- ensuring resources and tools on sustainable and regenerative practices are available to tourism operators
- encouraging tourism operators in their sustainability and regenerative journeys with personalised support programmes and by fostering collaborative approaches
- learning more about the motivations and barriers that affect tourism operators' ability to adopt practices that protect and enhance the natural environment, and then drawing on the resulting insights to design effective incentives and mechanisms to recognise tourism operators that take positive action.

Creating a future where:

- tourism operators are incentivised to mitigate their impact on the environment and have the knowledge, tools, and skills they need to prioritise activities that protect and enhance Aotearoa New Zealand's climate and unique biodiversity
- visitors can readily differentiate tourism operators that are committed to environmental best-practices and this is reflected in their purchasing decisions
- the Aotearoa New Zealand tourism industry is recognised, both internationally and at home, for its world-class sustainable and regenerative practices.

The following Tīwaiwaka Principle (refer page 10 for more information) provides insight into where we should place our focus when supporting tourism businesses to adopt sustainable and regenerative practices:

Principle 6: We give special care to the tiniest living creatures

In the same way that our biodiversity depends on the tiniest living creatures, our tourism system depends on small businesses. These range from boutique hotels to laundromats, from local tour guides to food vendors. Decarbonising the tourism system requires ensuring that each of these businesses has what they need to be able to adopt practices that protect and enhance the climate and environment.

Why?

Tourism links people to nature and places, creating unique opportunities to influence, but also brings responsibility

Tourism plays a vital role in connecting people to nature and places, linking te taiao and te whenua to te tangata.

By prioritising activities that protect and enhance the natural environment, tourism operators can lead by example. They can encourage visitors to walk alongside them and to adopt a similar mindset, both while they are visitors and when they return home. As well as creating opportunity, tourism's role in connecting visitors to nature also brings responsibilities. As the natural environment is central to Aotearoa New Zealand's attraction as a destination, the tourism industry's social license to operate is intrinsically linked to the commitment the industry makes to protecting and enhancing our unique places and biodiversity.

Photo: newzealand.com

Market expectations are changing

Both now and in the future, changing consumer awareness and attitudes towards climate change and the environment will create a market imperative for tourism operators to adopt good environmental practices. More consumers are expected to seek evidence that the businesses they support prioritise the environment, often becoming wary of 'green-washing' in the process. We need to ensure that our tourism industry's sustainable and regenerative practices are robust, credible, and can withstand scrutiny. Better still would be if practices were demonstrably world-leading.

But some tourism operators are facing obstacles to changing practices

While a good number of Aotearoa New Zealand tourism operators are already taking steps to mitigate their carbon emissions and ensure their impact on the environment is neutral or positive, many operators report they face obstacles when seeking to adopt sustainable and/or regenerative practices. A 2022 survey of Tourism Industry Aotearoa (TIA) members found that, while more than 90 per cent of respondents said sustainability was either 'extremely important' or 'very important' to their businesses, 62 per cent reported that they face difficulties when putting this commitment into practice. Issues identified by operators included: not having the time or resources, not being able to afford to make changes, and not knowing where to start. Many indicated they would benefit from more online guidance, opportunities to network, and technological and personalised support.

Operators may also face obstacles to understanding the biodiversity impact of their operations and the ways in which they can make positive contributions to biodiversity. These issues are likely exacerbated by the fact that most tourism operators are small and medium-sized enterprises (SMEs) who may lack the resources to act on their ambitions to be more sustainable. The research that MBIE has commissioned will build understanding of the barriers faced by operators and how they can be overcome.

What?

Action needs to be taken across several fronts to support Aotearoa New Zealand tourism operators to build capability and capacity in sustainable and regenerative tourism practices.

Scale up resources for tourism operators and support them to take action

Three related actions are set out below. All three are closely related and could potentially be delivered by the same party. In addition, Regional Tourism Organisations (RTOs) will have a key role in connecting operators to appropriate tools and resources:

- **Reach and scalability – ensure online toolkits on sustainable and regenerative practices are widely available.** This action would begin by reviewing existing resources and tools relating to sustainability and regenerative practices and assessing whether these are accessible and appropriate for use across the tourism industry. If gaps exist, then new tools could be created. Tools could be based on those used by other sectors and at other destinations. RTOs could play a role in recommending tools or supporting delivery. To ensure relevance and encourage their usage, the tools need to be suitable for universal application across the tourism industry, as well as for adaptation for different-sized operations, specific sub-sectors (e.g. for accommodation providers), and/or regions. They could incorporate:
  - 'how to' information, shared learnings and stories from peers, and template plans that operators can follow. The information could include not only advice on adopting regenerative practices but also tips on how to effectively promote and demonstrate sustainable and regenerative practices to customers, to help operators generate market benefit at the same time as they are giving back to the environment.
  - agreed industry-wide, standardised tools for measuring tourism operators' carbon footprints and impact on biodiversity.[76]
  - easy-to-use technology aids. Examples could include carbon calculators for operators to include on their website dashboards and apps that enable businesses and visitors to measure their emissions and/or biodiversity impact. Gamification elements could be incorporated where appropriate to encourage uptake.

76 A variety of carbon calculators are in use across the industry. This can create difficulties, for example it can make it difficult to draw comparisons between operators or build a picture of the industry's total impact. We expect that determining standardised methods of quantifying tourism operators' impact on biodiversity may be challenging (refer Accelerated technology and innovation enable regeneration Tirohanga Hou.)

- **Sector-specific coaching – determine the key components that need be included when designing and delivering personalised support programmes** to tourism operators seeking to become sustainable and regenerative.[77] This action envisages that, in addition to being able to access the type of resources discussed above, many tourism operators also need personalised support if they are to adopt sustainable and regenerative practices rapidly and effectively. This action also envisages that such support needs to be made more widely available and accessible than is currently the case.

  There are some existing support schemes that have already demonstrated success. However, if they are to reach greater numbers, these schemes will need to be scaled up. A leading example is the Tourism Industry Aotearoa (TIA) Sustainability Commitment Programme. Many tourism businesses that have completed the TIA Programme report making rapid and considerable progress on their sustainability journey. There is the potential to learn from existing programmes when considering models for the future.

  As a first step, work needs to be done to determine the key components that should be reflected in the design of such support programmes. These components could include:

  - alignment with national and international best practice
  - a focus on fostering biodiversity and climate change adaptation as well as mitigating carbon emissions
  - incorporation of te ao Māori values
  - inclusiveness, in terms of cost and accessibility
  - alignment with Qualmark and other certification/assessment schemes in use in Aotearoa New Zealand
  - commercial viability.

  Once these foundational components have been established, suppliers could be invited to tender to provide this support on an ongoing basis. This would be on the basis that funding is available to deliver this support widely, at least in the short-term.

  It is important that this work progresses swiftly to avoid detracting from the momentum being built by the existing programmes.

- **Network effect – foster a collaborative approach between tourism operators** by creating regional and sub-sector (e.g. ski, rental vehicle, accommodation) networks, hubs, and platforms. The aim would be to enable early adopters of sustainable and regenerative practices to be champions and to share data, practical stories, and examples about what works for them, provide ongoing mentoring and peer-to-peer support, and create a 'nudge' effect for others operating in the same sub-sectors or regions. An example of a positive output from such collaboration could be the development of more regional green itineraries for visitors (similar to the Nelson Tasman Zero Carbon Itinerary), which can encourage visitors to spend more time in one region, and also to use sustainable transportation between attractions.

77 By personalised support programmes, what is meant are forms of tailored, one-to-one support for operators.

Design and embed effective incentives and forms of recognition for best-practice operators

The action we propose is:

- **Respond to research that deepens understanding of tourism operators' motivations, opportunities, and barriers** to adopting more sustainable and regenerative policies and practices. MBIE has commissioned qualitative and quantitative research for this purpose, with the resulting insight expected in mid-2023. MBIE and Tourism New Zealand have also commissioned research into consumer attitudes towards sustainable tourism options, the results of which will also be delivered in mid-2023. Responding to these insights may involve designing new, or refining existing, means of supporting, incentivising, and recognising tourism operators that adopt sustainable and regenerative practices. This could provide a means for consumers to differentiate operators that make this commitment. Examples could include:
  - Tourism New Zealand giving priority to operators which demonstrate commitment to sustainability and regeneration, e.g. in marketing campaigns, when compiling listings for marketing websites etc
  - the trade distribution chain, for example inbound tour operators, being encouraged to prioritise and showcase best-practice
  - tourism operators being encouraged to find ways of demonstrating their green credentials are trustworthy, including through assessment or certification schemes
  - where relevant, research findings being reflected in the design of the Qualmark assessment scheme, noting that Qualmark has recently strengthened its focus on sustainability.

CASE STUDY

THE GREEN ROOM | TE RŪMA KĀKĀRIKI AND TOURISM BAY OF PLENTY

The Green Room is a programme launched by Tourism Bay of Plenty to encourage the Coastal Bay of Plenty's visitor sector to work towards a zero carbon and regenerative future. The 12-week programme is provided by Tourism Industry Aotearoa and funded by Toi Moana Bay of Plenty Regional Council, which means it is free for participants. The programme:

- provides practical, tailored support for operators to enable them to build their capability
- consists of onsite visits, online webinars, and a customised action plan for each participant to help them gain the knowledge, skills and confidence to actively pursue zero carbon and regenerative goals
- brings together a range of operators and stakeholders, creating a chance to build networks of people / organisations who are striving to transition to regenerative models
- identifies key areas where organisations can make quick wins towards their regenerative goals as well as creating longer-term action plans. In particular, the programme helps organisations to understand and measure their carbon footprint and devise ways that it can be reduced.

Photo: newzealand.com

THE TOURISM SYSTEM AND ITS LEVERS ARE OPTIMISED AND RESOURCED TO SUPPORT REGENERATION

Summary

As we move to a regenerative tourism model, we need to be confident that the Aotearoa New Zealand tourism system, and its various structures and levers, can enable the actions and reinforce the priorities that will drive the transition.

To provide this confidence, we recommend that a high-level assessment be undertaken to check there are no significant blocks in the tourism system that would hinder the achievement of the other actions set out in this document. This assessment would be timely because much of the tourism system was designed at a period of time when achieving growth in visitor volumes was the priority for the tourism industry and the governments of the day.

Such an assessment should incorporate destination management (DM). Our view is that DM has a significant role to play in the future, including in enabling local communities to respond to the environmental, biodiversity, and climate change opportunities and challenges facing their regions, and to determine how these forces shape their local destinations.

Creating a future where:

- The Aotearoa New Zealand tourism system (see below for how we are defining the 'system'), and its structures and levers, support an environmentally regenerative tourism model and can respond to ongoing evolution
- The tourism system operates in a coordinated and collaborative way with integrated leadership, to progress common environmentally regenerative goals
- Aotearoa New Zealand's destinations have the resources they need to take a regenerative, adaptive approach to destination management plans and related initiatives and to drive positive climate and biodiversity outcomes
- Empowered and equitable local decision-making recognises the two-way and reciprocal linkages between the Aotearoa New Zealand tourism sector and the people that reside within tourism destinations

When considering the tourism system, we draw attention to the following Tīwaiwaka Principle (refer page 10 for more information):

Principle 3: The mauri is the web of connections that sustains life

The Tourism Futures Taskforce described tourism as "a complex, networked ecosystem that touches the lives of all New Zealanders." The connections between the actors in the system are what sustains regenerative tourism. If any of those connections is weakened or broken, the system as a whole falters. Maintaining an effective collaborative system to contain the web of these connections will ensure that tourism in Aotearoa New Zealand is supported to thrive.

Photo: newzealand.com

Why?

To realise our vision, all parts of the system need to work together to prioritise regenerative tourism

If the Tirohanga Hou in this draft Action Plan are to drive the transformation we seek, they need to be reinforced by the broader tourism system and its structures, levers, and related actors.

The table below illustrates the core elements we have in mind when we refer to the "tourism system". System levers include leadership, strategy and policy setting, stewardship and administration of key public tourism assets and infrastructure, funding sources, regulation, marketing, assessment or certification schemes, and evidence and insights. All have a role to play in securing the future we seek.

Sample components of the Aotearoa New Zealand tourism system

Central government organisations with tourism functions	Other key players in the tourism system	Tourism system funding	Tourism sector-specific regulation
Hīkina Whakatutuki - Ministry of Business, Innovation & Employment (MBIE) • Functions include provision of advice to the Minister of Tourism, development of tourism strategy and policy, evidence & insights, administration of tourism-specific legislation, and monitoring of Tourism New Zealand. **Tourism New Zealand** • Functions include marketing Aotearoa New Zealand as an international destination, gathering insights and research, operating Qualmark, partnering to deliver Tiaki – Care for New Zealand, and providing services such as i-SITEs. **Other government agencies are stewards of key public tourism assets, and develop policy and administer government programmes or funding that impact tourism, such as Te Papa Atawhai Department of Conservation, Te Manatū Waka Ministry of Transport, and Waka Kotahi New Zealand Transport Agency.**	**Regional Tourism Organisations (RTOs) and Economic Development Agencies (EDAs)[78]** • Functions include marketing regions; leading and co-ordinating the development, facilitation, ongoing evolution and implementation of regional destination management plans; and supporting operator capability building. **Local government** • Relevant functions include investment; funding RTOs, planning, infrastructure provision; and setting and implementing some regulations that impact on tourism, e.g. related to food safety and accommodation.[79] **Other key players include peak industry and representative bodies (such as Tourism Industry Aotearoa, Regional Tourism New Zealand, New Zealand Māori Tourism, or the New Zealand Cruise Association), transport hubs (such as airports and ports), and the Tourism Data Leadership Group.**	**Government spending on tourism related projects. In 2022, this included funding for:** • Tourism New Zealand • the development of tourism policy and strategy • the Tourism Infrastructure Fund • COVID-19 related recovery funding **International Visitor Conservation and Tourism Levy** **Funding sources for RTOs, EDAs and DMOs (including from local government)** **Membership dues paid to peak industry bodies**	**New Zealand Tourism Board Act 1991 (established Tourism New Zealand)** **Health and Safety at Work (Adventure Activities) Regulations 2016** **Immigration (Visa, Entry Permission and Related Matters) Regulations 2010 (prescribe payment of the International Visitor Conservation and Tourism Levy)** **Self-Contained Motor Vehicles Legislation Act 2023**

78 Noting that 16 of the 31 RTOs are part of Economic Development Agencies.

79 Noting that the future roles and functions of local government will be subject to the ongoing Review into the Future of Local Government.

Some elements of the tourism system were established with different priorities

Much of the tourism system was established at a time when achieving growth in visitor volumes and revenue were the predominant goals for the industry and the governments of the day. We now have broader priorities for tourism, including pursuing positive outcomes for the environment and our host communities. While the tourism system has - and does - flex and respond to changing contexts, undertaking a high-level assessment would ensure that there are no significant blockers in the system that could prevent progress.

In the case of destination management, it would be timely to review this lever now that all regions have developed plans

During the COVID-19 pandemic, the Government funded the development of destination management (DM) plans in all regions (with the exception of five regions that already had plans in place). These DM plans are now almost all complete. In the process, regions have been encouraged to embed robust local decision-making processes, and to evaluate how all the elements that comprise a regional destination can be managed in an integrated and long-term way.

The experience gained, and the systems built by developing this initial suite of DM plans, will play an important ongoing role in supporting regions and tourism operators to address climate change-related challenges. This should ultimately enhance the positive contribution that tourism can make to a regenerative environment.

However, we have heard there are challenges to the continuing success of the DM model. These include:

- funding and resourcing,
- whether RTOs have the right structures,
- mandates and support from their funders to drive forward and facilitate/coordinate destination management as well as destination marketing,
- inconsistency across regions in terms of their level of focus and aspiration regarding the environment; and
- the level of direction provided at a national level so that RTOs, DMOs, and local tourism operators know why and how they can contribute to regenerative tourism outcomes.

What?

Examples of actions that could be taken to realise our ambition for the tourism system include:

- **Undertaking a high-level assessment of the tourism system** and its structures and levers, to ensure there are no major hindering factors that could block the transformation to a regenerative tourism model, with a primary focus on environmental outcomes.
  - This assessment should incorporate central government, local government, and regional structures that impact tourism. The assessment could look at connections across the system, including those involving peak industry bodies. It could also look at whether there is a need for improved collaboration with other sectors in addressing common challenges and driving key reforms.
  - The review would be informed by drawing comparisons with the tourism systems of competitor destinations of comparable size and objectives (for example Ireland and Iceland).
  - This assessment should be undertaken concurrently with, rather than in advance of, the implementation of the priority initiatives in this document. This would mitigate any risk that the assessment would distract and disrupt progress on implementing the other Tirohanga Hou, at a time when the need for collaborative change is urgent.
  - We recognise there is also discussion within the sector about whether there is need for a wider-ranging review that would consider whether the tourism system needs to change to address challenges and maximise its contribution across other dimensions of wellbeing, beyond our scope of the environment.

- **Refreshing the MBIE Destination Management Guidelines** to ensure they provide DM practitioners with the information, resources, and tools they need to reinforce a strong focus in their DM plans on carbon mitigation, biodiversity risks and impacts, and climate change adaptation.
  - The Destination Management Guidelines (the Guidelines) were released by MBIE in 2020 as a practical tool for people and organisations throughout the motu that have a role in supporting, growing, and developing the tourism economy within their regions, district or community. The Guidelines provide advice on the components that should be included in a DM plan and the process for developing one.
  - We consider there is scope to add new and updated content to the Guidelines, which could range from guidance on national environmental policies and how these can cascade down to the regional level, through to advice on the application of practical tools such as carbon calculators. Refreshing the Guidelines would provide opportunity to ensure alignment with relevant best-practice global frameworks, such as the Global Sustainable Tourism Council. The original Guidelines were developed at a time when most regions had not yet been through the process of developing DM plans. Now that nearly all regions have plans, it will be timely to refresh the Guidelines to reflect the ongoing focus on implementation and the maintenance and updating of plans.[80]
- **Recommending to the Government that it commit to issuing a national tourism strategy on a regular basis (e.g., every three or five years).** One of our aims in making this recommendation is to ensure a clear national direction is signalled regularly to everyone that has a role to play in the tourism system. In the process, we hope to foster coordinated leadership, planning, and action.[81] This action would include consideration of the role of, and alignment with, separate strategies that the tourism industry may develop.
- **Review current funding structures and mechanisms that will enable a regenerative tourism system within Aotearoa New Zealand.** Adapting to climate change, mitigating greenhouse gas emissions, and adopting practices that protect and enhance Aotearoa New Zealand's unique places and biodiversity will require a new investment approach. Funding mechanisms, structures, and tools are of the utmost importance to enable a regenerative system. To successfully undertake the actions outlined in this draft Action Plan, long-term sustainable sources of funding will be required at national, regional and local levels. Coupled with this, more tourism-specific funding is required, as highlighted by Cabinet's previous agreement that sustainable funding for the tourism sector should be reviewed in late-2023. Tourism-specific funding should include taking account of the resourcing needed to secure a strong and effective DM function across regions. As part of the late 2023 considerations, other avenues of revenue raising should also be explored with a particular focus on the promotion of access to green financing options throughout the tourism system.

80 Note that the Guidelines are an optional tool – there is no requirement that changes in the Guidelines must be reflected in existing DM Plans.

81 The Leadership Group also considered the merits of developing a national destination management plan, as a means of encouraging consistency across regional destination management plans and signaling a clear national direction. However this concept has not been advanced at this stage, in part because of concern it could detract from the principle that local communities should determine how their regional destinations develop.

Photo: newzealand.com

CONCLUSIONS AND APPENDICES

HOW TO HAVE YOUR SAY

Tell us what you think

- Do you think each of the Tirohanga Hou (new outlooks or ways of thinking or doing things) will lead to better environmental outcomes in tourism? Why?
- How can we improve each Tirohanga Hou?
- What do you think is the most important Tirohanga Hou?
- Are there any other Tirohanga Hou we are missing that you think should be considered for development?
- Do you have any other comments?

How to provide your feedback

MBIE will gather feedback on the draft Action Plan on behalf of the Leadership Group. You can share your views by completing an online survey or providing a written submission. We are also hosting in-person or online workshops you can attend.

Please visit www.mbie.govt.nz/have-your-say/draft-tourism-environment-action-plan for details or the workshops, survey, or written submissions process. The QR code will direct you to MBIE's Have Your Say webpage.

You can also mail your submission to:

Tourism Policy Team
Tourism Branch
Ministry of Business,
Innovation and Employment

PO Box 1473
Wellington 6140
New Zealand

Your feedback could respond to any or all of the issues raised in this draft Action Plan. Where possible, please include evidence to support your views; for example, references to independent research, facts and figures, or relevant examples.

Please direct any questions that you have in relation to the submissions process to environmentITP@mbie.govt.nz.

What happens next?

MBIE and the Tourism Environment Leadership Group will consider and process submissions and feedback received, before developing a final Tourism Environment Action Plan in the coming months.

After submissions close, a summary of submissions will be published at www.mbie.govt.nz

Use and release of information

The information provided in submissions will be used to inform the Tourism Environment Leadership Group and wider government's policy development process, and will inform advice to Ministers. MBIE intends to upload a summary of submissions to www.mbie.govt.nz, which may include direct quotations. MBIE will consider you to have consented to uploading by making a submission unless you clearly specify otherwise in your submission. If your submission contains any information that is confidential or you otherwise wish us not to publish, please indicate this on the front of the submission, with any confidential information clearly marked within the text.

Submissions may be the subject of requests for information under the Official Information Act 1982 (OIA). Please set out clearly if you object to the release of any information in the submission, and in particular, which parts you consider should be withheld (with reference to the relevant section of the OIA). MBIE will take your views into account when responding to requests under the OIA. Any decision to withhold information requested under the OIA can be reviewed by the Ombudsman.

The Privacy Act 2020 applies to submissions and survey responses. Any personal information you supply to MBIE in your submissions will only be used for the purpose of assisting in the development of policy advice in relation to this work programme. If you do not wish for your name, or any other personal information to be included in any summary of submissions that MBIE may publish, please clearly indicate this in the cover letter or e-mail accompanying your submission.

Photo: newzealand.com

APPENDIX 1: OPPORTUNITIES AND BARRIERS FOR THE UPTAKE OF LOW-EMISSIONS AVIATION TECHNOLOGIES

For long-haul international aviation, SAF is perceived to be the only viable technology for decarbonisation out to 2050. SAF is a catch-all term for alternative jet fuel produced from a variety of feedstocks, including waste products such as used cooking oil, tallow, woody biomass, green hydrogen and captured carbon (often referred to as e-SAF or Power to Liquid SAF). On a lifecycle basis, SAF results in up to 90 per cent less carbon emissions when compared to conventional jet fuel. It is a 'drop in' fuel which means it can be blended with fossil fuels and used in existing aircraft (currently up to a 50% blend with fossil fuel), and with existing airport and fuel infrastructure.

However, airlines face the following key barriers to adopting SAF in meaningful quantities:

1. **Cost:** SAF is currently three-to-five times more expensive than conventional jet fuel, depending on type and grade, due to it being an early-stage technology, the high cost of feedstocks, and limited production quantities. Recognising this cost as being a significant hurdle to aviation decarbonisation, some jurisdictions, such as the US and UK, have taken steps to improve the commercial viability of SAF through incentivising investment in research and development, production and/or airline SAF purchasing.
2. **Supply:** SAF production currently equates to less than 1% of all jet fuel consumed today, so is in very short supply. In addition, production is largely located in jurisdictions that are geographically far from Aotearoa New Zealand: mainly the US, UK and the EU as they have favourable policy and investment settings. With a lack of supply in the Asia-Pacific, SAF import supply chains to Aotearoa New Zealand are very long and underdeveloped.
3. **Sustainability:** SAF production can in some cases have negative social and environmental impacts, for example due to causing deforestation or undesirable land use change. For example, a UK study found that producing enough SAF to power the UK's planes would require about half of UK agricultural land[82] There are also concerns that the deliberate production of SAF overseas has resulted in deforestation and reduced biodiversity. This risk is currently mitigated by the certification of SAF supply chains by independent sustainability certification regimes designed to ensure such negative impacts are avoided (such as the International Sustainability and Carbon Certification Scheme, and the Roundtable on Sustainable Biomaterials). As new feedstocks and technologies develop, continuous scrutiny is required to ensure

82 The Royal Society (2023) Net zero aviation fuels: resource requirements and environmental impacts, https://royalsociety.org/topics-policy/projects/low-carbon-energy-programme/net-zero-aviation-fuels/

that these standards evolve to consider the unique environmental and social impacts that each new pathway can present.

4. **Emissions reduction:** While SAF reduces emissions, it currently does not result in completely zero-emissions aviation, as SAF is still carbon-based and requires combustion. However, this is expected to be overcome in the coming years through technological pathways such as Power to Liquid SAF that are made from carbon captured directly from the atmosphere. When a biological source of carbon is used (such as woody biomass), SAF can be close to carbon neutral because the growth of the bio-source (e.g. trees) extracts carbon from the atmosphere, which is then released back into the atmosphere during combustion. This compares to fossil fuels where the carbon is taken from trapped sources in the ground and then released into the atmosphere through combustion.

Domestically, for flights under 3,000 kilometres, hydrogen fuel shows potential for decarbonising aviation. Unlike SAF, hydrogen fuel is not carbon-based, so does not produce carbon emissions when deployed. Hydrogen fuel is light enough to potentially be deployed in medium-haul aviation. Airbus has set a target to make hydrogen-powered aircraft commercially available by 2035. Some factors to take account of in the transition to hydrogen energy are:

1. The manufacturing and liquefaction of hydrogen requires some other form of energy. 'Green' hydrogen is produced via a process called electrolysis where renewable electricity is used to separate hydrogen atoms from water molecules. The hydrogen gas generated from electrolysis needs to either be compressed or liquified before it can be stored, distributed, and then used onboard an aircraft.
2. Hydrogen is a difficult fuel to transport, requiring liquefaction or conversion to a carrier fuel such as ammonia, driving higher distribution cost when compared to conventional jet fuel today. This property of hydrogen incentivises local production, closely located to final use. As such, the concept of airport energy/hydrogen hubs is emerging as a way to fuel future aircraft.
3. The deployment of hydrogen requires new or retrofitted aircraft, new production facilities, and changes to airport refuelling procedures, and potentially infrastructure improvements at airports.

Photo: James Coleman on Unsplash

4. Combusting hydrogen can produce some nitrous oxide, which is another greenhouse gas.
5. The technology for hydrogen energy is still in its infancy, and a large amount of energy is lost in its conversion and usage.[83]
6. Aircraft using hydrogen as an energy source could potentially do so in one of two ways:
    a) **Hydrogen electric aircraft:** where hydrogen is mixed with oxygen in a fuel cell which creates electricity, powering an electric motor. The only by-product of this process is water. These aircraft could have a range of around 2,000 kilometres and capacity for up to 100 passengers by 2035.
    b) **Hydrogen combustion aircraft:** where hydrogen is used as a combustible fuel which is burnt in much the same way fuel is consumed in a gas turbine today. Water vapour is the only major by-product, however like all combustion engines today, this process would also produce nitrogen oxide which is a greenhouse gas. Aircraft powered by hydrogen combustion could have a range of around 3,000 kilometres and carry around 200 people by 2050.

Electric planes are another option for aviation decarbonisation that are being explored by some airlines in Aotearoa New Zealand. There are several different battery electric architectures that could feature in the future aircraft designs:

1. Pure battery electric aircraft are designs where batteries provide energy to an electric motor. Aircraft in this class will be limited in range (up to 400km) and capacity (up to 20 seats) in the foreseeable future due to battery weight constraints.
2. Series hybrid aircraft enable portions of the flight to be flown on battery energy along with conventional gas turbines and fuel providing energy for contingency. Series hybrid aircraft will have greater range and capacity capability than all battery electric aircraft, but could still be limited to flights shorter than 600km and will carry less than 50 passengers.
3. Parallel hybrid architecture is where a combination of battery energy and fuel-powered gas turbines power the aircraft. Designs such as these would not offer zero-emissions flights but would offer significant emissions reduction while retaining the range and capacity needs offered today.

The electrification of aviation on short-haul routes in Aotearoa New Zealand will require a significant increase in our renewable electricity generation, as well as a transformation of infrastructure at our regional airports.

83 Michael Liebreich (2022) *The unbearable lightness of hydrogen*, https://about.bnef.com/blog/liebreich-the-unbearable-lightness-of-hydrogen/

Indicative estimated electric aircraft capabilities by 2030

- 200km - 100% zero emissions, 30 passengers
- 400km - Hybrid, 30 passengers
- 800km - Hybrid, 25 passengers

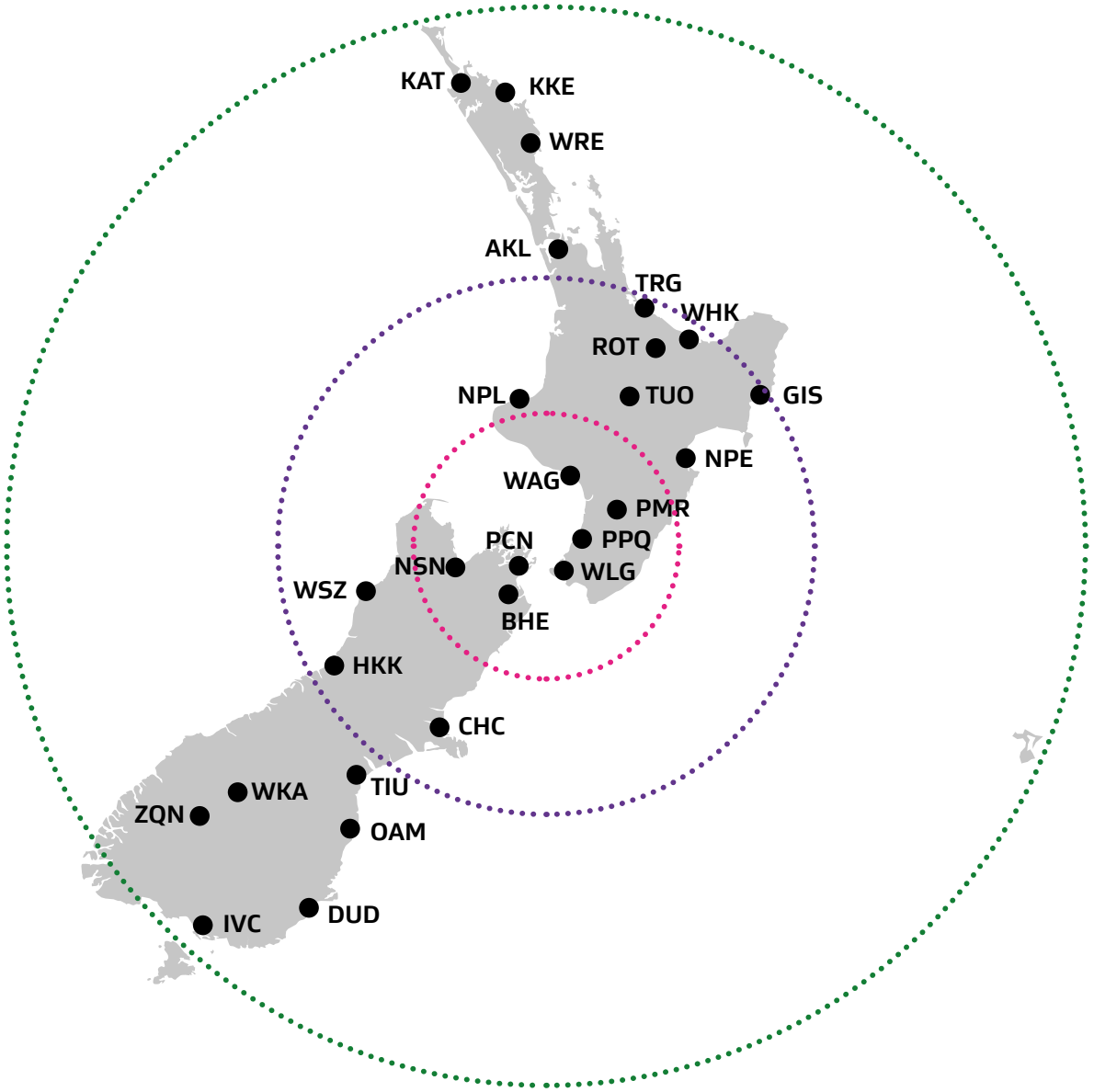


Figure 8: Distance ranges for Wellington airport

Photo: newzealand.com

APPENDIX 2: GLOSSARY OF MĀORI TERMS AND THEIR APPROXIMATE ENGLISH TRANSLATIONS

Aotearoa	New Zealand (literally, "land of the long white cloud")
Hapū	Subtribe, clan
He Mahere Tiaki Kaimahi	Better Work Action Plan
Hīkina Whakatutuki	The New Zealand Ministry of Business, Innovation, and Employment
Iwi	Tribe, people, or nation
Kāhui	Group, assembly, or gathering
Kaitiaki	Guardian or caretaker
Kaitiakitanga	Guardianship or stewardship
Kaumātua	Elder(s)
Kaupapa	Purpose, plan, or agenda
Kupe	A legendary explorer described in Māori oral history as the first person to discover New Zealand
Mahi	Work, activity, or job
Mana whenua	People with authority, responsibility or jurisdiction over land or territory
Manaaki	To care for, support, or show hospitality
Manatū Mō te Taiao	New Zealand Ministry for the Environment

Manuhiri	Guest or visitor
Māori	The indigenous people of New Zealand
Mātauranga	Knowledge, wisdom, or understanding
Mauri	Life force, essence, or vitality
Moemoeā	Dream or vision
Mokopuna	Grandchild or descendant
Motu	Island(s)
Papatūānuku	Earth mother, or the Earth
Ranginui	Sky father, or the sky
Tā tātou ara	Our pathway
Tāmaki Makarau	Auckland
Tangata	People
Tangata whenua	The indigenous people, or the people of the land
Te Mana o te Taiao	The Aotearoa New Zealand Biodiversity Strategy
Te Manatū Waka	The New Zealand Ministry of Transport
Te Papa Atawhai	The New Zealand Department of Conservation
Te Papa Tongarewa	The Museum of New Zealand (the national museum in Wellington)
Te Tai Ōhanga	New Zealand Treasury
Te taiao	The natural environment, or the natural world
Tiaki	To protect or care for
Tirohanga Hou	New outlook, perspective, or vision
Tīwaiwaka	The New Zealand fantail, also called the Pīwakawaka, Tīwakawaka, or Pīwaiwaka
Toi Moana	Bay of Plenty Regional Council
Whakataukī	Traditional proverb or saying
Whānau	Family
Whanaungatanga	The principle of extended family or kinship
Whenua	Land

Te Kāwanatanga o Aotearoa
New Zealand Government

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