

The environmental impacts of tourism in Aotearoa New Zealand: A spatio-temporal analysis.

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Table of Contents

1) Executive summary	5
2) Introduction.....	9
3) The environmental effects of tourism: A temporal analysis	12
3.1) The past: 1990 – 2010	12
3.2) The present: 2011 – 2018.....	33
3.3) The future: 2019 – 2025	61
4) The environmental effects of tourism: A spatial analysis.....	73
4.1) Local	73
4.2) National	91
4.2.1) Conservation policy and planning context.....	91
4.2.2) Tourism governance and strategy at the national scale.....	99
4.3) Global	109
5) Analysis and interpretation	123
5.1) The past (1990-2010)	123
5.2) The present (2011-2018).....	127
5.3) The future (2019-2025)	134
6) Conclusion	158
7) References	167
7.1) 1990 – 2010	167
7.2) 2011 – 2017	170
7.3) 2018 – 2025	173
7.4) Local.....	174
7.5) National	176
7.6) Global	178

List of Figures

Figure 1: Total international visitor arrivals (MBIE, 2017)	13
Figure 2: Annual change in international visitor arrivals (MBIE, 2017)	13
Figure 3: International visitor arrivals by country of origin (MBIE, 2017)	14
Figure 4: Length of stay of international visitors (Stats NZ Infoshare, 2018)	15
Figure 5: Length of stay of international visitors, 1990 vs 2010 (Stats NZ Infoshare, 2018)	15
Figure 6: Arrivals and expenditure (real terms) over time (Ministry of Economic Development, 2011)	15
Figure 7: Spend per visit, selected markets (Ministry of Economic Development, 2011).....	16
Figure 8: Mode of transport used while in NZ (Stats NZ, n.d.)	16
Figure 9: Number of international visitors who are freedom camping while in NZ (MBIE, 2018)	17
Figure 10: Most popular activities while in NZ (Stats NZ, n.d.)	17
Figure 11: Physical activities while in New Zealand (Stats NZ, n.d.)	17
Figure 12: Places visited while in New Zealand (Stats NZ, n.d.)	17
Figure 13: Wildlife activities while in New Zealand (Stats NZ, n.d.)	17
Figure 14: International visitor arrivals (MBIE, 2017)	34
Figure 15: Annual change in international visitor arrivals (MBIE, 2017)	35
Figure 16: International visitor arrivals by country of origin (MBIE, 2017)	35
Figure 17: Length of stay of international visitors (Stats NZ Infoshare, 2018)	36
Figure 18: Length of stay of international visitors, 2011 vs 2017 (Stats NZ Infoshare, 2018)	36
Figure 19: Mode of transport used while in NZ (Stats NZ, n.d.)	37
Figure 20: Most popular activities while in New Zealand (Stats NZ, n.d.)	38
Figure 21: Places visited while in New Zealand (Stats NZ, n.d.)	38
Figure 22: Physical activities while in New Zealand (Stats NZ, n.d.)	38
Figure 23: Wildlife activities while in New Zealand (Stats NZ, n.d.)	38
Figure 24: Number of international visitors who are freedom camping while in NZ (MBIE, 2018)	40
Figure 25: International visitors by national parks, 2013 – 2017 (year ending June) (DOC, 2017c)	49
Figure 26: Total international visitor arrivals (MBIE, 2017)	62
Figure 27: Annual change in international visitor arrivals (MBIE, 2017)	62
Figure 28: International visitor arrivals by country of origin (MBIE, 2017)	63
Figure 29: New Zealand tourism forecasts: Organic, accelerated and ambitious (Auckland Airport, 2014).	64
Figure 30: New Zealand tourism sustainable commitment (TIA & TINZT, 2017)	68
Figure 31: DOC's budget 2018 – itemised in terms of tourism / recreation (Source: own)	91
Figure 32: DOC's organisational structure (DOC, n.d.)	95
Figure 33: A single airline meal service that produces upward of eighteen pieces of plastic	114
Figure 34 (a-d): Then and now.	116
Figure 35: Historical parts per million (ppm) CO (NASA, 2013)	118
Figure 36: The tourism production system (Source: Cornelissen, 2004).....	163

List of Tables

Table 1: Tourism sector economic indicators	9
Table 2: International visitor arrivals, 1990 - 2010 (MBIE, 2017)	13
Table 3: International visitor arrivals, 2011 – 2017 (MBIE, 2017)	34
Table 4: Examples of DOC corporate partnership projects	54
Table 5: International visitor arrivals, 2018 – 2023 (MBIE, 2017)	61
Table 6: New Zealand tourism forecasts: Visitor arrivals, length of stay and total spend (MBIE, 2017)	63
Table 7: Factiva New Zealand media analysis (2011-2018): Searches with > 10 results	75
Table 8: Factiva New Zealand media analysis (2011-2018): Searches with < 10 results	79
Table 9: Allocation of the tourism infrastructure fund (source: own).....	101
Table 10: Cost of tourism to New Zealand.....	108
Table 11: Tourism and environmental sustainability: Past (1990-2010)	124
Table 12: Tourism and environmental sustainability: Present (2011-2018)	130
Table 13: Tourism and environmental sustainability: Future (2019-2025)	135
Table 14: Tourism and environmental sustainability: Local	144
Table 15: Tourism and environmental sustainability: National	150
Table 16: Tourism and environmental sustainability: The global scale of analysis	154

1) Executive summary

Tourism – now firmly established as part of New Zealand’s social fabric - is also an increasingly recognised component of the nation’s economy, generating \$36 billion (YE March 2017 +1.9%) in annual visitor spending, and 5.9% of GDP (Statistics New Zealand 2017). Environmentally, tourism has played an important part in the gazettal and management of national parks and other areas of conservation value that form the nature resource for recreation and tourism, and the centrepiece of New Zealand’s enormously successful ‘100% Pure’ international marketing brand, the value of which extends beyond international tourism to other high value export sectors. International inbound tourism, as a source of foreign exchange earnings, has been the primary focus of tourism development since the early 1990s. In contrast, the nation’s domestic tourists have been largely overlooked as a market historically, a neglect that represents a considerable loss in both economic and environmental terms.

High growth in international tourist arrivals has been sustained in recent years, driven by growth in global tourism flows and the unprecedented success of the *100% Pure New Zealand* international tourism marketing campaigns. International visitor arrivals grew steadily from one million in 1992 to three million in 2015, reaching 3,734,187 just two years later. Forecasts indicate that international arrivals will pass four million within the next twelve months and reach five million by 2024 (MBIE 2017). This sustained growth in international arrivals has raised questions about the environmental (and social) sustainability of tourism in New Zealand. Recognition and concern has been expressed for what may be seen as a depletive tourism growth paradigm, in which the resource base for tourism (environmental, social, cultural, infrastructural) is being exhausted in the absence of adequate investment, governance and management.

Within this context, this report presents a spatio-temporal analysis of tourism development in New Zealand. It begins with a synthesis organised into three tourism development temporal phases: past (1990-2010), present (2011-2018) and future (2019-2025). In the first phase (1990-2010), the report documents the establishment of a tourism growth model in New Zealand, with an explicit focus on the development of international visitor markets and growth in international arrivals. This model has remained largely unchallenged over time. During this period the Department of Conservation came under increasing pressure to manage growing international tourist demands for visitor experiences on public conservation lands and waters. More visitors led to growing concerns about compromised wilderness values (solitude and remoteness), social impacts (crowding and displacement) and evidence of environmental impact including physical effects (trampling, erosion and damage of geological features), as well as ecological impacts (disruption of wildlife and the introduction of alien plant species).

Intensification of the high growth tourism model and the development of a neoliberal conservation economy, in part as responses to the global financial crisis, are evident in the second temporal phase (2011-2018), alongside increased doubts about the sustainability of high growth tourism. Social and environmental impacts at frequently crowded tourist destinations and popular front country sites, unregulated freedom camping, and largely unmanaged tourist interactions with rare or endangered wild animal populations have been widely recognised. Industry-led sustainable business programmes, local government responses, and new funding arrangements for tourism (e.g., Tourism Infrastructure Fund) have latterly emerged as responses to these challenges. The third temporal dimension (2019-2025) forecasts continued high growth to five million international visitors per annum, amplifying questions about sustainable growth, social licence, sector productivity and accelerating environmental change.

The report's spatial dimensions foreshadow a new range of environmental challenges at different scales of analysis, indicating that the existing high growth model is not sustainable under the current management approach. The local scale highlights the social and environmental impacts of concentrated tourism flows and intensifying demand at iconic natural sites. Unregulated demand and overwhelmed infrastructures have contributed to crowding, lack of adequate facilities at key sites, trampling and erosion, inappropriate litter disposal, human waste and associated public health risks, and impacts on wildlife. At the national scale questions of the conservation policy and planning context arise from the delicate challenge facing the Department of Conservation in balancing conservation priorities (e.g., protection of critically endangered iconic native species) with high visitor demands for nature experiences. The tourism industry itself highlights the need for broader environmental issues to be addressed, including water usage, waste generation, and oil dependency in the tourism sector.

Finally, the spatial analysis reflects on tourism in the context of global social and environmental change. Set within the global policy context (e.g., United National Sustainable Development Goals 2015-2030; Paris Climate Accord 2015), this section draws attention to the global tourism system and the phenomenon of 'overtourism' - a term that describes rapid changes in tourism supply and demand that have created an oversupply of high volume, short stay, low yield tourism - and its associated social and environmental costs. This section specifically addresses the environmental impacts of tourism in relation to global biodiversity loss and species extinctions, the sustainable management of the global ocean commons, accelerating climate change, the crisis of the cryosphere and the energy intensiveness of high volume, short stay and predominantly long-haul tourism.

The syntheses presented in the spatio-temporal analysis raise important questions for policy makers. New Zealand's 100% Pure international marketing programme has achieved sustained high growth over many years, and forecasts suggest this will continue. The 100% Pure brand has also come under increasing scrutiny due to the high environmental costs of international tourism. Investment in the

resource base for tourism, including natural assets and public infrastructure, and the management of common pool resources have been relatively neglected in the face of increasingly independent and largely unregulated international tourism demand. It is evident that under current management approaches and within existing tourism infrastructure constraints and visitor management systems, continued growth of 4-5% per annum, can not be sustained. Initiatives such as the international visitor levy (IVL) and tourism infrastructure fund (TIF) are initial steps to address the depletive paradigm that has become apparent as increasing numbers of visitors have been added to a New Zealand tourism system that is not infinite in terms of tourist infrastructure capacities, social licence, and environmental limitations.

Tourism is a high energy sector that does not currently meet the full economic, social and environmental costs of the resources that it consumes. The social and environmental sustainability of tourism is being questioned, and the case has been made that the tourism industry should be subject to the same standards of environmental accountability as other economic sectors. If so, the current tourism growth model must be closely interrogated, and consideration given to what measures are required to achieve a new sustainable (regenerative) tourism paradigm. Pressing questions arise from a critical assessment of tourism. It is important to consider the optimum number of international visitors that the New Zealand tourism system can reasonably accommodate, in terms of both visitor experience and sustainable management, under current system constraints (e.g., visitor flows and regional infrastructures). Given the economic importance of tourism, an analysis is required of the value of each visitor (within discrete visitor sub-markets) needed to increase sector productivity while slowing or limiting growth in tourist volume and promoting the principles of tourism sustainability. Strong governance and policy interventions are required to achieve a well-resourced and sustainable regenerative tourism model, given that tourism is a resource intensive industry that consumes finite resources, and public goods in the delivery of its product (Gössling & Hall, 2006). The acts of legislation and planning approaches that underpin the existing growth model should be reviewed and revised using a systematic and coordinated inter-agency approach aimed at achieving a more sustainable tourism trajectory.

Precisely how a sustainable (regenerative) tourism model might be advanced, given the unique and challenging aspects of tourism, is a complex challenge. Despite its economic importance and its acknowledged presence in the daily lives of many New Zealanders, the tourism industry is an open system that is loosely coordinated, fragmented and hard to clearly define. It comprises a multitude of agencies and actors who interact at crosscutting levels to produce social, economic and environmental outcomes that should be in the collective best-interest. It is important to critically consider who defines the 'outcomes', who wins and who loses from those outcomes (in the broadest sense) and how those outcomes can be periodically revisited, systematically reviewed and inclusively redefined over time. We conclude with recommendations that speak directly to the need for collaborative

strategic planning and management systems to be (re)established; and for the key actors from across the open tourism system to engage with each other on a continuing basis to consider and implement a new 'regenerative' paradigm for tourism that is firmly founded upon the principles of sustainable development, both in terms of New Zealand's national environmental protection and conservation management priorities, and global environmental commitments.

2) Introduction

Tourism is important. Economically, it has been and continues to be one of New Zealand's highest performing economic sectors (Table 1). Currently tourism generates \$36 billion (YE March 2017 +1.9%) in tourist spending¹, contributing 5.9% to GDP, and a further 4.6% of GDP by way of indirect value added to industries supporting tourism (Tourism Satellite Account, Statistics New Zealand 2017). Recognised particularly for its economic value, tourism has long been a generally accepted part of the social fabric of New Zealand. International inbound tourism, as a source of foreign exchange earnings, has been the central focus of tourism development since the early 1990s. Domestic tourism has been relatively neglected historically, although the importance of domestic tourism is clearly evident in Table 1; this importance is likely to only increase given the carbon constraints that confront the New Zealand economy now and in the future (Royal Society of New Zealand, 2016; Ministry of the Environment, 2018)². Environmentally, tourism has played an important part in the protection and management of national parks and other areas of conservation value that form the nature resource for recreation and tourism.

Table 1: Tourism sector economic indicators

Economic indicators	Tourism sector performance
Total tourism expenditure	\$36 billion (YE March 2017 +1.9%)
International tourism expenditure	\$14.5 billion (YE March 2017 -0.9%)
New Zealand's biggest export industry	20.7% of New Zealand's foreign exchange earnings
Domestic tourism expenditure	\$21.4 billion (YE March 2017 +4%)
International visitor spending (foreign exchange)	\$40 million in FOREX to the economy per day
Domestic tourism spending	\$59 million in economic activity per day
Direct contribution to GDP	\$14.7 billion, or 5.9% of GDP
Indirect value-added of industries supporting tourism	\$11.3 billion for tourism - 4.6% of GDP
Total employment	399,150 directly and indirectly employed (14.5%)
GST from international visitors	\$1.5 billion (YE March 2017)
GST paid by domestic travellers	\$1.8 billion (YE March 2017)
Total GST	\$3.3 billion (YE March 2017)
International students (studying <12 months)	\$2.9 billion (YE March 2017) +2.7%

¹ <https://www.stats.govt.nz/information-releases/tourism-satellite-account-2017>;
<https://tia.org.nz/about-the-industry/quick-facts-and-figures>

² Royal Society of New Zealand (2016) <https://royalsociety.org.nz/assets/documents/Report-Transition-to-Low-Carbon-Economy-for-NZ.pdf>

Zero Carbon Act 2018 <https://www.mfe.govt.nz/news-events/zero-carbon-act>

Sustained high growth in international tourist arrivals has accelerated in recent years, driven by growth in global tourism flows following the global financial crisis, and the unprecedented and sustained success of a continuing series of *100% Pure New Zealand* international marketing campaigns. International arrivals grew steadily from one million in 1992 to two million in 2002 and three million in 2015. Since 2015 visitor arrivals to New Zealand reached 3,734,187 just two years later. International arrivals are forecast to pass four million within the next twelve months and reach five million by 2024 (MBIE 2017). This sustained and accelerating growth in international arrivals has, unsurprisingly, raised questions about the environmental (and social) sustainability of tourism. Despite an industry commitment to sustainable tourism practices³, and efforts to encourage acceptable tourism behaviour to reduce local social, cultural and environmental impacts⁴, there is a growing sense that the tourism sector more broadly is not subject to the standards of environmental management that now apply increasingly in other sectors of the economy.

These concerns have been expressed most publicly in association with specific and at times divisive local issues such as largely unmanaged freedom camping, crowding in national parks, pressures of use at local natural areas, acts of inappropriate tourist behaviour, and concerns about the building pressures of use on finite local infrastructures, facilities and services; all of which are associated with diverse environmental and social impacts. Recognition and concern has been expressed for what may be seen as a depletive tourism growth paradigm, in which the resource base for tourism (environmental, social, cultural, infrastructural) has been increasingly exhausted by an uncritical focus on growth in visitor numbers and the relative lack of adequate investment and management. Social licence, a term that describes the support of local communities that live with the positive and negative outcomes of tourism, has emerged as an issue of growing concern at some local/regional destinations in New Zealand, where residents may feel overwhelmed by the sustained and seemingly relentless growth in visitor arrivals.

This report addresses the sustained high growth of New Zealand tourism and the environmental impacts of tourism, within the wider context of sustainable development. The focus is almost entirely on inbound international tourism markets, given the relative neglect of domestic tourism during the periods under review. The focus falls primarily upon environmental impacts, although it is important to note that the environmental, social, cultural and political dimension of tourism are inextricably integrated. Kauri dieback offers a useful current example of the interplay of environment-society-culture and local/regional politics in the field of recreation and tourism management⁵. We begin with the evidence-base; six sections that review the development of tourism in New Zealand by way of a critical spatio-temporal analysis. These sections first address three temporal phases of development;

³ New Zealand Tourism Sustainability Commitment <http://www.sustainabletourism.nz>

⁴ Tiaki – Care for New Zealand <https://www.tourismnewzealand.com/tools-for-your-business/tiaki-care-for-new-zealand/>

⁵ Kauri Dieback Programme <https://www.kauridieback.co.nz>

past (1990-2010), present (2011-2018) and future (2019-2025). The evidence-base is then considered in terms of three spatial dimensions; local, national and global. This analytical framework affords insights into the pathways and trajectories of tourism growth over time and to 2025; and into the diverse impacts of tourism and challenges of sustainable development that vary with local, national and global scales of analysis. There follows in Section 5 and analysis of the evidence-base in which interpretations are offered, and recommendations proposed before conclusions are drawn.

3) The environmental effects of tourism: A temporal analysis

3.1) The past: 1990 – 2010

International visitor data: Steady growth tourism to 2.5 million visitors.

The first period of the temporal analysis (1990 to 2010) begins following the economic restructuring and new environmental legislation (including the Conservation Act 1987 and the creation of the Department of Conservation) of the fourth Labour Government, and ends two decades later with a National government that was negotiating the global financial crisis. At the start of this period a tourism growth model was established with an explicit focus on the development of international visitor markets, and an initial targeting of three million international visitors by the end of the millennium. The data presented in Table 2 and Figure 1 shows the steady growth in international tourist arrivals during this period. Visitor numbers grew from just under 1 million visitors (976,010) in 1990 to about 2.5 million (2,525,047) in only two decades. In the 1990s in particular this high growth was driven by an ambitious target of attracting 3 million visitors per annum to New Zealand by the year 2000 (NZTB, 1991), supported by aggressive international marketing based on the clean and green New Zealand campaign. As a result, many tourists arrived in New Zealand with a desire to experience breath-taking nature, remote wilderness and abundant wildlife (Chamberlain, 1992).

Despite the steady growth trend there were periods with a negative annual change in visitor arrivals (see Figure 2), most noticeably in 1997 and 1998 when visitor numbers decreased by 2.1% and 0.8% respectively, due in large part to the impact of the Asian Financial Crisis on the outbound tourism markets of East Asia. The same modest decline in international arrivals occurred in 2008 and 2009 during the Global Financial Crisis. It is worth noting that although visitor numbers decreased during those years, visitor arrivals remained relatively steady around just under 2.5 million for the four years from 2006 to 2009. The second half of the period under review is characterised by high growth in international arrivals at the turn of the millennium to 2004, during which time some regions experienced very high growth in tourism, for example the South Island West Coast (Conradson & Pawson, 2009). This was followed by a steady state of modest growth through to the end of the first decade of the new century.

Table 2: International visitor arrivals, 1990 - 2010 (MBIE, 2017)

	Actual	Annual Change (Actual)	Annual Change (Relative, in %)
1990	976,010		
1991	963,470	-12,540	-1.3
1992	1,055,681	92,211	9.6
1993	1,156,978	101,297	9.6
1994	1,322,565	165,587	14.3
1995	1,408,795	86,230	6.5
1996	1,528,720	119,925	8.5
1997	1,497,226	-31,494	-2.1
1998	1,484,741	-12,485	-0.8
1999	1,607,478	122,737	8.3
2000	1,789,081	181,603	11.3
2001	1,909,808	120,727	6.7
2002	2,044,964	135,156	7.1
2003	2,106,235	61,271	3.0
2004	2,347,671	241,436	11.5
2005	2,382,950	35,279	1.5
2006	2,421,556	38,606	1.6
2007	2,465,677	44,121	1.8
2008	2,458,505	-7,172	-0.3
2009	2,458,380	-125	0.0
2010	2,525,047	66,667	2.7

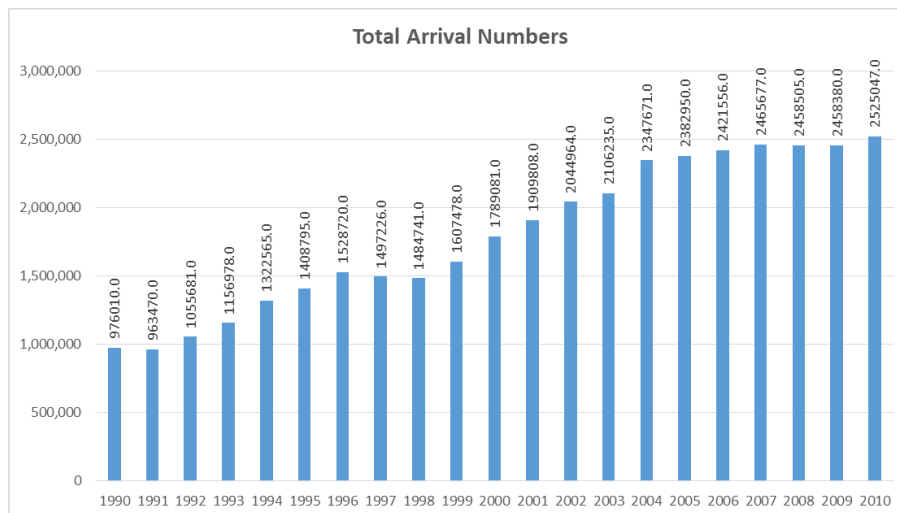


Figure 1: Total international visitor arrivals (MBIE, 2017)

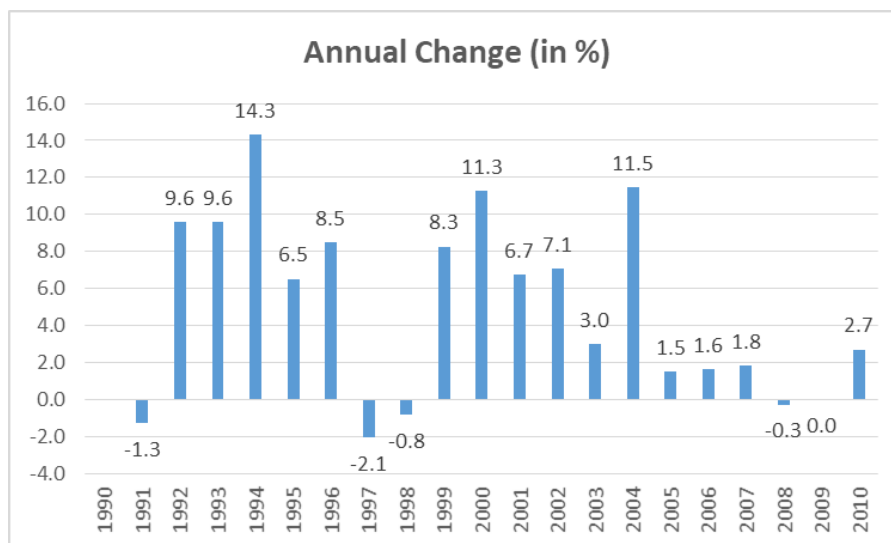


Figure 2: Annual change in international visitor arrivals (MBIE, 2017)

Australia was New Zealand's most important international visitor market, representing between 29% and 45% of total annual visitors throughout the period from 1990-2010 (see Figure 3). The number of Australian tourist arrivals grew consistently and reliably during the period under review. The United Kingdom and the United States were other key markets during these decades. We also observe the initial development of the Chinese visitor market in this period. In 1990, China represented 0.3% of total international visitors (3,082 visitors), growing to almost a 5% share in 2010 (123,412 visitors), with significant future growth potential recognised in this market. The varied impacts of the Asian Financial Crisis in 1997-1998 as evident in the data. Visitor arrivals from Korea dropped by 84% from 1997 to 1998 whereas arrivals from Japan and China decreased by 5% and 6.5% (respectively) in that same year.

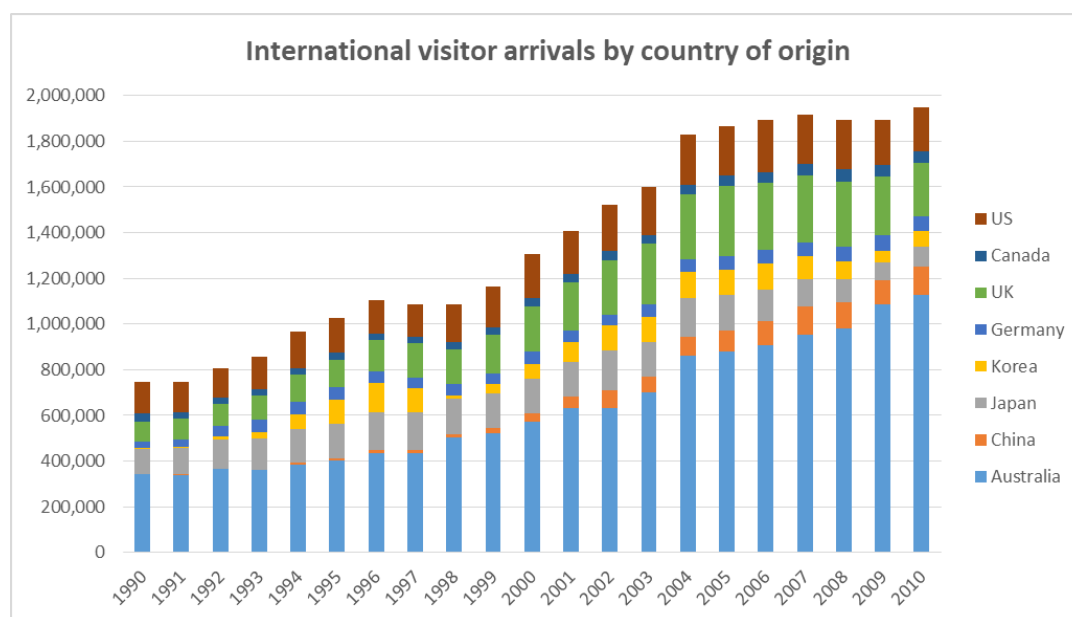


Figure 3: International visitor arrivals by country of origin (MBIE, 2017)

Length of stay is a critical determinant of many aspects of tourism in New Zealand, including spatial travel flows, tour schedules, and energy intensity (e.g., mode of travel), with implications for qualities of experience, environmental impacts (across a range of scales) and regional development. Throughout the period under review the length of stay of the majority of international visitors ranged between 1-7 days, 8-14 days and 15-28 days (see Figure 4).⁶ Interestingly, while the length of stay of international visitors remained quite consistent between 1990 and 2010, we do observe an overall trend towards shorter duration of visit (see Figure 5), with a higher proportion of visitors staying 1-7 or 8-14 days, and a lower proportion of visitors staying more than 28 days. Figures 6 and 7 highlight the fact that during this period visitor arrivals increased while international visitor expenditure decreased consistently between 2002-2010 (Ministry of Economic Development, 2011).

⁶ Data includes international business travellers and visitors travelling to New Zealand for conferences or education

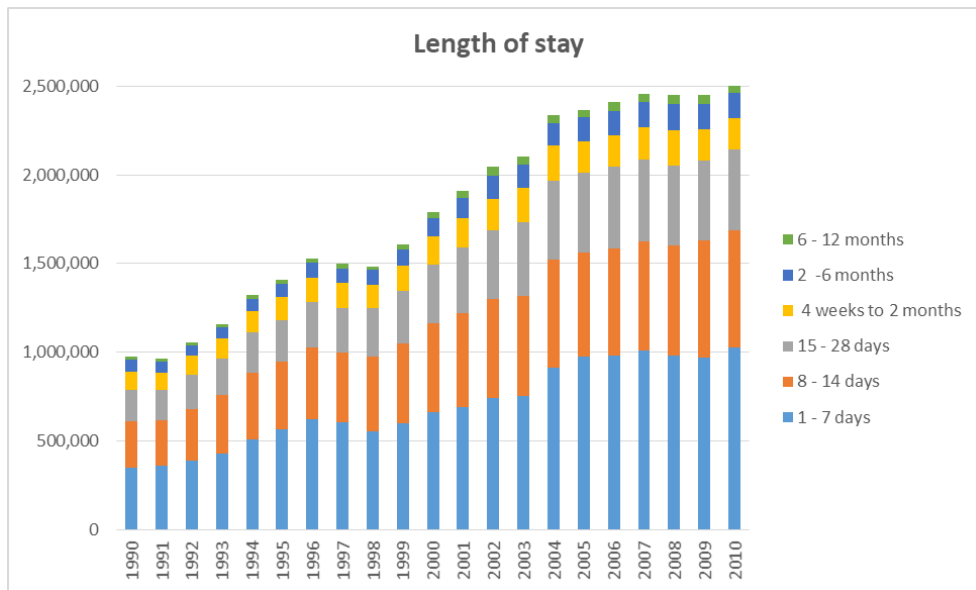


Figure 4: Length of stay of international visitors (Stats NZ Infoshare, 2018)

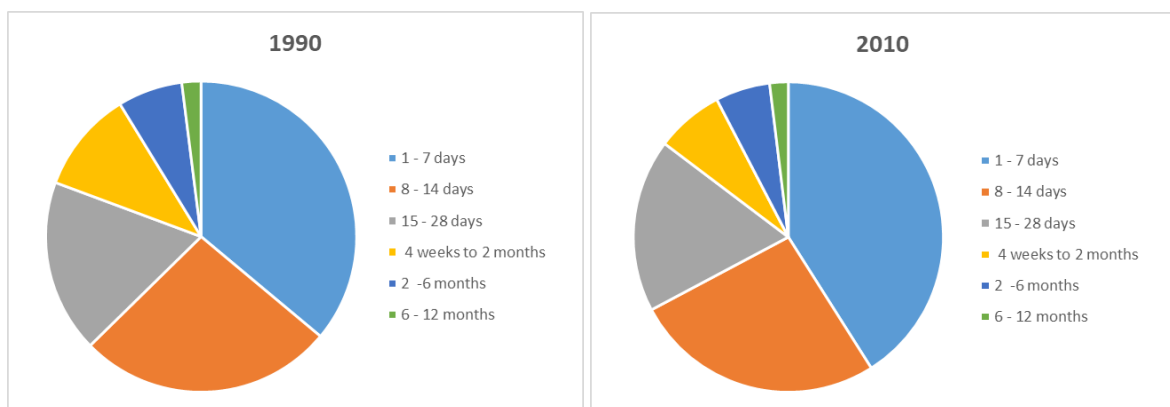


Figure 5: Length of stay of international visitors, 1990 vs 2010 (Stats NZ Infoshare, 2018)

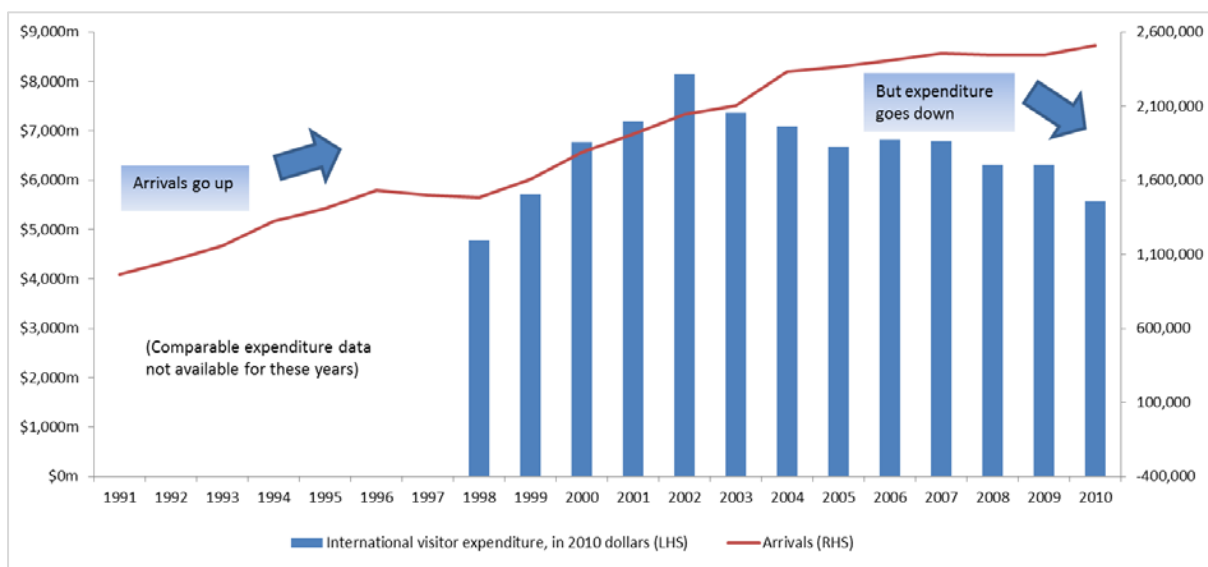


Figure 6: Arrivals and expenditure (real terms) over time (Ministry of Economic Development, 2011)

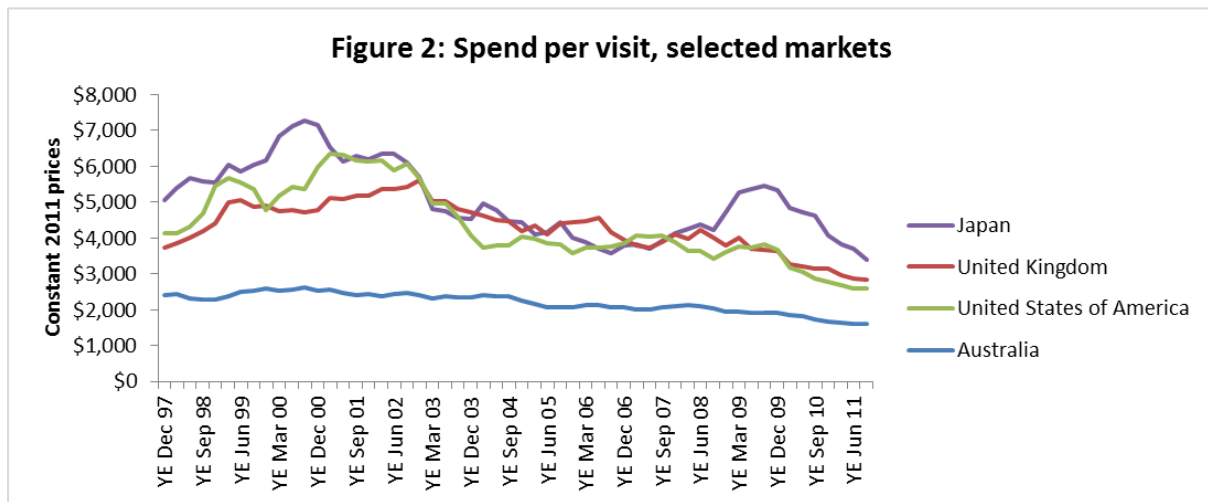


Figure 7: Spend per visit, selected markets (Ministry of Economic Development, 2011)

International visitors made use of a variety of transport modes (Figure 8). The data presented in Figure 6 is derived from the International Visitor Survey, which allowed for multiple response answers. Since 1997, when the surveying of transportation mode began, the highest energy intensity tourist transportation modes, namely aircraft, private car/van and rental cars, have remained the most common modes of tourist transportation. Since 2005 private car/van as the most frequently reported mode of transport used, although this data does not indicate the extent or purpose for which different modes were used. The use of rental vehicles increased steadily throughout the period, while the use of tour bus services, both scheduled intercity services and backpacker bus circuits, fluctuated during the period under review, according to this data source. The dominance of high energy intensity transport modes, and the growth in the use of private cars/vans, increasing from 240,000 in 1997 to approximately 1.09 million in 2010, are noteworthy features of international tourism in New Zealand during this time.

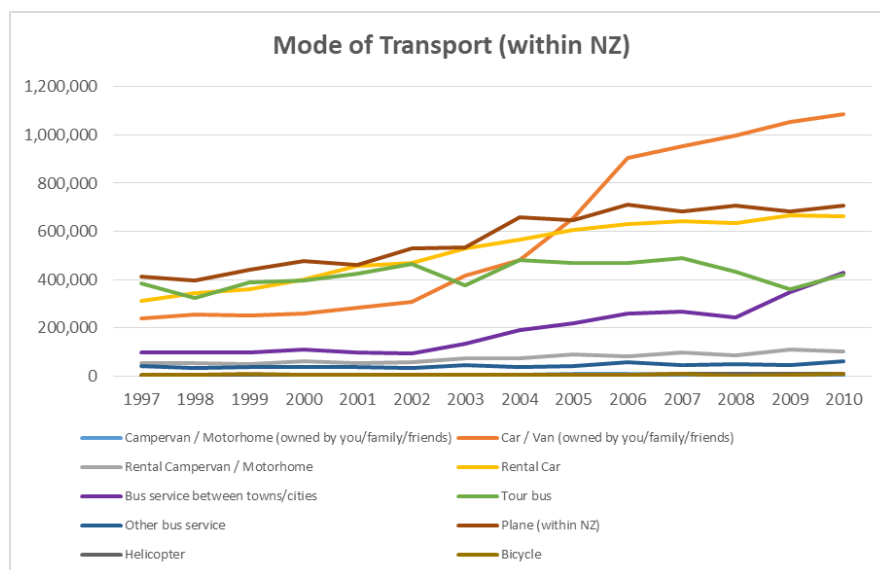


Figure 8: Mode of transport used while in NZ (Stats NZ, n.d.)

We pay specific attention to freedom camping here, given the widely expressed concerns associated with freedom camping in recent years. An estimate provided by the Ministry of Business, Innovation and Employment (2018) indicates approximately 3,895 freedom campers in 1997 growing to 18,255 freedom campers in 2010 (see Figure 9). A period of sustained growth in this form of tourist transportation occurred from 2004/2005. It is noteworthy that the 2005 British and Irish Lions tour of New Zealand was associated with high demand from campervans, to allow travelling fans the independence of movement required to follow the tour itinerary, while maximising opportunities to experience regional New Zealand in between tour matches. This event possibly marks the start of a period of growth in freedom camping that has been sustained.

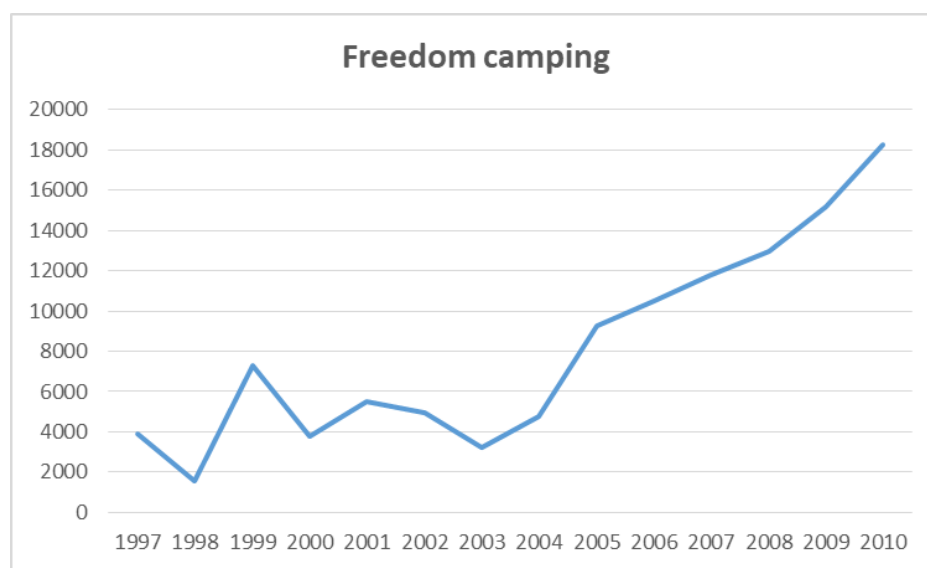


Figure 9: Number of international visitors who are freedom camping while in NZ (MBIE, 2018)

The IVS lists an extensive range of visitor activities engaged by international visitors to New Zealand and, again, while providing useful insights into popular visitor places and activities, the data must be observed with caution. It is of no surprise that the vast majority of international visitors engage in walks, hikes, treks or tramps while in New Zealand (see Figures 10 and 11). Beaches, geothermal parks and scenic boat trips are popular places and activities. Figure 12 indicates in very broad terms the places where activities are engaged; the wild nature of the data presented in Figure 12 confirms that many of the response categories in this data are open to wide interpretation. What this data does safely indicate is the growing popularity of a range of natural settings, with lake, mountain and river settings, and hot pools coming under increasing international tourist demand during the period 1990-2010.

Direct engagements in natural settings (walk/hike/trek/tramp) and scenic boat trips (Figure 11) dominated the activity profile during this time, alongside a wide range of generally more specialist or special-interest nature tourism activities. Among these activities, in Figure 13 we observe steady

growth in the development of commercial and non-commercial tourist engagements with species of wild animals, including marine mammals, marine seabird and native fauna. These experiences may be mediated and managed by wildlife trusts, commercial operators and DOC concessionaires. In some cases, however, free ranging species have been drawn into increasing engagements with largely unmanaged independent visitors to unregulated public nature areas. Historically significant glow worm caves remained prominent during this time period, during which time we observe the establishment and/or early development of a growing diversity of wildlife tourism experiences.

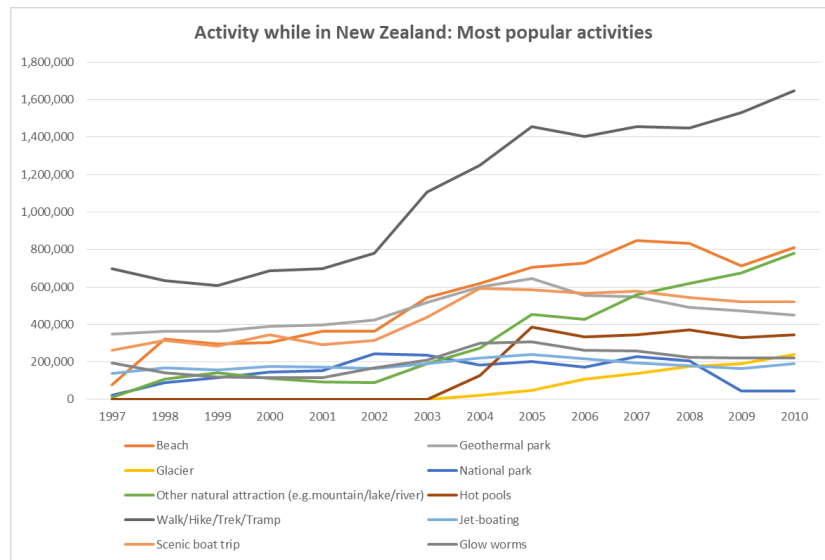


Figure 10: Most popular activities while in NZ (Stats NZ, n.d.)

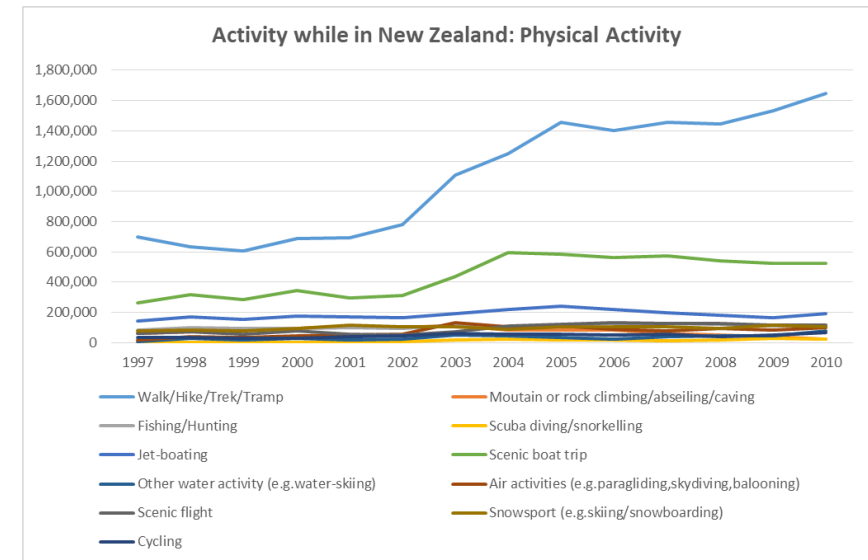


Figure 11: Physical activities while in New Zealand (Stats NZ, n.d.)

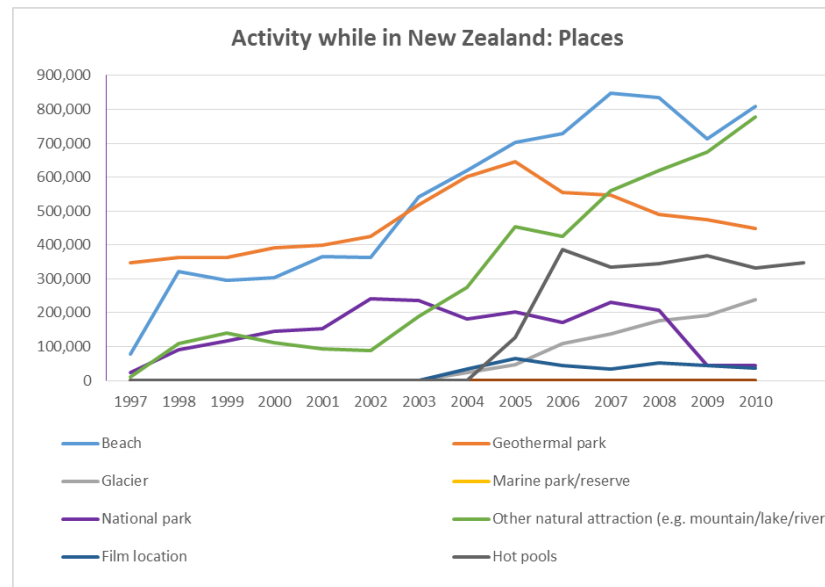


Figure 12: Places visited while in New Zealand (Stats NZ, n.d.)

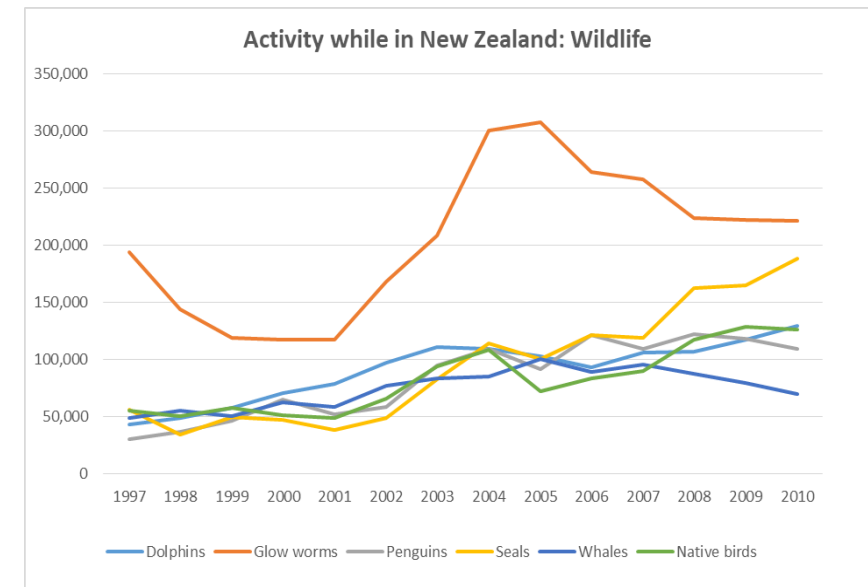


Figure 13: Wildlife activities while in New Zealand (Stats NZ, n.d.)

The New Zealand Tourism Board (1991) and a commitment to the principles of sustainable management (1990-1994)

The 1980s can be viewed historically as the pre-development initiation phase of today's New Zealand tourism sector. Prior to the 1990s, data on tourism and tourists was limited to relatively basic visitor arrival information, and consistent collection of data about what tourists did and the places they visited while in New Zealand was not available until the establishment of the International Visitor Survey (IVS). It was not until 1999, with the creation of New Zealand's 'Tourism Satellite Account', that tourism was first identified in official industry statistics, and a new measure of tourism's economic impact was available.

Visitor numbers grew steadily from a small base prior to 1990, with an international visitor profile dominated by the Australia, the United Kingdom/Europe, and North America markets. The development of Whale Watch Kaikoura in the late 1980s was a portent of a future in which carefully planned local tourism development and growing international visitor markets could bring a turnaround in fortunes of regional economies (Butcher, Fairweather & Simmons, 1998). The development of tourism in Kaikoura was closely supported, and informed, by research into the socio-cultural, community and environmental sustainability challenges of a growing local tourism industry (e.g., MacGibbon, 1991; Gordon, Leaper, Hartley & Chappell, 1992). The development of the New Zealand tourism industry can, for the purposes of this report, be usefully reviewed from the start of the 1990s, which can be considered the start of the development phase.

In 1990, the year of the 150th anniversary of the signing of the Treaty of Waitangi/ *Te Tiriti o Waitangi*, 976,010 international tourists visited New Zealand. In 1991 the New Zealand Tourism Board (now Tourism New Zealand) was created under the New Zealand Tourism Board Act 1991. NZTB was established as a Crown Entity, with a Board of Directors appointed by the Minister of Tourism. With an annual budget allocation from the New Zealand government, NZTB was charged with the international marketing of New Zealand as a tourism destination. The NZTB put in place a tourism growth strategy that remains in place today. From the outset NZTB established and pursued ambitious tourism growth targets driven by the goal of maximising the export value of tourism; domestic tourism was generally ignored. In 1991 NZTB produced *'Tourism in New Zealand: A strategy for growth'*, in which the Board first expressed the target of 3 million international visitors a year by the year 2000. This document considered the target to be highly ambitious and feasible, but one that would "...require excellence in strategic planning, marketing and service, as well as sustained and full support and commitment from all the many stakeholders involved" (p.3). In articulating the goal to treble the number of visitors arriving in New Zealand between 1991 and 2000, the strategy for growth identified the environment as the central focus of tourism marketing, and as a potential barrier to growth. "Tourism growth in New Zealand cannot be at the cost of our natural resources. One of our greatest

assets in an increasingly green conscious world is our pristine environment. The Board accepts the principles of sustainable management and environmentally sensitive development." (p.17)

The commitment of the NTZB to the principles of sustainable management was signalled in the co-publication (with Department of Conservation) of *New Zealand: Conservation Estate and International Visitors* (1993). This report noted that 43,000 tramps were undertaken by international visitors on 32 selected over-night tracks in 1990/1991, with international visitor use very high on four major tracks, the Abel Tasman coastal track, Routeburn, Milford and Kepler (between 43% and 76% of track users in 1990/91). The largest international market of independent trampers (unguided) in that season was Germany (18% of all total trampers both international and domestic on those tracks). The report raised critical development issues, including the need for infrastructure for visitors (e.g., the Milford Sound road, toilets, parking and visitor information, especially on interpretation of tracks and its surrounding environs). It also highlighted the need for research into the social carrying capacity of tracks, including quality of experience, perception of crowding, and environmental impacts. The report concluded that Milford Sound and Whakarewarewa could handle increased visitor numbers while noting the issues of access to Milford Sound. Fox Glacier, Franz Joseph Glacier, Aoraki/Mt. Cook village and the Waitomo Caves were considered to already operate close to or at capacity at peak times. It was noted that high growth in forecast demand for national park experiences at the time of publication, required continued cooperation between DOC, NZTB and the tourism industry to ensure 'sustainable management and environmentally sensitive development'.

Discontinued cooperation (1995-2000)

In 1992, North & South produced a feature article titled *On the tourism trail* (Chamberlain, 1992), which questioned the NZTB growth target, noting that it was critically important to not only market tourism overseas, but to work closely with DOC to "upgrade and develop in such a way that we don't ruin what brought the visitors in the first place" (p.90). It observed that "unrestricted and unplanned growth in green tourism places our natural areas at risk" (p.95), arguing that crowding in huts, erosion and plant damage from high use are examples of environmental impacts that could already be seen. There is little evidence of the 'continued cooperation' between NZTB and Department of Conservation expressed in 1993. In the latter half of the 1990s it is evident that the focus of the NZTB fell upon the ambitious growth target of three millions visitors in 2000, while the Department of Conservation attended to the management of growing international visitor pressures in the national parks and other conservation areas, including the marine environment. In 1993 NZTB and DOC recommended a task force to investigate and advise on the use of the conservation estate by tourism. NZTB & DOC (1993) noted a need for "taking stock of the resource and analysing likely patterns of future use and

recommending strategies to cope" (p.V). Soon after the Nelson Conservation Board expressed concern for growing tourist numbers in its annual report and called "for the establishment of a national task force". Its annual report also stated that the granting of concessions to National Parks needed to be controlled "to ensure the conservation estate was not over commercialised to the point where either the tourist experience or the environment was damaged".

Department of Conservation strategic directions (1995-2000)

By the mid-1990s it was evident that the Department of Conservation needed to take leadership as arguably the key government agency responsible for sustainable management and environmentally sensitive tourism development. In 1995 a number of published documents highlighted the growing pressures of outdoor recreation and nature-based tourism in the conservation estate (Booth & Cullen, 1995; Kerr & Cullen, 1995, Corbett, 1995; Devlin et al., 1995). The Department of Conservation produced the *Visitor Strategy* (1996), noting both increased visitor numbers and changes in the mix of visitors, as well as growing diversity in the experiences of nature being sought by visitors. The *Visitor Strategy* (1996) identified unprecedented numbers of international visitors with social and environmental impacts being felt on some of the Great Walks (i.e., Abel Tasman Coastal Track, Routeburn Track), Milford Sound, Cape Reinga, Aoraki/Mt Cook and South Westland's glaciers. It reported a growing tension between the need for protection and visitor use, highlighting that the active management of visitors to lands and marine areas managed by the department had become a very live issue in the 1990s" (p.7). It also observed the "detrimental impacts on the intrinsic nature and historic values" (p.11) of visitors to vulnerable areas, and the impacts of wildlife disturbance, trampling, erosion, pollution, toilet waste, and irresponsible rubbish disposal. The New Zealand Conservation Board identified more than 60 sites in 1995 "where visitor activities were having a detrimental impact on departmental areas" (p.11).

The *Visitor Strategy* (1996) did suggest that the impact of visitor activities on the environment, was seen, at that time, as "still relatively localised and modest in scale" (p.12) and with a lesser impact on the conservation estate than pests. The *Visitor Strategy* (1996) marked the adoption of the Recreation Opportunity Spectrum (ROS) visitor management framework (Taylor, 1993), which required the identification of the discrete 'visitor groups', which were defined in the *Visitor Strategy* (1996) as a basis for articulating management guidelines for recreational zones that were designed to provide distinct qualities of nature experience. It suggested a suite of recreation and visitor impact management techniques for discrete recreational zones, including:

1. Managing and controlling visitor access (including denial of access) to some sites and/or ecosystems (an initially contentious but inevitable and ultimately successful Routeburn Track booking system was introduced in response to chronic overuse of hut facilities in 1995);
2. Limitations of commercial activity and visitor numbers/facilities/services in some zones;
3. Development or upgrading of facilities where needed;
4. Informing and educating visitors;
5. Focus on the provision of services to more accessible and 'hardened' front country zones, to relieve pressure of recreational use on backcountry sites.

The *Visitor Strategy* (1996) highlighted the need to safeguard the environment in terms of "...qualities of solitude, peace and natural quiet" (p.13). The importance of 'natural quiet' in experiences of wilderness emerged in this document. The DOC *Greenprint: Conservation in New Zealand* (1996), following the Cave Creek tragedy, placed high emphasis on visitor service provision, requiring that the inspection of all visitor-related structures be conducted in 1996 ('Quality Conservation Management System'). It also highlighted the need for judicious concessions management, noting increasing commercial pressure for the "allocation of helicopter landing rights in Mt Cook National Park" (p.14), acknowledging potential disturbance of other users through noise. It suggested that no additional landing rights should be issued until the 1999 management plan was reviewed. The growing commercial pressures of nature-based tourism development in New Zealand extended at that time to Kaikoura commercial whale tours. The Department of Conservation was fielding requests for additional operational permits for commercial whale watch tours. This signalled growing concerns for the environmental impacts of tourism; including the impacts of tourism on focal wildlife species, and the management of wilderness experiences both on the most high demand tracks and in the more remote parts of the conservation estate.

Growing concern for the environmental impacts of tourism (1997)

In 1997, in response to growing concerns for the environmental impacts of tourism, the then Parliamentary Commissioner for the Environment Morgan Williams commissioned a series of studies into the *Management of the environmental effects associated with the tourism sector*. With a focus on both the social and environmental effects and growing concerns about questions of sustainability arising from growth in tourism, it focussed on the impacts of crowding, recreational succession, displacement, and congestion at some key sites (e.g., Milford Sound). Three reports were produced, including an extensive literature review, a summary of critical issues and, subsequently, a call for submissions from the wider tourism industry. The key environmental effects of tourism on the natural environment identified at that time included:

1. Physical environment effects: air pollution, water pollution, erosion, damage to geological features, etc.);
2. Ecological effects: Wildlife (disruption of breeding patterns, feeding patterns, modification of behaviour, displacement, etc.), vegetation (trampling, damage, introduction of alien species, etc.);
3. Direct effects of people in natural environments, i.e. crowding and reduced satisfaction, displacement, noise etc.).

This report highlighted the concern that while the focus had been on sustained high growth in international tourism arrivals throughout the 1990s, targeting three million international visitors by the year 2000, central government management agencies were fragmented (PCE, 1997). Recommendations focussed on improved governance; "Lack of communication and coordination at the strategic level has meant that agencies are working at cross purposes at times" (PCE, 1997: 45). This report highlighted the importance of coordinated governance, noting that coordination and strategy was lacking for an important but fragmented sector of the economy.

There followed a DOC report on the *Impacts of visitors on natural and historic resources of conservation significance* (Cessford, 1997), the purpose of which was to "provide the basis for developing a research action plan for addressing visitor impacts on the environment" (p.5). This report differentiated between two types of environmental impacts in conservation areas:

1. Effects on conservation values (physical damage, wildlife disturbance, hazard introduction) to be managed through conservation management strategies;
2. The effects on the visitor experience to be managed through visitor management approaches.

The report suggested a framework for identifying and managing key visitor impacts on conservation values, with a focus on long-term research and information needs. The framework was designed to help identify visitor 'hotspots' where current use may compromise key environmental values, and to identify where more research and information assessment was required to assist in management of visitor impacts. At this time DOC also developed the *Visitor Asset Management Programme* (1998) (VAMPS), an asset database which advanced DOC's management of (in particular) structures and facilities. It included the creation of comprehensive inventory of each and every built item on public conservation land, its expected lifespan and replacement cost (etc.), highlighting the critical role that DOC had assumed in recreation management and tourism in New Zealand. At this time the ever closer relationship between tourism and conservation interests in New Zealand were reinforced by the gazettal in 1997 of Kahurangi National Park (formerly North West Nelson Ecological Region) and, later

in 2004, Rakiura National Park, both driven in part by regional tourism economic development interests.

In 1998 DOC released its new Strategic Business Plan (1998-2002) titled *Restoring the Dawn Chorus*. The growing pressures of international tourism were mentioned briefly, primarily as one of the key factors affecting the department. This document recognised that numbers were expected to grow continuously and that it was unlikely that in future visitors (both New Zealanders and international tourists) would be able to "use all the facilities they might like" (p.19). This document did signal early concerns around resourcing. "The Department will not be able to afford to maintain the full range of existing facilities, to new quality standards, for increased numbers of visitors (particularly from overseas), at current resourcing" (p.19). In terms of managing environmental impacts, it was noted that it was important to ensure, to the extent possible, that the areas managed by DOC are "not compromised by the impacts of visitor activities and related facilities and services" (p.31). This was to be achieved through monitoring and identifying unacceptable impacts and reacting to them, representing a reactive rather than proactive approach, no doubt due to resource limitations.

It appears that the systematic monitoring of environmental impacts was lacking through this period. Isolated attempts to determine the acceptability (or otherwise) of impacts were limited to isolated one-off case studies, often informed by the supervised research of graduate students (e.g., Kazmierow 1998; McKay, 2006; Wray et al., 2005). Booth and Espiner (2006) developed a carrying capacity method for managing human activity in Fiordland, but with the exception of regular monitoring of the aesthetic effects of aircraft overflights on visitors to Westland/TP and Aoraki/Mount Cook National Parks, little in the way of longitudinal monitoring of impacts was undertaken at this point in the development phase of New Zealand tourism. In other parts of the world, monitoring programmes are generally considered to be critical to the identification of agreed indicators of change, the adoption of standards, and the implementation of recreation and tourism management systems.

In 1999 Cessford & Dingwall produced a report titled *An approach to assessing the environmental impacts of tourism*. It highlighted the lack of research addressing the impacts of tourism on the environment to inform and provide practical guidance for conservation managers. This reinforced a point raised by the Office of the Parliamentary Commission for the Environment (1997) that "the collection and integration of data, needed to be improved" (p.3). In response, the DOC conducted a workshop to address the physical impacts of tourism in the conservation estate, attended by management and research staff from the Department. Cessford and Dingwall's report summarised the outcomes of that workshop. These included recognition of growing visitor-related effects on the environment including physical impacts, trans-location of invasive species, waste management, and wildlife disturbance and impact. The report called for more research on classification and prioritisation

of conservation value categories, as well as databases of visitor use. The key tourism-related challenges faced by DOC included provision and servicing of facilities and maintaining high use sites/trails in the conservation estate within limits of acceptable change.

In the same year Kearsley & Coughlan (1999) published a study titled *Coping with crowding: Tourist displacement in NZ backcountry huts*. This research noted that the increase in tourism threatened recreation and tourism resources and visitor experiences. It reported the social and environmental effects of crowding resulting in displacement and dissatisfaction, with inter-site displacement becoming a more widely noticed phenomenon, potentially carrying visitors into most remote and challenging physical environments (where in some cases visitors were less able to cope in response to weather changes etc.), and dispersing the environmental impacts of recreation and tourism to previously less pressured and more remote environments.

Impacts of tourism on wildlife (1992-2000)

During the course of the 1990s the Department of Conservation was further challenged to manage growing visitor demands, and concomitant business development interests, in wildlife tourism (see Figures 10-13). The sustainable management of human interactions with cetaceans off the coast of Kaikoura provided the litmus test for the commercial development of wildlife tourism in New Zealand. DOC commissioned studies conducted by MacGibbon (1991) and by Gordon et al. (1992) to investigate the impacts of tourism upon focal animals (e.g., as expressed in terms such as surface intervals between dives when vessels were present/absent), to inform sustainable management guidelines. In 1992 Gordon (et al.) produced a research report title: *Effects of whale-watching vessels on sperm whales off Kaikoura*. This document formed part of an ongoing research commitment in Kaikoura that was recognised internationally as an exemplar for research-informed sustainable management of wildlife tourism. It noted that "On a national level whale watching appears to have joined jet-boating and bungy-jumping as a tourist attraction which typifies the exciting, outdoor, "Green" image for which New Zealand is famous" (p.5). Specifically, it noted that:

1. Comparisons of vocalisations and surface behaviour of sperm whales along the coast of Kaikoura identified evidence of disturbance of wildlife through tourism operations;
2. "On some occasions sperm whales were clearly disturbed by the activities of whale watching boats." (p.2) This was usually the case when the boats failed to strictly adhere to operational guidelines for whale-watching, which means the disturbance could be avoided (i.e. boat navigation and handling);
3. The impact of tourism were "relatively undramatic" (p.3) but that long-term effects had not been measured at the time and were therefore unknown.

4. Further industry improvements may reduce the impact even further (i.e. hydrophone techniques or cooperation between aircrafts and boats)

The Kaikoura whale-watching industry was considered to have reduced its disturbance of and impacts on sperm whales following guidelines and recommendations made in a previous study by MacGibbon (1991), but noted that further improvements could be made, i.e. through consistent adherence to regulations. This programme of research warned of cumulative impacts, and the potential for adverse long-term effects of wildlife tourism, resulting in a moratorium on operator permits, despite growing visitor demand.

Other studies of sustainable wildlife tourism followed. In 1998 Higham published a study titled *Tourists and albatrosses: The dynamics of tourism at the Northern Royal Albatross Colony, Taiaroa Head, New Zealand*. With the support of Dr. Christopher Robertson (DOC Scientist), this study examined the evolution of tourism patterns at Taiaroa Head in relation to the long-term wildlife monitoring science programme dating to Dr. Lance Richdale (from 1935) and continued by the Wildlife Service and, latterly, the Department of Conservation. This study highlighted the potential long-term impacts of wildlife tourism, drawing the concept of 'non-consumptive wildlife tourism' into question. The susceptibility of wildlife to visitor impacts, the need for time series data collection and analysis, and the importance of a tourism management regime that funds the science required to inform sustainable management were clear conclusions. The evolution of wildlife tourism in Kaikoura, has extended the reach of commercial tour operations to include visitor engagements with pelagic bird species and other marine mammals including New Zealand fur seals and dusky dolphins. This course of development has, in some cases, been associated with world-class research into visitor impacts and sustainable management (e.g., Lusseau, 2003; Lusseau & Higham, 2004; Lundquist et al., 2012), which has highlighted the highly site-specific nature of wildlife tourism impacts, and cases of both apparent high and low sustainability (see Section 4.1 Local scale).

Wilderness management in the new millennium (2001-2010)

In 1999, Tourism New Zealand (formerly NZTB) launched the '100% Pure New Zealand' global marketing campaign; an global branding campaign that transcends tourism and reaches across many of New Zealand's export sectors. The '100% Pure New Zealand' brand has become the envy of national tourism marketing programmes internationally, as illustrated through generally consistent and sustained high growth in international visitor arrivals since its launch. While the target of 3 million international visitors by 2000 was not achieved (1,607,478 international tourists visited New Zealand in 1999), the high growth that had been achieved during the 1990s continued beyond 1999 through the success of '100% Pure New Zealand'. While the brand has proved adaptable to timely marketing

opportunities (e.g., '100% Pure Middle Earth'), it has not been without its critics. An initial criticism levelled against the '100% Pure' campaign was the growing disconnect between marketing claims of pristine environments and empty landscapes rich in opportunities to experience solitude, and the reality of growing pressures of recreation and tourism in New Zealand's national parks.

In 1981 The Federated Mountain Club had hosted a symposium to explore the challenges of wilderness management in the face of growing recreational and tourism demands; a workshop that resulted in the creation of the Wilderness Advisory Group (WAG). Two decades later, and in light of ever-growing demand for wilderness experiences in New Zealand at the start of the new millennium, Cessford (2001) produced an edited volume titled *The State of Wilderness in New Zealand*. This volume had a strong focus on the protection of wilderness values (e.g., solitude, remoteness, naturalness) in the face of growing recreational and tourist demand. In it, Molloy (2001) noted that while international tourist numbers increased rapidly between 1985 and 1995, DOC's budget and staff for managing visitor services and facilities decreased. NZTB's growth strategy was widely criticised for lack of recognition of the impacts of increased visitor numbers on 'traditional wilderness uses'. Pressure from the tourism industry to develop and extend sightseeing flights as well as road networks and other transport infrastructures in national parks (and other conservation areas) in the South Island were highlighted as causes of concerns vis-à-vis wilderness values.

Cessford & Dingwall (2001) observed that not only have international visitor numbers increased but the scope of activities has increased and/or changed; while traditionally most tourists have engaged in sightseeing and short scenic walks they now sought to increasingly access backcountry areas, including Great Walks and the more remote and challenging secondary or tertiary track systems. "These changes in recreation and tourism patterns present a threat to the quality of recreation experiences available both in Wilderness Areas and in other conservation lands." (p. 35). The Department of Conservation's Recreation Opportunity Spectrum (ROS) management framework had seen rapid increases in international visitor numbers in the 'backcountry comfort seekers' category while numbers of New Zealand users in this category were forecast to remain static or even decline at the same time due in part of crowding and recreational displacement.

At the time, a recent DOC report titled *Measuring the effects of aircraft overflights on recreationists in natural settings* (Booth et al., 1999) had drawn attention to the social and ecological impacts of aircrafts noise in national parks. 'Natural quiet' became a subject of public concern. In 2003 North & South published an article titled: *Wild Space Race: Loving the wilderness to death* (Chamberlain, 2003). It pointed out pressure points through ever rising tourist numbers, including Milford Sound, Abel Tasman National Park, the Tongariro Crossing, and Aoraki/Mt Cook National Park. It highlighted the view that the number of concessions issued by DOC was seen as a problem. It also explored potential solutions including seeking to maintain small scale tourism while spreading tourism to the regions,

"Encouraging tourism on private land may help relieve pressure on the public estate" (p.59), introducing a 'green levy' to fund sustainable tourism and conservation, and encouraging communities to develop local tourism strategy plans to manage tourism in their communities.

The environmental impacts of tourism in the new millennium (2000-2010)

As noted above, international visitation to New Zealand in the initial years of the new millennium grew significantly, with arrivals increasing nearly 50 per cent between the end of 1999 and 2004 (see Table 2; Figures 1 and 2). While this rapid growth was not sustained throughout the course of the decade, it did lead to further concerns about management of tourism and, in particular, the allocation of concessions for business operations on public conservation land and water. For instance, in her examination of DOC's concession management system, Parr (2000) found that there were no clear limits with regard to the maximum numbers of concessions that can be issued in the light of managing environmental and social impacts, and recommended that it needs to be clearly established "when to allow or restrict concessions, and under what conditions" (p.6), decisions that require reliable data on visitor numbers and the effects of use. Moreover, Parr found that the Department concentrated "...on the procedural aspects of concessions approval processes, rather than the strategic rationale for allowing appropriate commercial recreation services within the wider recreation-planning context" (p.26). The review recommended that DOC clarify "visitor experience standards" and develop a more proactive approach to "identify where commercial provision of recreation services may enhance its desired management outcomes" (Parr, 2000, p.28).

For Booth and Simmons (2000), the challenges associated with burgeoning tourism in New Zealand's protected natural areas, was part of an emerging phase in the nation's history of parks and tourism. "Tourism has first been an important motive for protecting 'scenery', a tool for regional development to justify park establishment, and recently, as tourism has grown in both size and scope, it provides increasing challenges to the core preservation values of national park establishment and management." (p.39f). According to Booth and Simmons (2000), national parks, having moved through an 'acquisitions' phase (1890s-1920s), a 'maintenance' phase (1930s-1950s) and a 'management' phase (1960s-mid-1980s), were now in the midst of a 'business and negotiation' phase, characterised by a focus on business management processes, revenue generation, branding, regular restructuring, and commercial investment. The further development of a concessions management approach for tourism operations on public conservation land was an important part of this phase of New Zealand's national park history.

At this time the management of tourism was identified as key challenge for the Department of Conservation. The DOC (2001) *Strategic Business Plan - 2001-2004* acknowledged the challenges associated with the rapid increase in visitor use of the areas it managed. In its *Statement of Intent 2001-2004*, DOC (2001, p.18) makes specific reference to the potential impacts of increasing visitor demands: "Managing increasing visitor pressure on certain sites will be an important part of the Department's work in coming years. The Department aims to ensure that visitor experiences are optimised, and that crowding does not spoil the experience or damage the values of sites". Notwithstanding this acknowledgement, there is relatively little detail provided with regard to objectives or management suggestions to deal with increasing visitor pressures and crowding. Rather, the focus at this time was on encouraging more New Zealanders to enjoy protected areas; ensuring that DOC's facilities were designed, constructed, operated and maintained in accordance with relevant legislation and best practice; and ensuring that visitors have "easy access to information and interpretation to help them choose, understand and enjoy the places they visit" (p.25). Some recognition of the potential for visitor impacts is evident in DOC's strategic intention to "provide for a range of appropriate recreation opportunities in the areas we manage, to the extent that the use preserves the quality of the visitors' opportunities and experiences" (p.25).

While DOC's strategic documents of the time appeared to pay limited specific attention to the management of impacts associated with increasing visitation, during the 2000-2010 period, the agency did commission various reports on approaches to managing recreation and tourism on public conservation lands, and to examine what data might be needed to inform developments in management. Harnessing knowledge developed by researchers in the USA, and a considerable international database on the benefits of outdoor recreation (Driver, Brown & Peterson, 1991), Booth, Driver, Espiner and Kappelle (2002) adapted the Beneficial Outcomes Approach (BOA) to the New Zealand context. The BOA is a management planning process that "emphasises achievement of positive social outcomes and avoidance of negative social outcomes" (p.5). The application of the BOA was intended to help DOC to better identify as well as prioritise social outcomes of conservation management, rather than focus on the management of inputs and outputs. Hence "...throughout the BOA management planning process, primary attention is focused on outcomes, defined in terms of value added to, or detracted from, individuals or society, including the values humans attach to sustainable ecosystem management" (Booth et al., 2002, p.10). "Several proponents of the BOA have described this shift of primary attention away from inputs and outputs to outcomes as a major paradigm shift in park and recreation resource management" (ibid). In their report Booth et al (2002) identified issues and practices within the current management that were inconsistent with a beneficial outcomes approach, including a need for greater emphasis on managing for specific bio-physical and social outcomes, and DOC's "ambiguous role in visitor management" (in particular, a lack of clarity in

regard to who DOC is serving and who should therefore have access to the public conservation areas); and the need for greater stakeholder involvement in outcome prioritisation.

During the 2000-2010 period, the Department of Conservation also commissioned reviews of visitor research to inform managers of research gaps, and support the development of a research strategy. Booth's (2006) review noted that "existing DOC documents fail to delimit and prioritise visitor research" (p.30), and identified the need for a DOC visitor research strategy. According to Booth, DOC's research efforts at the time, were relatively uncoordinated due to the absence of a cohesive framework. A lack of consistent data and data quality were also emphasised. Similarly, the Ministry of Tourism commissioned a bibliographic review of tourism and recreation in New Zealand's natural environment (Booth & MacKay, 2007), which included a substantial entry on 'impacts' of visitors. Approximately 60 per cent of bibliographic references documented in the report were related to social impacts.

In addition to literature review works, DOC commissioned the development of frameworks and toolkits intended to address issues associated with the impacts of visits to public conservation settings. Illustrative of DOC's focus on the visitor experience during this period, a 'Visitor Monitoring Toolkit' was developed for DOC by Tourism Resource Consultants, Lincoln University and the University of Otago (DOC, Standard Operating Procedure, 2006). DOC intended for this Standard Operating Procedure (SOP) to be used on an annual basis for monitoring trends in visitor activities, crowding, conflict, displacement and satisfaction with recreation and tourism services and facilities. Results were intended for the purposes of reporting to government, informing management plans, understanding visitor impacts and the allocation, review and monitoring of commercial recreation and tourism-related concessions (DOC, 2006). The level of uptake and the longevity of this SOP is uncertain.

The mid-2000s also saw the production of other tools and studies aimed at managing increasing demands on natural areas used for tourism, including some work aimed specifically at the identification of social and environmental indicators of change (see Hughey & Ward, 2002; Hughey et al., 2004; Johnson, Ward & Hughey, 2001; McKay, 2007; Wray, Harbrow & Kazmiero, 2005). Similarly, Booth and Espiner (2006), in a commissioned work for Environment Southland, developed an enhanced carrying capacity tool for addressing human activity in Fiordland. The study purpose was to develop a science-based planning method to assist Environment Southland and DOC "...to make decisions about the suitability of proposed and existing human activities in Fiordland, with a strong emphasis upon community involvement in the decision-making process" (p1). The outcome of the project was a detailed eleven-step carrying capacity method which set out a clear process for the identification and measurement of indicators of change, alongside a transparent process for establishing consensus around appropriate resource condition standards. The carrying capacity

framework was underpinned by three principles: community 'buy in', protecting area-related values, and scientific robustness. In 2008 a major DOC restructure included the disestablishment of DOC's Heritage Appreciation Unit and the loss of much of the department's social science capacity, with significant implications for recreation and tourism management in New Zealand's conservation estate.

The growing commercialisation of nature (2009-2010)

As the period 1990-2010 drew to a close, attention again focussed on the commercial use of public conservation lands. Wray & Booth (2010) produced a report titled *Attitudes towards commercial recreation on public conservation lands*, which documented the growth of commercial recreation activities on public lands and subsequent concerns about potential effects. This, they argued, was a topic that attracted differing and often opposing views with some raising concerns about the "fear that national parks may become 'commercialised'" (p.53). This report highlighted the need to ensure that "...commercial recreation activities are compatible with existing independent experiences and with the management objectives for the areas in question" (p.53), and to ensure that commercial operators are aware of conservation goals.

In 2010 DOC published a *Concessions Processing Review*, which was initiated by the Minister of Conservation (The Concessions Processing Review Working Group, 2010). It examined the process of issuing concessions and whether there was a need to simplify or streamline, whether length of process could be shortened, whether there was a need for more transparency and certainty for operators. The review did not give consideration to the effects of high numbers of concessions on public conservation lands. It did note 3,701 active concessions (2,993 low impact, 522 high impact); 57% for non-recreation uses and 43% for commercial recreational activities; the most common concessions based on activity were guiding, grazing, aircraft or boating, filming and access; and that DOC receives approximately 1,100 applications for concessions per year. The audit reported that the Otago (18%), West Coast Tai Poutini (13%), Canterbury (12%) and Southland (11%) conservancies received the largest number of concession applications. The review concluded that concessions were "a tool for managing commercial activities on public conservation land and enabling appropriate business opportunities, while delivering conservation outcomes and a return to the public." (p.10).

3.2) The present: 2011 – 2018

Data analysis

The second period of the temporal analysis (2011-2018) begins with over 2.5 million visitors in 2011, influenced by the much anticipated Lions rugby tour (which occurs every twelve years) and the inflated numbers of British and Irish fans during that year. Visitor numbers decreased by 1.4% in the follow year. These years were followed by accelerating and sustained high growth in arrivals in the latter part of this period from 2013 to 2017 (see **Error! Reference source not found.** and 14). In 2015 visitor arrivals exceeded 3 million for the first time. The year 2016 saw a record annual growth of over 386,000 visitors, which constitutes a relative annual change of 11.8% (see Figure 15).

The TIA (2016) *'Tourism 2025: Two years on'* comments that international visitor arrivals had been driven during this time by economic recovery in key origin markets, increased air connectivity, lower air fares (result of decreasing fuel prices and increased competition on key routes) and rapid growth in the Chinese outbound tourism market. Film tourism, particularly the success of the Hobbit movies and associated international marketing campaigns, contributed to this growth in arrivals, which the TIA noted to have "...exceeded overall global tourism growth of 4.2% in 2014 and 4.4% in 2015". This document also comments that although visitor density in New Zealand is relatively low, capacity constraints emerged during this time. Destinations that appeared to have been over-sold suffered from "shortages of some types of accommodation for short periods for certain locations", and infrastructure overload emerged as a challenge (e.g., vehicle parking and road congestion in some destination communities). The TIA was drawn to again highlight the importance of economic, environmental, social and cultural sustainability at times of sustained high growth. It noted that "The New Zealand tourism industry is highly reliant on the environment in which visitors immerse themselves, whether this is air and water quality, or urban and natural environments". In response it observed the need for strategies to ease pressure on popular destinations by dispersing tourists and reducing seasonality.

Statistics New Zealand *Tatauranga Aotearoa* (2017) reporting on the Tourism Satellite Account 2017 noted that "Overseas visitor arrivals to New Zealand increased 8.9 percent" in the year to March, representing 288,168 additional visitors, following an increase of 10.4 percent in the previous year." Key drivers identified by Statistics New Zealand included extended airline connectivity, specifically multiple new services and routes and larger aircraft capacities, increases in cruise ship tourism, over 50 films being filmed in New Zealand, and, once again, the success of the 100% Pure New Zealand international marketing campaigns. Slower growth in 2017 was attributed to the magnitude 7.8 (M_w) Kaikoura earthquake which occurred in the minutes immediately after midnight on 14 November 2016 NZDT.

This period is characterised by growth of over 1 million visitors within the space of just six years, from 2.6 million to 3.7 million. Previously, growth of 1 million visitor arrivals (from two to three million tourists) had taken 13 years⁷. Having reached three million international arrivals in 2015, sustained high growth resulted in over 3.7 million visitors arriving in New Zealand just two short years later (Table 3). This underlines the accelerating growth in international arrival during this period.

Table 3: International visitor arrivals, 2011 – 2017 (MBIE, 2017)

	Actual	Annual Change (Actual)	Annual Change (Relative, in %)
2011	2,601,447	76,400	3.0
2012	2,564,619	-36,828	-1.4
2013	2,717,698	153,079	6.0
2014	2,857,400	139,702	5.1
2015	3,131,930	274,530	9.6
2016	3,499,938	368,008	11.8
2017	3,734,187	234,249	6.7

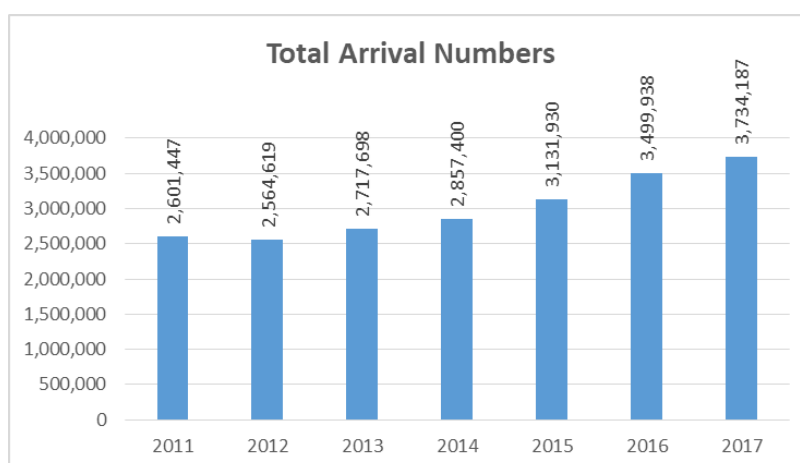


Figure 14: International visitor arrivals (MBIE, 2017)

⁷ The growth in international arrivals from two million (2002) to three million (2015) was achieved in 13 years.

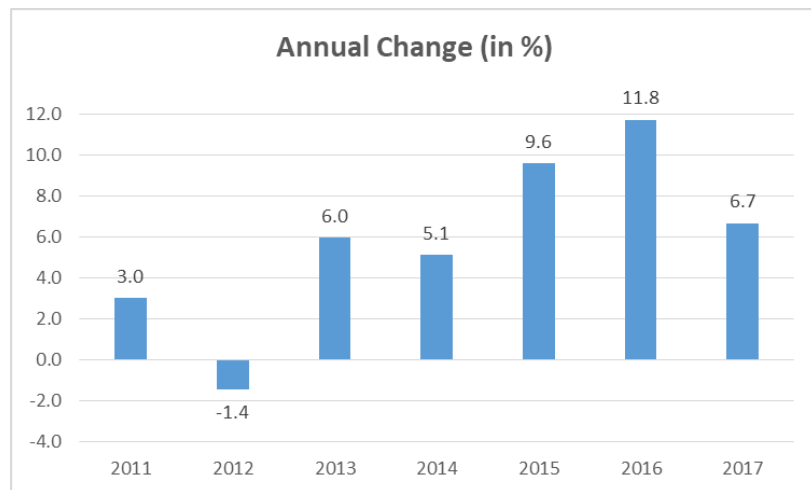


Figure 15: Annual change in international visitor arrivals (MBIE, 2017)

Australia remained the biggest source market of international visitors (see Figure 16), consistently making up between 44% and 45% of international visitors between 2009 and 2013, but with a steadily decreasing market share in the subsequent years until 2017. China's market share on the other hand is consistently growing, doubling from 5.6% in 2011 to 12% in 2017, which represents an increase of about 300,000 Chinese visitors. In 2012, China overtook both the United States and the United Kingdom and is now the second biggest source market after Australia. The United States was the third biggest visitor market in 2017. Visitor numbers from Japan, Korea and Canada are grew slowly but remained relatively stable in terms of market share.



Figure 16: International visitor arrivals by country of origin (MBIE, 2017)

The length of stay of international visitors again did not change considerably throughout the 2011-2018 period (see Figure 17), which is similar to what was observed during the previous period (1990 – 2010). When comparing the length of stay between 2011 and 2017, a slight increase in shorter trips (1-7 days and 8-14 days) can be noted (see Figure 18). The same applies when comparing trip lengths between 1990 and 2010. This could partially be explained by the fact that this data set does not include international business travellers and visitors travelling to New Zealand for conferences or educational purposes. Since these numbers also increased within the last few years they affect the distribution of length of stays. It can be concluded that tourist length of stay in New Zealand has not changed considerably over the course of the last 28 years.

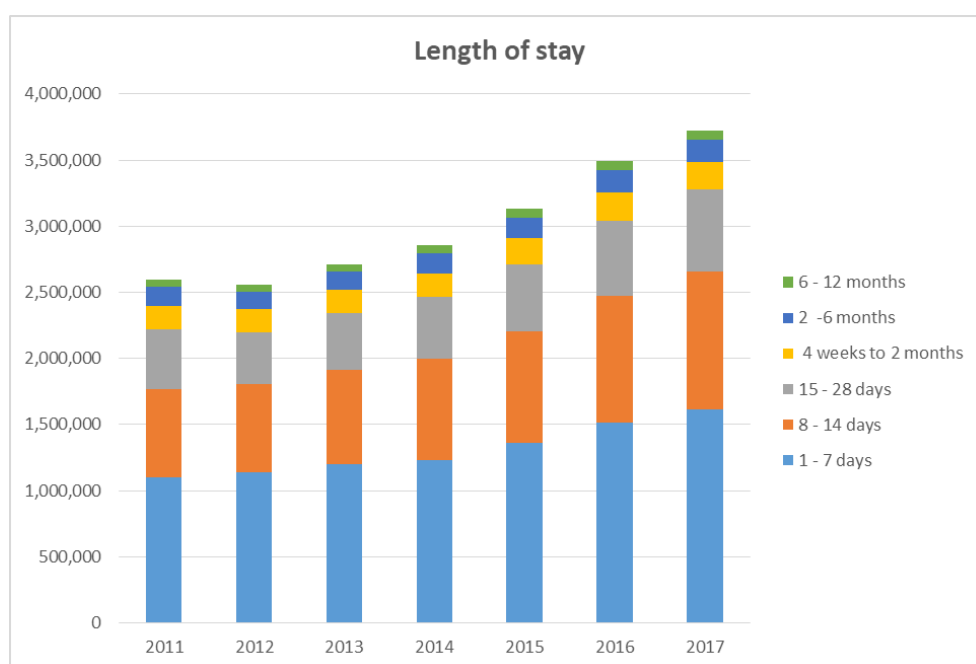


Figure 17: Length of stay of international visitors (Stats NZ Infoshare, 2018)

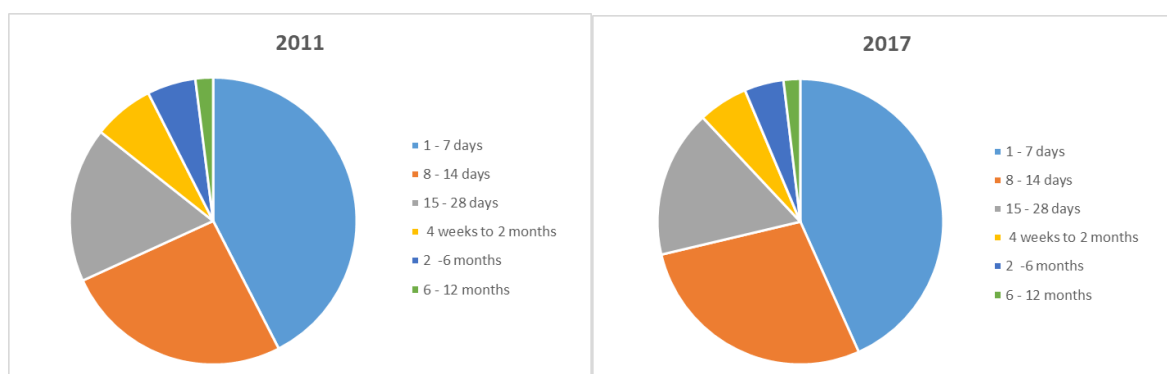


Figure 18: Length of stay of international visitors, 2011 vs 2017 (Stats NZ Infoshare, 2018)

With regards to the modes of transport used by international visitors during their stay in New Zealand, the most drastic change is the replacement of privately owned cars with rental cars (see Figure 19). Since 2013/2014, the rental car has been the most popular mode of transport, used by about one third of all visitors (37%).

The increasing popularity of the independent bus service between towns/cities which was noted in the last period (1990 – 2010) did not last and the number of visitors choosing the tour bus over the independent bus service has instead decreased. This most likely correlates with the growth of the Chinese market, where journeys by tour bus are generally popular. The plane is consistently being used as a transport mode within New Zealand by a high number of visitors, which is not surprising due to the country's geographical characteristics.

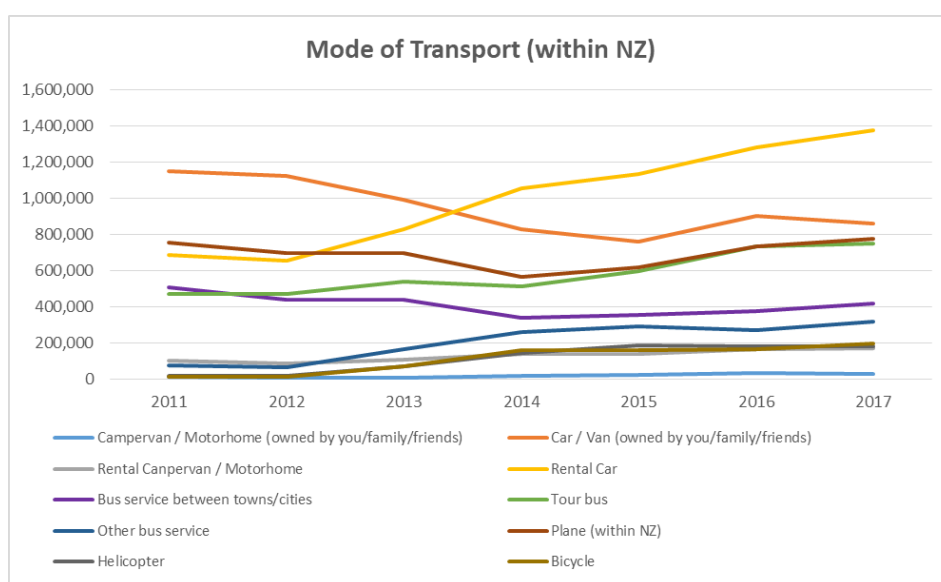


Figure 19: Mode of transport used while in NZ (Stats NZ, n.d.)

Throughout the 2011 to 2017 period, going for a walk, trek, tramp or hike remained the most popular activity for international visitors, followed by being engaged in activities in other natural areas, such as mountains, lakes or rivers, and by going to the beach (see Figure 20)⁸. The number of international tourists visiting a national park as part of their holiday in New Zealand increased significantly with particularly high growth between 2012 and 2014. In the last four years (2014 – 2017), a yearly average number of about 1.5 million international tourists visited a national park during their stay. Engagement with native birds has also increased in popularity and was the fourth most popular activity in 2017. These findings are reflected in an analysis of the places that international tourists visited during their stay (see Figure 21). Other natural areas (mountains, lakes, rivers), the beach and national parks constitute the top three most popular natural settings that international tourists visited.

⁸ Note: Data is derived from samples and may not be fully representative.

Compared to the previous period (1990 – 2010), a number of places have emerged during this period as popular places to visit. These include places significant to Māori, showing a stronger cultural focus of visitors, marine parks or reserves, and health or day spas.

Figure 21 reflects the above findings with the walk/trek/tramp/hike being by far the most popular nature activities among international visitors. This is followed by scenic boat trips. Other physical activities remain popular and were almost unchanged throughout the 2010-2017 period. Native birds have received increasing visitor attention through this period with high growth from 2012 (see Figure 23). Seals and glow worms are also popular among tourists. The number of visitors wanting to see whales during their stay in New Zealand remained stable and relatively low compared to other wildlife, no doubt a reflection of the limited opportunities and close management of whale watching in Kaikoura, and the closure of Kaikoura as a visitor destination in the latter part of the period under review, following the November 2016 earthquake.

The number of international visitors who engaged in freedom camping at some point during their stay in New Zealand dropped in 2012 and 2013 (see Figure 24). Although this may in part reflect the high use of campervans by Lions rugby fans in 2011, it also occurred following the implementation of the Freedom Camping Act 2011. Numbers stayed at this lower level for two years but then saw a period of high growth again in 2016 and 2017, peaking at the end of the period under review⁹. Expressions of public concern associated with aspects of freedom camping, including social and environmental impacts, have been associated with this growth in various regional destinations in New Zealand.

⁹ Note: Data is derived from samples and may not be fully representative.

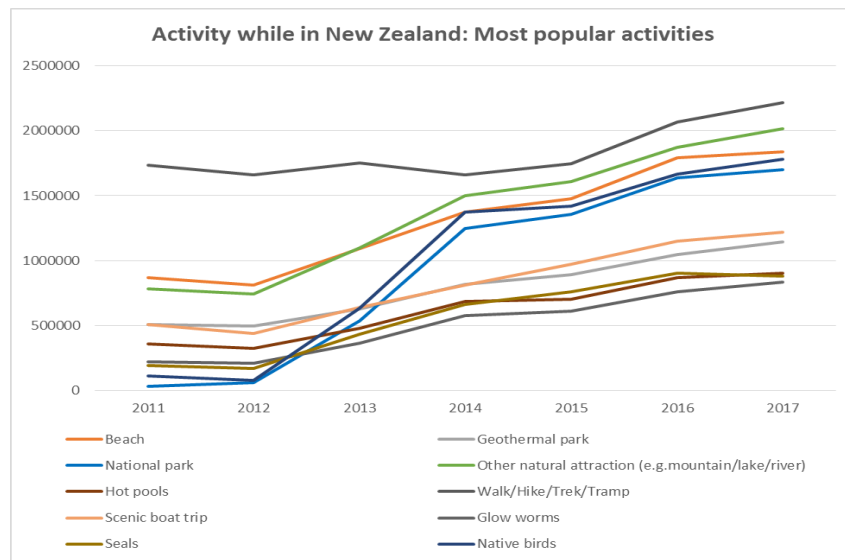


Figure 20: Most popular activities while in New Zealand (Stats NZ, n.d.)

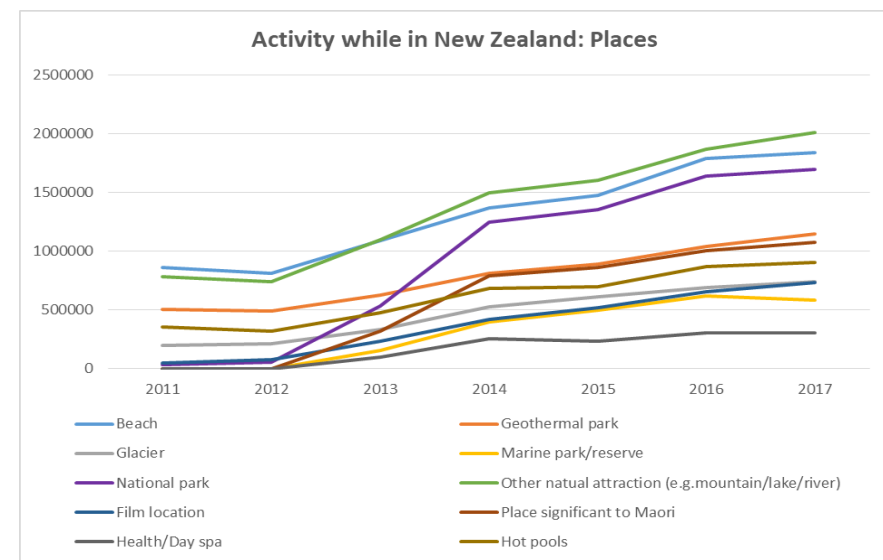


Figure 21: Places visited while in New Zealand (Stats NZ, n.d.)

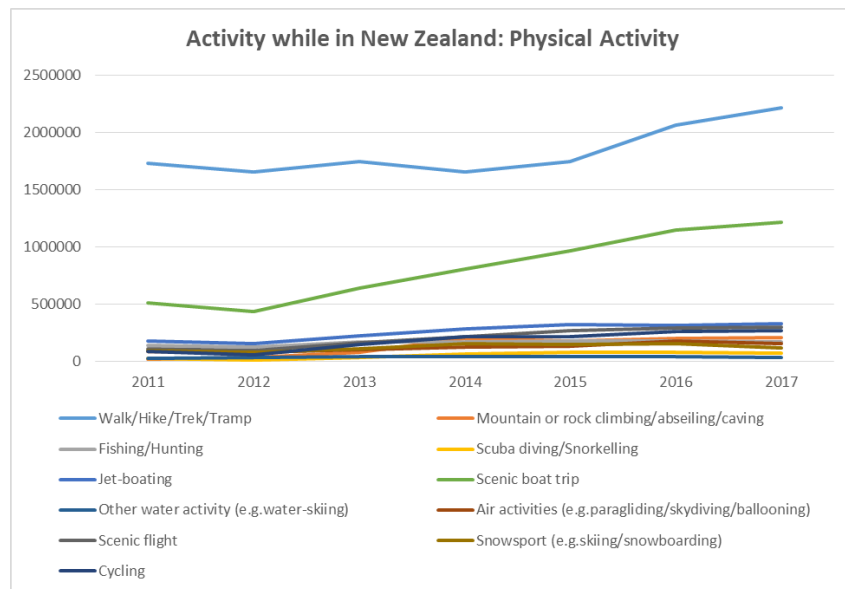


Figure 22: Physical activities while in New Zealand (Stats NZ, n.d.)

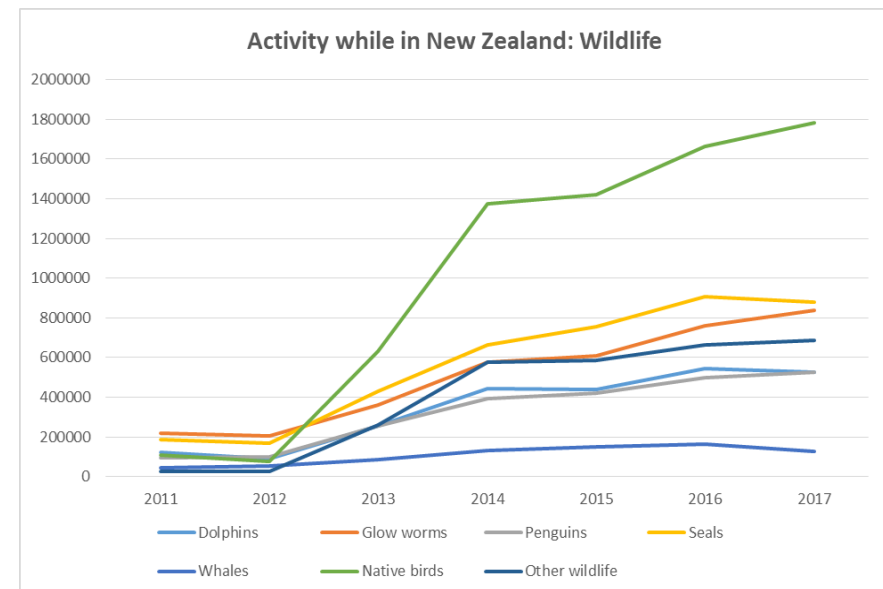


Figure 23: Wildlife activities while in New Zealand (Stats NZ, n.d.)

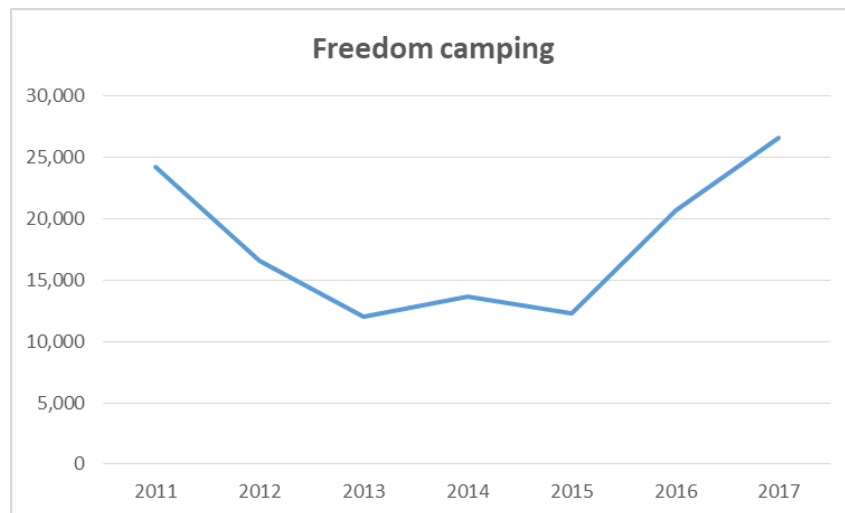


Figure 24: Number of international visitors who are freedom camping while in NZ (MBIE, 2018)

Media analysis (2011-2018)

In preparation for the media analysis, a list of relevant keywords and keyword strings was created. These were based on topics that had been identified as relevant and recurring in the literature review. A total of 32 keyword strings were identified but more than half of these (19) were excluded due to a low number of results or where other key word searches yielded similar or identical results. The media analysis was conducted with the use of the newspaper database Dow Jones Factiva. Factiva is a global news database with access to over 33,000 sources including licenced publications, websites, blogs, images and videos, and most importantly a large range of global, national and regional newspapers (Dow Jones, 2018). For the purpose of this research with its specific focus on New Zealand, and to keep the number of results at a manageable scale, the media analysis was restricted to selected New Zealand newspapers only. They included the Dominion Post, National Business Review, New Zealand Press Association, Otago Daily Times, Sunday Star-Times, The Dominion, The Independent Financial Review, The New Zealand Herald and The Press.

The search was further narrowed down by only including articles published between 01/01/2011 and 31/12/2018 to reflect the time frame of the temporal scale of this report¹⁰. The end date was set to the 31/12/18 to ensure consistency between searches which were conducted on multiple days while still including the latest relevant publications. Subsequently, the relevance of search results was analysed and its distribution across the time period (numbers of relevant articles published per year) was recorded. Factiva automatically identifies and excludes identical duplicates of articles but publications with very similar content, for example as a result of syndication, were identified manually.

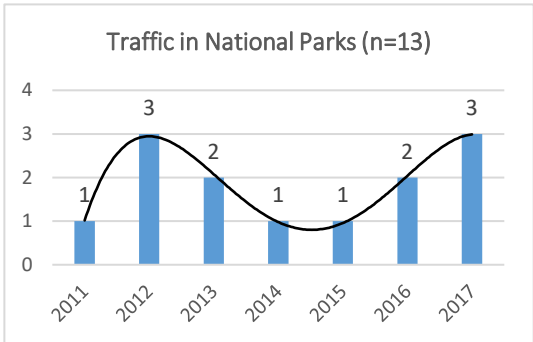
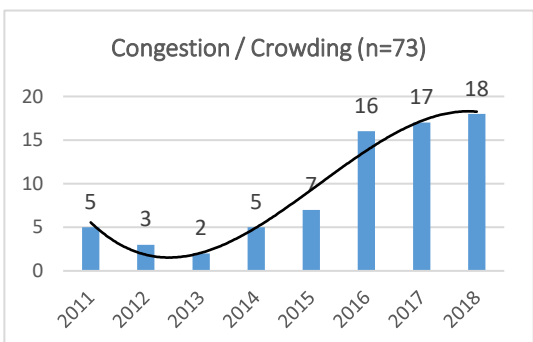
¹⁰ Because the analysis was performed in May 2018 the 2018 YTD represents only the first four months of that year (the Factiva database used in the analysis was that updated at the end of April 2018).

Articles that contained all search terms but were not relevant to the search topic were also excluded. For those searches with less than 100 search results, each article was screened for relevance. For those with more than 100 search results, the titles of articles were first scanned in chronological order and only screened in more detail if the title suggested that the article would be relevant. Key findings from this media analysis and selected quotes are presented below. For those searches with 10 or more relevant results, graphs were also produced in Excel to portray the annual distribution of published articles.

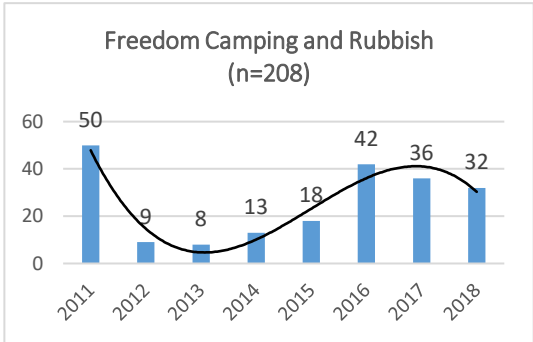
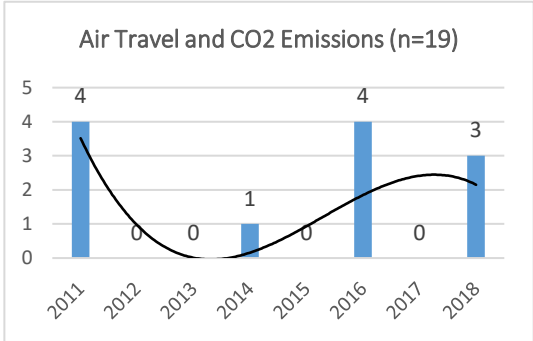
This media analysis highlights a range of emerging issues during the 2010-2018 period under review, arising from growing pressures of visitor use of natural areas, and coping with rapid growth in tourism and recreation demand. The media analysis highlights growing concerns about crowding at key front country sites. It also highlights the rapidly increasing pressures of use at iconic sites in New Zealand's national parks, such as Aoraki Mount Cook. Writing in Stuff.co.nz (11th August 2016), Mitchell's article titled 'Overcrowding a growing issue in NZ's national parks' highlights the social and environmental implications of visitor numbers increasing 25% from 2015, noting that it is now crowded even during once quiet times. " Crowding is one of the challenges facing New Zealand's national parks, which have more visitors than ever before, at all times of the year". He presents the argument that Tourism New Zealand has successfully attracted tourists to New Zealand, and now have the increasing challenge of managing them while they're here.

"At least half of all international tourists visit a national park while in New Zealand" and the consequences of growing arrivals include insufficient toilet facilities, traffic congestion, inappropriate waste disposal, and the impacts of crowding and environmental impacts on the visitor experience. There have also been cases of visitors not using public toilets provided inside the national park. Pressure points have emerged. "The White Horse Hill Campground and car park, Sealy Tarns and Hooker Valley Track, had struggled to cope at peak visitor times this summer". Because DOC cannot control the number of people visiting national parks, they can only try to provide sufficient facilities (including car parking and toilets), improve track designs, and seek to allocate resources to cope with sustained and growing visitor pressures. In the latter part of this period, high growth in freedom camping is also increasingly associated with the environmental impacts of waste/effluent management on water quality, the visual impacts of illegal overnight camping and associated social impacts on host communities.

Media analysis results

Graphics	Search terms	Key notes																		
 Traffic in National Parks (n=13) <table><thead><tr><th>Year</th><th>Traffic</th></tr></thead><tbody><tr><td>2011</td><td>1</td></tr><tr><td>2012</td><td>3</td></tr><tr><td>2013</td><td>2</td></tr><tr><td>2014</td><td>1</td></tr><tr><td>2015</td><td>1</td></tr><tr><td>2016</td><td>2</td></tr><tr><td>2017</td><td>3</td></tr></tbody></table>	Year	Traffic	2011	1	2012	3	2013	2	2014	1	2015	1	2016	2	2017	3	Traffic & Tourism / tourist & National park / conservation area	- In 2011 – 2014, media attention on proposals of new access routes to National Parks, especially Milford Sound, for example via a new road/tunnel/monorail; discussion of conservation vs easier access to remote areas which helps the tourism industry “New Zealand Transport Agency (NZTA) statistics show average daily traffic on the road [to/from Milford Sound] throughout the year was 608 in 2010, rising to 697 last year. Just over 80% of traffic was passenger vehicles or camper vans” (Beckham, 2015) → suggestions are made for solutions to reduce congestion “A leading New Zealand tourism consultant says a park-and-ride system is urgently needed at Milford Sound to reduce traffic congestion at peak times.” “A park-and-ride system would require people to leave their cars at a designated point and catch a bus.” “It's reaching a tipping point during the peak visitor season and those peak hours of the day where the visitor experience will become compromised, and no-one wants that.” (Beckham, 2016) - Tongariro Crossing is also the focus of media attention		
Year	Traffic																			
2011	1																			
2012	3																			
2013	2																			
2014	1																			
2015	1																			
2016	2																			
2017	3																			
 Congestion / Crowding (n=73) <table><thead><tr><th>Year</th><th>Congestion / Crowding</th></tr></thead><tbody><tr><td>2011</td><td>5</td></tr><tr><td>2012</td><td>3</td></tr><tr><td>2013</td><td>2</td></tr><tr><td>2014</td><td>5</td></tr><tr><td>2015</td><td>7</td></tr><tr><td>2016</td><td>16</td></tr><tr><td>2017</td><td>17</td></tr><tr><td>2018</td><td>18</td></tr></tbody></table>	Year	Congestion / Crowding	2011	5	2012	3	2013	2	2014	5	2015	7	2016	16	2017	17	2018	18	Tourism / tourist & Congestion / crowding	- Places mentioned: Milford Sound, Akaroa, Queenstown/Frankton, Mt Eden, Wanaka, The Church of the Good Shepherd (Lake Tekapo), Kaikoura, Mt Cook, Wanaka, Dunedin (Otago Peninsula) - Akaroa’s crowding is due to cruise tourism; article refers to survey of local residents: “66 per cent identified problems caused by the visits, including a strain on facilities and amenities (137 mentions), overcrowding and congestion (121 mentions), and traffic and parking congestion (119 mentions)” (Meier, 2013) - The Church of the Good Shepherd: “The church this year banned photography inside because of crowding and congestion” (Bradley, 2015) “Waves of tourists are overcrowding New Zealand's national parks - and not just in summer.” “Crowding is one of the challenges facing New Zealand's national parks, which have more visitors than ever before, at all times of the year.” (Mitchell, 2016) “Nearly one in five New Zealanders are worried about the influx of tourists, according to a survey by Tourism Industry Aotearoa and Tourism New Zealand.” (Bradley, 2016) “The number of domestic visitors coming to Queenstown in January fell 10% compared with last year.” “He acknowledged locals were feeling a strain in relation to infrastructure, particularly around traffic congestion.” (Scott, 2017)
Year	Congestion / Crowding																			
2011	5																			
2012	3																			
2013	2																			
2014	5																			
2015	7																			
2016	16																			
2017	17																			
2018	18																			

		• “Three new freedom-camping sites are proposed for Dunedin, as the two already provided by the Dunedin City Council have reached capacity.” (Loughrey, 2017) • “Surging visitor numbers have not affected the overall level of satisfaction of tourists visiting Milford Sound, a University of Otago survey shows”. “But about half of those surveyed were slightly annoyed by the numbers of tourists, vehicles and noise” (Bradley, 2017) • “Foreign visitors have swamped eco- tourism sites in the South Island, largely to the exclusion of New Zealanders.” (Otago Daily Times, 2018)																		
Tourism and Human Waste (n=23) <table><tr><th>Year</th><th>Value</th></tr><tr><td>2011</td><td>3</td></tr><tr><td>2012</td><td>1</td></tr><tr><td>2013</td><td>0</td></tr><tr><td>2014</td><td>0</td></tr><tr><td>2015</td><td>1</td></tr><tr><td>2016</td><td>8</td></tr><tr><td>2017</td><td>5</td></tr><tr><td>2018</td><td>5</td></tr></table>	Year	Value	2011	3	2012	1	2013	0	2014	0	2015	1	2016	8	2017	5	2018	5	Tourism / tourist & Defecation / faeces / human waste NOT Freedom camping	• Has become more prominent topic in the media in recent years (2016 – 2018), probably linked to generally increased tourist numbers • Places mentioned: Waitomo Caves, Rotorua, generally around lakes, along cycle trails, on Great Walks and other tracks • Topics: concern for live stock, pollution of waterways, cost for communities, dealing with human waste especially in remote areas, e.g. on Great Walks or in National Parks • “DOC estimates that visitors deposit close to 300,000 litres of excrement in the 192 Great Walk toilets each year. The cost of nature's call in our national parks in the past financial year was close to \$300,000, DOC figures show.” (Sunday Star-Times, 2016)
Year	Value																			
2011	3																			
2012	1																			
2013	0																			
2014	0																			
2015	1																			
2016	8																			
2017	5																			
2018	5																			
Freedom Camping and Human Waste (n=93) <table><tr><th>Year</th><th>Value</th></tr><tr><td>2011</td><td>30</td></tr><tr><td>2012</td><td>5</td></tr><tr><td>2013</td><td>2</td></tr><tr><td>2014</td><td>8</td></tr><tr><td>2015</td><td>5</td></tr><tr><td>2016</td><td>18</td></tr><tr><td>2017</td><td>12</td></tr><tr><td>2018</td><td>13</td></tr></table>	Year	Value	2011	30	2012	5	2013	2	2014	8	2015	5	2016	18	2017	12	2018	13	Freedom camping + Defecation / faeces / human waste	• Lots of media attention in 2011 around the introduction of the Freedom Camping Bill, less attention in 2012 – 2015. Becoming a problem again now (2016-2018), probably due to increasing tourist numbers • Many articles revolving around: cost for communities, impact on the environment • “Freedom camping has become a problem in tourist hot spots with locals angered by campers leaving human waste and litter behind.” (The Press, 2011) • “Mr Hague [Green MP] said freedom campers had an infinitesimally small impact on fresh water quality while dairying intensification was having a devastating impact.” (New Zealand Press Association, 2011) • “More than 50 vehicles had been at the site each night, Goldspink [resident] said, and he was concerned about the long-term effects on the water quality.” (Stylianou, 2016) • “Akaroa residents are calling for action on freedom campers, arguing issues related to the practice show little sign of easing up.” (Lewis, 2018) • “a number of issues raised by their ratepayers and residents: Locals crowded out of popular sites; piles of rubbish and human waste left in the campers' wake; and a general lack of respect for these spots and surroundings.” (Dominion Post, 2018)
Year	Value																			
2011	30																			
2012	5																			
2013	2																			
2014	8																			
2015	5																			
2016	18																			
2017	12																			
2018	13																			

Freedom Camping and Rubbish (n=208) <table><tr><th>Year</th><th>Count</th></tr><tr><td>2011</td><td>50</td></tr><tr><td>2012</td><td>9</td></tr><tr><td>2013</td><td>8</td></tr><tr><td>2014</td><td>13</td></tr><tr><td>2015</td><td>18</td></tr><tr><td>2016</td><td>42</td></tr><tr><td>2017</td><td>36</td></tr><tr><td>2018</td><td>32</td></tr></table>	Year	Count	2011	50	2012	9	2013	8	2014	13	2015	18	2016	42	2017	36	2018	32	Freedom camping + Litter / rubbish / waste	• Mostly similar articles to the search on freedom camping and human waste; the two are usually mentioned together, seem to have been similarly acute problems; also similar temporal distribution, i.e. lots of media attention in 2011 around new Freedom Camping Bill and then again in recent years • “An estimated 60,000 international visitors a year go freedom camping during their stay in New Zealand, but there are no official statistics on where they stay, or how long for.” (Cropp, 2016) • “The freedom camping situation at Lowburn improved this season, despite police removing some rule-breakers.” “there was a “big improvement” in the rubbish situation compared with the year before.” (Edwards, 2016) • “About 300kg of rubbish has been collected daily from freedom camping sites around Lake Dunstan at times this year, the agency in charge of managing the areas says.” (Jones, 2017) • “solar-powered compacting rubbish bins that alert contractors when they need emptying are cutting the mess at camping areas and picnic spots.” (Cropp, 2017) • “Freedom campers have been flocking to Warrington in record numbers with up to 100 vehicles parking at the village's domain each night during summer.” (Miller, 2018)
Year	Count																			
2011	50																			
2012	9																			
2013	8																			
2014	13																			
2015	18																			
2016	42																			
2017	36																			
2018	32																			
Air Travel and CO2 Emissions (n=19) <table><tr><th>Year</th><th>Count</th></tr><tr><td>2011</td><td>4</td></tr><tr><td>2012</td><td>0</td></tr><tr><td>2013</td><td>0</td></tr><tr><td>2014</td><td>1</td></tr><tr><td>2015</td><td>0</td></tr><tr><td>2016</td><td>4</td></tr><tr><td>2017</td><td>0</td></tr><tr><td>2018</td><td>3</td></tr></table>	Year	Count	2011	4	2012	0	2013	0	2014	1	2015	0	2016	4	2017	0	2018	3	Air travel + Carbon emissions / CO2 / greenhouse gas emissions	• Relatively consistent media interest throughout the 2011-2018 period • Some articles cover the passenger duty tax Britain introduced in 2012 and its impact on New Zealand tourism businesses • Few articles discuss tourism in particular, more interest on the air travel done by politicians, business people, etc. and question whether they offset • “According to the WWF International, airline travel is the fastest- growing source of global greenhouse gas emissions, leaving trucking and coal-burning power plants behind. Already flights each year produce about 5 per cent of the world's output from all sources” (<i>The Press</i>, 2015) • “A carbon emissions audit finds contributions from the tourism industry make up nearly one-tenth of total greenhouse gas emissions.” “The rapid increase in tourism demand is effectively outstripping the decarbonisation of tourism-related technology. We project that, due to its high carbon intensity and continuing growth, tourism will constitute a growing part of the world's greenhouse gas emissions.” (<i>Sunday Star-Times</i>, 2018)
Year	Count																			
2011	4																			
2012	0																			
2013	0																			
2014	1																			
2015	0																			
2016	4																			
2017	0																			
2018	3																			

Climate Change and Air Travel (n=12) <table><tr><th>Year</th><th>Count</th></tr><tr><td>2011</td><td>4</td></tr><tr><td>2012</td><td>0</td></tr><tr><td>2013</td><td>0</td></tr><tr><td>2014</td><td>1</td></tr><tr><td>2015</td><td>0</td></tr><tr><td>2016</td><td>4</td></tr><tr><td>2017</td><td>0</td></tr><tr><td>2018</td><td>3</td></tr></table>	Year	Count	2011	4	2012	0	2013	0	2014	1	2015	0	2016	4	2017	0	2018	3	Climate change + Air travel	“One word conspicuously absent from the final text of the Paris Agreement on climate change is "aviation". The most recent report from the Intergovernmental Panel on Climate Change put the growth in emissions from international flights (the lion's share of the industry's emissions) at around 40 per cent between 1990 and 2010.” (<i>The New Zealand Herald</i>, 2016)
Year	Count																			
2011	4																			
2012	0																			
2013	0																			
2014	1																			
2015	0																			
2016	4																			
2017	0																			
2018	3																			
Concessions and impact on the environment (n=12) <table><tr><th>Year</th><th>Count</th></tr><tr><td>2011</td><td>1</td></tr><tr><td>2012</td><td>1</td></tr><tr><td>2013</td><td>4</td></tr><tr><td>2014</td><td>0</td></tr><tr><td>2015</td><td>2</td></tr><tr><td>2016</td><td>3</td></tr><tr><td>2017</td><td>1</td></tr></table>	Year	Count	2011	1	2012	1	2013	4	2014	0	2015	2	2016	3	2017	1	Department of conservation / DOC + Concessions + Impact + Environment	- Articles usually refer to individual projects, i.e. Milford Sound tunnel, ski field propositions, etc. “Abel Tasman National Park tourism operators fear a plan designed to enhance the coastal visitor experience will do the opposite.” (plan to double concession fees for tourism operators) “DOC and the council had failed to listen to years of operator concerns that herding visitors into a few commercial drop-off points would spoil the environment and the visitor experience” (<i>The Press</i>, 2012) “The impact of increased helicopter flights on a Fiordland National Park ice plateau will be minimal compared with the harm caused by trampers, an aviation industry leader says” (Taylor, 2016).		
Year	Count																			
2011	1																			
2012	1																			
2013	4																			
2014	0																			
2015	2																			
2016	3																			
2017	1																			

Keyword searches without graphs

Search terms	Number of results	Key notes
Tourism / tourist +	6	- No results for period 2011 – 2015, all 6 articles in 2016 and 2017 - More articles mention the impact of didymo on the tourism industry (i.e. threats to the fishing industry, NZ's image, etc.) than the impact of tourism on the spread of didymo

Didymo / didymosphenia geminata		• Didymo affects the 100% pure/green/clean tourism image of New Zealand as tourists travel through the country and experience the pollution of water ways with didymo • Tourism identified as the most likely reason for the introduction of didymo to NZ but more focus now on the question why it is spreading so much
Tourism / tourist + Kauri dieback	9	• In 2013 and 2014 media attention on government funding for research into kauri dieback, then attention drops in 2015/2016 and comes back in 2017/2018 mostly around the closure of areas, i.e. Waitakere Ranges • Opinions on closing affected areas for tourism access; impact of tourists on the spread of the disease vs the impact of closing areas on the tourism industry • “possible measure was closing the forest’s [Waipoua Forest] main tourist centre near old nurseries where the disease was thought to have entered.” (Powley, 2013) • “His [Conservation Minister Nick Smith] financial destruction of DoC and refusal to fund the kauri dieback research programme beyond June will consign New Zealand’s kauri to history in a very short time (The New Zealand Herald, 2014) • “The Waitakere Ranges could be closed to the million people who visit every year under a dramatic proposal to save the west Auckland park from kauri dieback disease” (Morton, 2017)
Tourism / tourist + Glacier retreat	3	• Media attention on the impact of glacier retreat on the tourism industry (not the other way round) and in 2013 particularly on the discussion of the construction of new private roads to the glaciers • “University of Canterbury geographer Dr Heather Purdie said she had been monitoring Fox Glacier since 2005 and was increasingly concerned about the impact that climate-driven glacier retreat would have on glacier tourism and regions reliant on glacier-related products.” (Manning, 2014)
Tourism / tourist + Congestion / crowding + National park / conservation area	9	• National Parks / Places mentioned: Milford Sound, Tongariro Crossing, Cathedral Cove • Topics: Tunnel/Monorail in Milford Sound National Park, tourist tax, national park fee, etc. • “Waves of tourists are overcrowding New Zealand’s national parks - and not just in summer.” “Crowding is one of the challenges facing New Zealand’s national parks, which have more visitors than ever before, at all times of the year.” (Mitchell, 2016) • Tongariro Crossing: “the growing numbers have created three problems: congestion on the roads; congestion at the toilets; congestion on the track” (Carville, 2017) • “A leading New Zealand tourism consultant says a park-and-ride system is urgently needed at Milford Sound to reduce traffic congestion at peak times” (Beckham, 2016)
Cruise tourism / industry + Waste / rubbish / litter	2	• “The cruise ship industry is a brilliant business model, but it would be hard to find a more environmentally destructive form of transport, Canadian academic David Brown says. Cruise ships used the lowest quality oil for fuel, had limited controls imposed on the dumping of waste at sea and the whole premise of the industry revolved around excessive consumption, he said.” (McLean, 2011) • “Despite the reputation for slow and leisurely travel, cruise tourism is still a big carbon emitter. Air transport accounts for the largest share of tourism-related greenhouse gas emissions, but cruises remain the most emissions-intense mode of transport per

		kilometre travelled, according to a 2016 report from the European Environment Agency. This carbon footprint is bumped up by between 10 and 30 per cent because cruisers often fly to and from their departure and arrival ports.” (<i>Sunday Star-Times</i> , 2017)
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DOC's (2017) report titled 'National recreation and tourism trends' noted that "53% of international visitors recorded visits to national parks", an annual growth rate of 11%. Growth was reported among visitors from all countries, but especially high growth rates for Chinese visitors (32%), the rest of Asia (19%), North America (17%) and Germany (16%). Fiordland and Aoraki/Mt Cook were reported to have particularly high visitor levels and high growth rates, but "some of the parks with lowest visitation have high growth rates - Rakiura (42%), Nelson Lakes (29%), Kahurangi (26%), along with Whanganui (11%)" (see Figure 25). Concern has also been expressed for the displacement of New Zealanders from the iconic tracks in the national parks. Displacement may be spatial (displacement to lower tier tracks which tend to be more physically and mentally demanding), or temporal (displacement to off peak seasons, which may expose trampers to the greater challenges of weather and track conditions). Both spatial and temporal displacement may have implications for visitor safety, as well as social and environmental impacts. Displacement may also take the form of abandonment of the preferred activity.

Pressures on tracks and trails in the conservation estate received increasing media and public attention during this period, with the crowding on the Tongariro Crossing being particularly prominent. The on-line booking system for huts on some Great Walks was extended during this period but not without growing concerns about the abuse of the hut payment system, particularly non-payment and long stays in huts with no DOC wardens present. *The Gisborne Herald* (2016) reported that trampers on Lake Waikaremoana Great Walk "continue to stay in huts without paying and do not use the designated toilets" despite increased warden efforts. It claimed that this happens every year but the issue is becoming more acute with increasing numbers of trampers. It also noted that "DOC kicks out eight illegal campers a day on trails in the South Island, including the Routeburn, Milford and Kepler tracks, where wardens have also had problems with human waste". Concerns were also expressed about the abuse of the DOC hut system which has been used as very cheap accommodation for international backpackers who purchase annual hut pass for \$160, or even \$100 with YHA membership. The *New Zealand Herald* (2016) reported that a DOC staff member has revealed one group of trampers (three families) that had invented twelve children (who can be booked for free) to book out an entire hut for their stay at Waitawheta Hut (Kaimai Mamaku Forest Park) to have exclusive use of the hut.

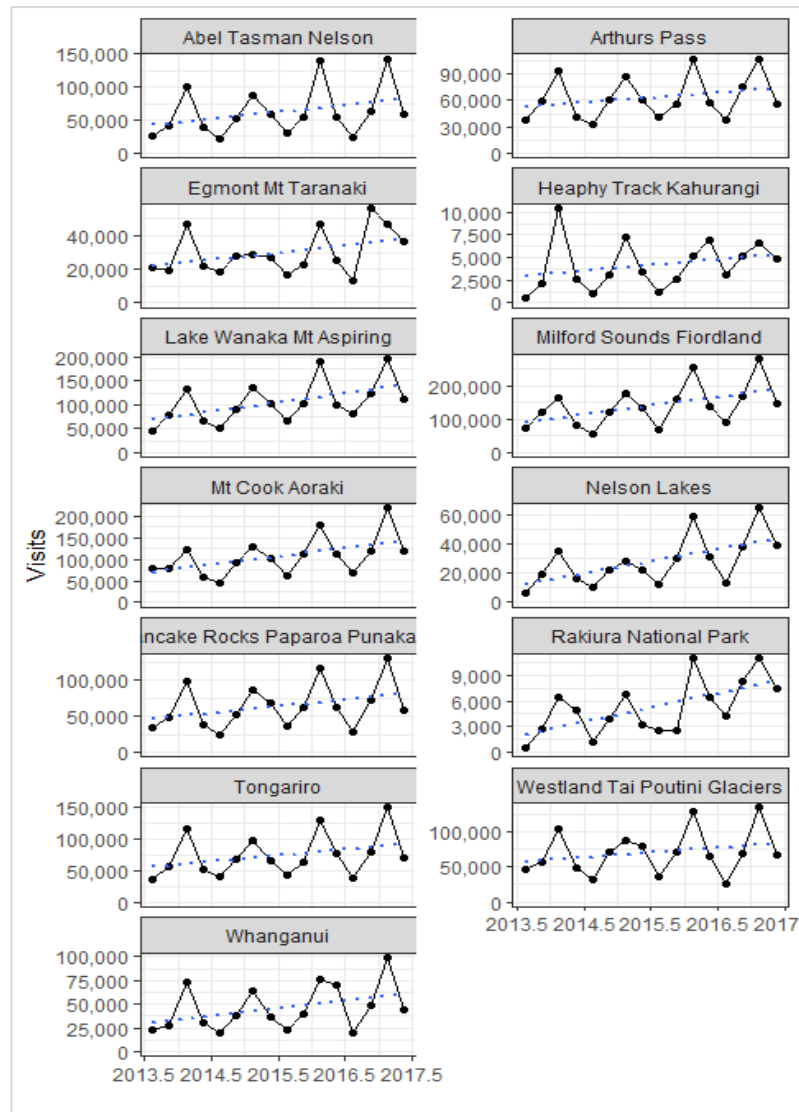


Figure 25: International visitors by national parks, 2013 – 2017 (year ending June) (DOC, 2017c)

Department of Conservation funding

Department of Conservation funding emerges as an increasingly acute problem during this period. Following years of concern about sinking DOC funding, Gutsell (2016, May) wrote in an article titled 'DOC funding cut by \$40m - independent expert', that Vote Conservation figures have dropped from \$471.9m to \$430m. However, "DoC was adamant funding had not been cut and said it expected the final budget for 2016/17 to be substantially higher once budget transfers were confirmed". About half of DOC's funds is spent on tourism and with the decreased funding concerns were expressed about not enough money being available to maintain pest control within the conservation estate. This was

expressed in a National Radio interview¹¹ in 12th May 2017 where calls were made for more transparency about fund allocations and spending. Some environmental and conservation groups had claimed that the DOC spends money on tourism rather than threatened species and biodiversity because they are required to generate income from the conservation estate. Greenpeace made the accusation that: "the government's real intention was to exploit the country's wildlife to make a quick buck". The DOC/government counter argument is that income from tourism can be invest in preserving biodiversity.

With growing concerns about the social and environmental impacts of sustained high growth tourism the looming general election in 2017 brought long overdue attention to the issues of deferred and delayed infrastructure investment, tourism and conservation management, and the issues of DOC under-funding. In May 2017 DOC announced that it was to receive \$76 million over the next four years to develop and upgrade tourist facilities and expand the Great Walks network. "The Government will invest \$76 million through Budget 2017 on new and upgraded tourism infrastructure for the Department of Conservation as part of a \$178 million tourism infrastructure package" (DOC, 2017a). This investment formed part of the Government's Business Growth Agenda and the Regional Economic Development programme. "The funding from Budget 2017 will go towards better managing the impact of the forecasted growth in visitor numbers by helping us to encourage visitors to disperse to new, lesser used locations" (DOC, 2017a)

This four year investment targeted several specific outcomes including; enhanced visitor management (in the light of the anticipated growth), improving the delivery of high quality visitor experiences (\$19.8m); expanding the Great Walks network through the creation of two new Great Walks to relieve pressure on popular sites and spread economic benefits (\$12.7m); develop a network of Great Day Walks and Great Short Walks (\$5.7m); upgrade & develop tourist facilities " increased maintenance, cleaning, wear and tear on huts, tracks and facilities, improving the quality of roads, and compliance activity" (\$23m); and improving DOC's online services, including a more customer focused service and new booking system (\$11.4m).

At the same time, DOC (2017) announced 'Modest fee increases for Great Walks'. It noted that as a result of the first review of the Great Walks pricing, DOC has 'modestly' increased the fees for huts and campsites. Increases were based on the popularity of the track (the highest increase being 30% for Milford track). It reported the expectation that this would raise DOC's revenue by \$880,000 per year, based on the same number of users. About 60% of visitors to the Great Walks are international

¹¹ Chiang (2017) 'DOC money going to tourism not environment – Conservationists'
<https://www.radionz.co.nz/news/national/330610/doc-money-going-to-tourism-not-environment-conservationists>

visitors and a 35% increase of use of the Great Walks network had occurred in the three year from 2015-2017. DOC (2017) noted that there is a \$1.2 million shortfall each year for DOC between the income generated and cost of maintaining the Great Walks; and that this shortfall had been growing with increasing visitor numbers. It also announced the introduction of seasonal pricing for some tracks. "DOC will continue to invest in New Zealand's extensive network of huts and tracks offering fantastic, lesser-known multi-day walks for those seeking quieter, lower-cost experiences" (DOC, 2017b).

Soon after, in August 2017 an article appeared in the *New Zealand Herald* titled 'Foreigners to pay double to tramp New Zealand's Great Walks' (Davison, 2017). It noted that the government planned to increase fees for Great Walks again and to charge tourists double the fees on the five most popular tracks (i.e., Milford, Routeburn, Kepler, Abel Tasman and Tongariro). Under the proposed arrangement New Zealanders would still pay the same fees, with the changes to be introduced from October 2018. This was expected to generate an additional \$4 million revenue that would be spent on conservation projects. The government also announced an extra \$5.4 million of funding per year for 'community-led conservation programmes'. At the time the Parliamentary Commissioner for the Environment had warned that DOC needed "a great deal more money" to cope with the growing environmental pressures of tourism. These announcements at the time of the general election signalled a significant change in tourism policy. Previous governments had strongly resisted talk of a 'green tax' on visitor arrivals, tourist levy, or regional bed tax, which had been framed as potentially compromising New Zealand's competitiveness in the global tourism market. Several years of sustained high growth tourism, and growing public concerns about the environmental sustainability of tourism, over tourism and social license at the community level, clearly undermined political resistance to the discussion of new funding mechanisms, particularly relating to DOC funding and tourist infrastructure and facility investment.

Rapid tourism growth and the challenges of sustainability

At the start of the period under review DOC (2011) produced its Destination Management Framework. "The Destination Management Framework is part of a range of change programmes that will help DOC to better achieve its conservation objectives, through increased efficiencies and working with others" (p.3). It noted that "DOC will be investing more at places that are popular and valued, and that provide commercial and/or community opportunities" (p.4). DOC reported that it was over-commitment to sustain the wide range of opportunities within DOC's area of responsibility that current resources commitments cannot sustain. Optimised investment was considered necessary in order to provide "an optimal mix of facilities and services across the desired range of opportunities in the most cost-

effective way" (p.14) The DOC (2011) Destination Management Framework outlined a categorisation of destinations and a commitment to allocate resources evenly across these four categories:

- Icons: Base of international and national tourism
- Gateways: Encourage outdoor recreation and conservation education
- Local Gems: Local/Regional opportunities for outdoor recreation
- Backcountry Networks: Places for challenging adventure in conservation areas

The sustained success of international marketing efforts to achieve growth in international arrivals has been beyond doubt, as clearly evident in the data presented above. The implications of this growth success in terms of tourism management, conservation management and the challenges of social and environmental sustainability have been considerable, particularly in the years between 2013 and 2017 when visitor arrivals increased from 2.7 to over 3.7 million per annum. The high growth in tourism that occurred in 2015, when three million visitors arrived in New Zealand for the first time in a calendar year, coincided with the development of a strategic partnership between DOC and TIA (TIA & DOC, 2015) with the vision: " A partnership that is positive, enduring and a win/win for tourism and conservation" (p.2). The core principles of this partnership included:

- Building strong relationships between the tourism industry and DOC;
- Better engagement by DOC working directly with tourism operators
- "Actively encourage commercial activities and proposals that grow conservation." (p.2) to be achieved through actions like providing information, supporting concessionaries to exceed their conservation contributions, foster the right culture of communication and understanding of respective constraints, challenges and opportunities.
- "Pursue national consistency and efficiency in DOC's commercial processes and decision-making." (p.2)

DOC Commercial and Business partnerships

A feature of the Department of Conservation during the period under review is the strong strategic focus on the development of commercial and business partnerships. Department of Conservation Statements of Intent during this time make this focus clear (2011 – 2016). These documents make reference to the importance of the Strategic Approach to developing business partnerships to be "Working proactively with the business sector" (2011; p.12); "More business opportunities delivering increased economic prosperity and conservation gain" (2012; p.11), "Conservation gains from more business partnerships" (2014; p.11) and the goal that "Every business fosters conservation for this and

future generations" (2015; p.4). The DOC (2014) 'Statement of Intent 2014 – 2018' outlines that "The Department is contributing to Government's Better Public Service results by:

- Working with businesses to achieve conservation gains in ways that deliver environmental, social and economic benefits to New Zealanders (...);
- Putting more emphasis on partnerships, relationship building, sharing skills and knowledge, and involving others'
- Working with all Natural Resources Sector agencies to implement medium term priorities agreed by Government for the sector and described in the Building Growth from Natural Resources Progress Report" (DOC, 2014b, p. 5)

The DOC (2016) Statement of Intent 2016 – 2020 outlines several key goals including to work with work with communities to "protect, restore and manage" conservation estate (p.7), develop partnerships to grow conservation and strive to ensure that New Zealanders see nature and its conservation as their personal responsibility. Immediate priorities included to fight weeds and kauri dieback, protect native birds, especially Kiwi, and to advance Island predator programmes. Longer-term goals (next 10 years) were identified to be pest management in 50% of New Zealand's natural ecosystems and restoration of fifty freshwater ecosystems throughout the country. DOC recognises in this document that its role lies at the heart of the tourism and recreation industry with a high number of tourists coming to experience New Zealand's natural landscapes, and that conservation management is critical to protect and support New Zealand's strong and well recognised brand. It notes that DOC "manages most of New Zealand's major natural tourist attractions" (p.17).

These intentions were expressed in the documents titled 'DOC's structure and commercial/business partnerships (DOC, n.d.) and 'Our national partners' (DOC, n.d.). A business group and one of the Deputy Director-Generals (Kay Booth) make up the senior leadership team at DOC that is now dedicated to partnerships. The principal goal of the partnership group is "achieving conservation growth through large scale, high impact partnerships". Partners include: Air New Zealand, Dulux, Fonterra, Fulton Hogan, Kiwibank, Kiwis for kiwi, Meridian Energy, Mitre10, and Toyota. Corporate partners are involved in a range of projects (Table 4). The development of commercial partnerships have not been without critique (O'Connell, 2017). It has been noted that since the Air New Zealand partnership began in April 2012, overnight visitors on the Great Walks have increased by 50%. The Toyota Kiwi Guardians programme was initially the Kiwi Ranger programme, until Toyota was asked to sponsor it, and was reluctant because of the association of 'Ranger' with Ford. The involvement of Tourism New Zealand in visitor strategy planning was intended to spread increasing visitor numbers

more widely across the conservation estate, but there is little evidence to confirm whether or not this has been successful, or indeed whether this is desirable.

Table 4: Examples of DOC corporate partnership projects

Corporate Partners	Conservation projects
Air New Zealand	- Invests in biodiversity projects on the Great Walks, i.e. through pest control - Promote Great Walks and encourages use by tourists; - Provides air transport for translocation of endangered species and conservation dogs - Involved in marine conservation projects
Dulux	- Three-year partnership to paint and protect DOC huts and other recreation and historic assets - Supports the Kea Conservation Trust
Toyota	- Kiwi Guardians programme - Connecting kids with nature, motivate them and their families to get involved
Tourism New Zealand	- 'Voice of the Visitor' strategy - Conducting consumer research to help with the development of new short walks, day walks and potentially new Great Walks.

The neoliberal governance experiments for a conservation economy in New Zealand, particularly the DOC Public-Private Partnership funding strategy and growth in commercial concessions, has not been without its critics, with some questioning the role of the Department of Conservation in terms of conservation and tourism management priorities. In 2017 Dr. Valentina Dinica (School of Government, Victoria University Wellington) published a paper titled Tourism concessions in National Parks: neo-liberal governance experiments for a Conservation Economy in New Zealand in the *Journal of Sustainable Tourism*. This paper addresses the environmental sustainability of protected area tourism and in it she argues that the growth of tourism in protected areas (PAs) raises concerns for environmental sustainability. She notes that the Recreation Opportunity Spectrum (ROS) management approach that has been used in New Zealand conservation management does not adequately consider the vulnerability of ecosystems and environmental resources but instead are limited in the general focus to the planning of visitor access and visitor facilities.

Dinica also critiques the concession regime, arguing that DOC has operated under a "wait and see approach" (p.152) when it comes to concession allocations, hoping that demand can be managed and

administrative efforts will be low. In light of the tourism boom, this approach is likely to be deficient. The Department of Conservation administers a "first-come-first-served method" and uses standardised concession contracts for most activities, which often include very limited environmental measures to be implemented as part of the approval. "For example, aircraft-based sightseeing concessions only include provisions regarding fuel spillage, soil and flora protection, and noise pollution to avoid user conflicts. [...] After project approval, there are no expectations for businesses to adopt innovations or enhance their environmental performances. The only requirements available refer to recovery from pollution events." (p.156).

The DOC concessions regime is addressed in more detail elsewhere in this report (See Spatial/National scale section) but the argument presented by Dinica (2017) is that DOC has introduced a more relaxed approach towards approving concessions (i.e. more and longer contracts) in exchange for contributions from the concessionaires to conservation, environmental and infrastructural issues (i.e. donations, voluntary business action), as outlined in the DOC (2014) Statement of Intent, and that DOC only monitors 15% of active concessions every year. This approach has been taken in response to budgetary challenges and constraints. The paper highlights multiple issues of concern (Dinica, 2017; p. 1826):

- National Park management based on outdated legal frameworks;
- DOC's funding constraints and inability to use effective financial instruments to raise revenue from tourism. This has limited DOC capacity to deliver on its highest order objective: conservation of natural heritage;
- DOC's inability to influence or adequately plan for the volume of tourists visiting the conservation estate (other than through concessions);
- Changes to the concessions approval process and requirements and "the absence of meaningful environmental and biodiversity conservation responsibilities in concessionaires' contracts";
- DOC's hierarchy of objectives: tourism development is now ranked second (used to be 4th) and increased tourism-management related expenses;
- DOC restructuring since 2009 and the shortage of staff to deal with an increasing concession-related workload;
- Centralisation of concession processes leading to dislocation between where applications are submitted and where they are reviewed;
- "Over-reliance on donations and volunteering by concessionaires" with no meaningful outcomes to date.

Dinica (2017) suggests that the government needs to enable DOC to use more effective financing instruments than modest concession fees and donations; to use a planning approach that can ensure the prioritization of natural heritage objectives, in line with national and IUCN objectives for national parks; to refresh the legal framework for a holistic environmental management of the Conservation Estate; to foster public engagement in decisions for national park governance; and to use the legally available mechanisms to insert environmental and biodiversity responsibilities in concessionaires' contracts" (Dinica, 2017: p.1827). Dinica's (2017) paper is timely in that it highlights the delicate balance between environmental and heritage conservation, and commercial conservation interests. It also points towards the need to critically review the legal frameworks for national parks and wider conservation management in New Zealand, as they relate to conservation/preservation, biodiversity and species recovery, Kaupapa Māori conservation values, commercial conservation and recreation/tourism.

Social Media influences

The power of social media, and its implications for visitor flows, crowding and environmental impacts, clearly emerges as a critical factor in tourism management during this time. Social media influences take various forms. The Instagram generation allows for social media influencers to post images of locations that they have visited that may influence thousands or millions of their followers. Social networks have facilitated communications between travelers who may share recommendations that can bring rapid growth in demand to specific locations. The growth of social media apps that promote nature-based destinations presents an enormous challenge to traditional management approaches. This is not a phenomenon that is unique to New Zealand. Apps such as Instagram and SnapChat appear to have led to very high visitor pressures at particular sites. These apps effectively bypass traditional promotion via management agency information sources.

The same opportunities and challenges of information sharing apply to tourism management agencies. In January 2018, DOC published a two-week loop road trip through the South Island¹², suggesting things to visit (with a nature/wildlife focus), walks/tracks and places to stay (i.e. DOC campsites). It became a key source for travellers and led to significantly increased visitation to some of the mentioned places, including the Roys Peak Track (Wanaka) and the White Horse Hill Camping Ground (Aoraki/Mount Cook). The Campermate App has been linked to increased awareness and use of DOC's small ('free') campsites. In 2014 a DOC media release announced an 'App to assist responsible camping

¹² <https://blog.doc.govt.nz/2018/01/12/the-ultimate-two-week-south-island-new-zealand-itinerary/>

this summer’.¹³ DOC had worked with Campermate to “encourage conscientious camping” and “to make responsible camping easy” (DOC 2014) by profiling locations of camp grounds, camping sites, toilets and recycling stations, etc. It noted in the media release that “This app will help to support DOC to highlight a wider range of camping options and also help people to make better decisions—minimising their impact on the environment and the tensions arising from inappropriate freedom camping”. Later, Dangerfield & McPhee (2016) wrote a piece in the *Sunday Star Times* titled ‘App for free camping but is it ruining NZ’s unspoiled beauty?’ In it they noted that thousands of international tourists are using Campermate to find free camping spots, resulting in problems that include sites littered with empty alcohol bottles and other rubbish, vandalism, crowding and visitors not using the toilets. Campermate’s Blog shows videos and shares posts on how to ‘best’ to engage in freedom camping in places around New Zealand (Campermate, 2018).

The growing importance and influence of social media cannot be overstated. Visitor demands are increasingly influenced by Instagram posts of individuals at iconic natural sites. The Wanaka Tree and Roy’s Peak (Wanaka) have been the subject of intense visitor interest inspired by social media communications. In the absence of data it is difficult to assess whether or not DOCs engagement with Campermate has been useful or not. However, the importance of social media communications in shaping and influencing tourist demands for nature experiences, and the rapidly evolving pressures of tourist demand at specific sites, cannot be ignored. Sustainable tourism management will require engagement with social media platforms by management agencies, to both provide visitor information in a manner that is strategic and selective, and to effectively provide advice to tourists on management interventions (e.g., site closures), as the immediate need for such interventions arise.

The importance of social media platforms in terms of sharing information extends to managing instances of unacceptable or unlawful tourist behaviour. Social media serve as important platforms for disseminating information to tourism operators and to tourists (e.g., relating to changes in service provision, cruise ship schedule changes and road closures). Social media platforms are also deployed to disseminate environmental care codes, information about visitor conduct at wildlife viewing sites and such like. The Tiaki Promise¹⁴ has been developed with the support of the Minister of Tourism, as a collaboration between Air New Zealand, the Department of Conservation, Local Government New Zealand, New Zealand Māori Tourism, Tourism Holdings Ltd, Tourism New Zealand and Tourism Industry Aotearoa (TIA). It aims to raise awareness of sustainability issues and proactively engage with international and domestic tourists to act as guardians of Aotearoa (i.e., protect the environment,

¹³ <https://www.doc.govt.nz/news/media-releases/2014/app-to-assist-responsible-camping-this-summer/>

¹⁴ <https://tiakinewzealand.com>

respect our culture and protects the country for future generations). The Tiaki Promise is to be promoted through newzealand.com and on Air New Zealand's international services, and will be disseminated on social media via #TiakiPromise. It will form an important part of the Tourism Sustainability Commitment¹⁵, specifically Business Commitment 6, which relates specifically to Visitor Engagement to encourage businesses to educate visitors to New Zealand and raise awareness and commitment to cultural and behavioural expectations.

Climate Change and resilience to natural hazards

Two other significant tourism-related environmental challenges came into increasingly clear focus during the period 2010-2018. The New Zealand government's commitment to the Paris Climate Accord (2015) has drawn attention to the high energy intensity of tourism and the urgency of the transition to low-carbon tourism economy. In April 2016 the Royal Society of New Zealand *Te Aparangi* produced its report titled 'Transition to a low-carbon economy for New Zealand'¹⁶ which included a short section dedicated to the considerable challenge of low-carbon transition within the tourism sector. It noted that air travel is increasing, that the CO₂ emissions associated with tourist arrivals to New Zealand are difficult to significantly mitigate under current aviation technologies, and that there had been a failure to account for international aviation emissions in both international agreements and national emissions inventories. This enormous challenge is addressed more thoroughly elsewhere in this report (see Spatial/global), but several points should be mentioned here. Due to New Zealand's isolation from its tourism markets, air travel accounts for upward of 98% of visitor arrivals (Statistics New Zealand, 2017). It has been noted that high dependence on long-haul aviation poses a considerable threat to New Zealand's '100% Pure' international brand. Little attention has been paid to the global and national policy measures and industry strategies that will be required to stabilise and reduce aviation (and cruise shipping) emissions, and to foster low-carbon transitions within the tourism sector. This shapes as an urgent priority for the government and industry, given the forecasted role of aviation growth in relation to oil production and climate change mitigation over the next five years¹⁷.

While in May 2018 Jucy announced that it had landed New Zealand's first electric campervan in response to increasing demand from international visitors for EV campervans, Lenzen et al. (2018) published a paper in *Nature Climate Change* titled 'The carbon footprint of global tourism'. Their

¹⁵ <http://www.sustainabletourism.nz>

¹⁶ <https://royalsociety.org.nz/assets/documents/Report-Transition-to-Low-Carbon-Economy-for-NZ.pdf>

¹⁷ <https://www.theguardian.com/business/2018/sep/23/opec-predicts-massive-rise-in-oil-production-over-next-five-years>

analysis reported that between 2009 - 2013 global tourism accounted for 8% of global greenhouse gas emissions; a figure that eclipsed previous estimations ranging from 4-5%. They noted that island destinations (i.e. Maldives, Hawaii and New Zealand) tend to have the highest carbon footprint per capita, mostly due to international aviation dependence. New Zealand travellers (i.e. tourism activities undertaken by New Zealand residents) make a significant contribution to aviation emissions because of high levels of outbound travel by New Zealanders to overseas destinations. The link between affluence and emissions is made clear by Lenzen et al., who note that "Visitors from and in high-income countries demand a high proportion of transport (especially by air), goods (shopping) and hospitality (accommodation and restaurants)".

With growing concerns regarding climate change mitigation, attention has also been increasingly paid to climate change adaptation in the New Zealand tourism industry. Hopkins (2014) notes that "Climate change adaption is characterised as identifying and taking advantage of new business opportunities plus reducing physical risks" (p.107). Snowmaking has been used in the ski industry as the key business strategy to mitigate or mediate the impacts of climate change and to secure the tourism product, but this does not come without its own resource demands and environmental impacts. Her paper addresses climate change as a critical sustainability challenge for the alpine tourism and ski industry and investigates the social perceptions (i.e. perceived sustainability) of climate change adaptations such as snowmaking by industry stakeholders. The results of her research indicate that snowmaking is perceived as a short-term solution with the goal of "short-term economic sustainability". Environmental or social sustainability were not taken into account by industry stakeholders. Similarly, Espiner & Becken (2014) highlight concerns regarding maladaptation to climate change; a term that describes adaptations to climate change that may allow continued short-term business viability, but will inevitably drive accelerating climate change. The response of glacier tourism businesses that provide helicopter (rather than foot) access to rapidly retreating glaciers is a classic example of maladaptation in the tourism industry.

Alongside sustainability concerns, resilience planning also emerges as a critical challenge facing the tourism industry in New Zealand. Orchiston (2012) notes that many the key destinations for nature-based tourism in New Zealand's South Island (e.g., Fiordland, Queenstown, Aoraki/Mount Cook, Westland) are based upon landscape features that are associated with the alpine fault, and that seismic risk scenario planning must be an important element of sustainable tourism management. Tourism resilience to natural hazards and environmental risks has emerged as an important aspect of tourism planning in New Zealand. Seismic risk scenario planning is one technique that can be used to this end (Orchiston, 2012). The social, economic and environmental impacts of the magnitude 7.8 (M_w)

Kaikoura earthquake (14 November 2016) highlights the importance of resilience planning in tourism. Espiner, Orchiston and Higham (2017), conceptualise the links between resilience and sustainability in tourism planning, and highlight the need for environmental management in tourism to extend to planning for natural disasters.

3.3) The future: 2018 – 2025

The third part of the temporal analysis of this report looks at tourism forecasts for the coming years to 2025. Various forecasts from different sources are discussed and interpreted in this section; initially the key sources including the Ministry of Business, Innovation and Employment (which produces forecasts annually to inform and support planning in the tourism industry and is based on current trends, economic modelling and input from members of the industry (MBIE, 2017)), Tourism Industry Aotearoa and Tourism New Zealand, followed by a selection of other sources. Tourism forecasts focus almost exclusively on visitor numbers, particularly international arrivals with occasional reference to domestic tourism and total economic impact. Little or no reference is made to other important aspects of tourism forecasting, such as length of stay, modes of transport, activities (such as freedom camping) and regional tourism flows. While total visitor arrivals remains the key aspect of tourism forecasting, further attention should be paid to the details of various future tourism scenarios.

International visitor arrivals to New Zealand are expected to grow consistently over the next few years (see Table 5 and Figure 26). This sees visitor numbers grow by 4.9% and 4.8% over the next two years, to reach over 4 million international visitors per year. Annual growth is then expected to slow down marginally, staying relatively stable around 4.2% - 4.5%, totalling to just under 4.9 million tourist arrivals in 2023 (see Figures 26 and 27). The biggest proportion of international arrivals are expected to consist of holidaymakers and tourists visiting friends and relatives (VFR).

Table 5: International visitor arrivals, 2018 – 2023 (MBIE, 2017)

	Actual	Annual Change (Actual)	Annual Change (Relative, in %)
2018	3,916,580	182,393	4.9
2019	4,102,860	186,280	4.8
2020	4,284,322	181,462	4.4
2021	4,471,312	186,990	4.4
2022	4,660,591	189,279	4.2
2023	4,861,483	200,892	4.3

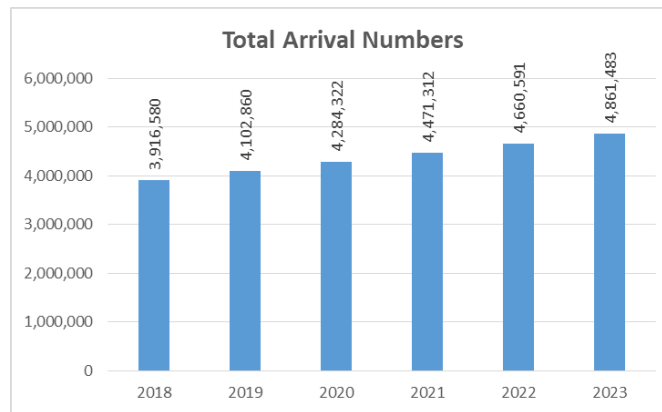


Figure 26: Total international visitor arrivals (MBIE, 2017)

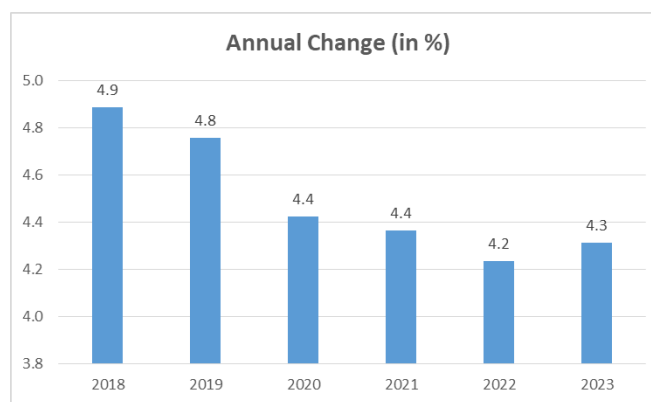


Figure 27: Annual change in international visitor arrivals (MBIE, 2017)

Australia is expected to remain New Zealand's single largest visitor market with over 1.75 million visitors by 2023, however annual growth is forecast to slow down (see Figure 28). The Chinese market is forecast to experience the biggest growth of about 12.5% per year, reaching close to 1 million visitors by 2023. All other markets are expected to either grow marginally or remain stable, with the exception of Canada and the United Kingdom, where visitor numbers are forecast to decrease slightly.

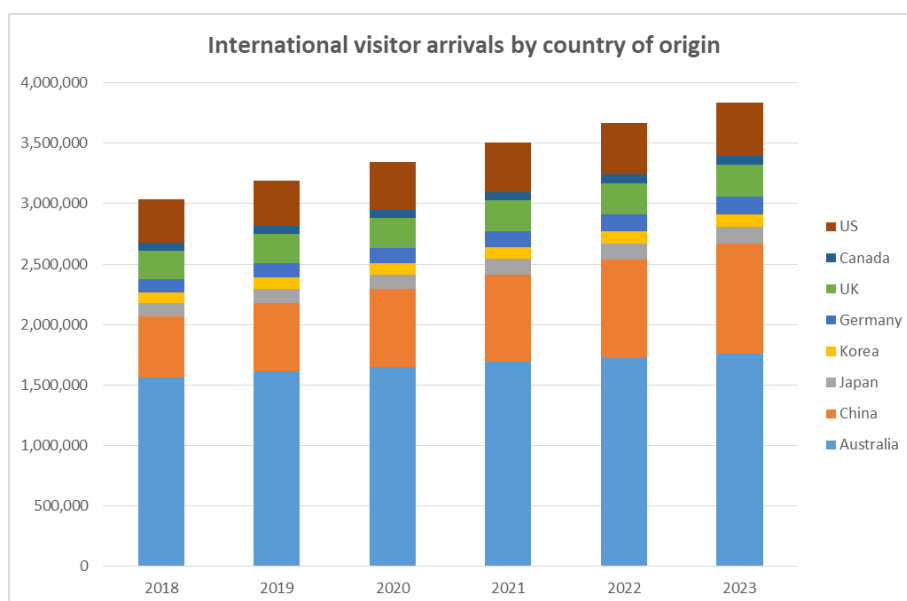


Figure 28: International visitor arrivals by country of origin (MBIE, 2017)

The Ministry of Business, Innovation and Employment is the key source for tourism forecasts. MBIE (2017) tourism growth projections for 2017-2023 note that "International visitor arrivals to New Zealand are forecast to reach 4.9 million visitors in 2023 (from 3.5 million in 2016, up 39 per cent). This equates to a growth rate of 4.8 per cent per year." (p.4). Australia and China are expected to remain key markets with a combined market share of 55% by 2023; Australia is expected to remain the biggest market by numbers but during this timeframe China is expected to become the most important international market in terms of visitor expenditure. "Total annual international spend is forecast to reach \$15.3 billion in 2023, up 52.1 per cent from 2016. Growth in visitor numbers is expected to be the main contributor to overall international spend growth, with increasing spend per trip (or visitor) also playing a significant role." (p.4) (see Table 6).

Table 6: New Zealand tourism forecasts: Visitor arrivals, length of stay and total spend (MBIE, 2017)

Year									Growth	
	2016	2017	2018	2019	2020	2021	2022	2023	Total	Annual ²
Total spend (\$m)	10,086	10,685	11,248	11,936	12,685	13,486	14,365	15,340	52%	6.2%
Total visitors (000s)	3,500	3,734	3,917	4,103	4,284	4,471	4,661	4,861	39%	4.8%
Total days (000s)	66,717	71,384	74,664	78,276	81,880	85,592	89,448	93,562	40%	4.9%
Spend per day (\$)	183	182	184	186	189	192	195	199	9%	1.2%
Avg length of stay (days)	19	19	19	19	19	19	19	19	1%	0.1%

Auckland Airport's (2014) forecast to 2025 included 'organic', 'accelerated' and 'ambitious' scenarios, set against MBIE tourism forecasts for the period 2013-2019 (Figure 29). These scenarios highlight sustained high growth in visitor arrivals. The 'ambitious' forecast scenario will be a cause of increasing concern, particularly given the widely reported crisis of 'overtourism' in many European destinations (Becker 2016) culminating in public protests in the northern summer of 2017, and growing concerns surrounding social license in fast growth tourism destinations in New Zealand. MBIE forecasts do call for a greater focus on visitor experience and high value rather than volume of tourism. The MBIE (2018) Tourism Strategy refers to "high value visitors" and "a great visitor experience" as being part of the key goals/strategic pillars for New Zealand tourism. Quite how concentrated tourism flows can be dispersed to regions that seek to develop their regional tourism economies, and how length of stay can be extended and tourism yield increased, remain ongoing challenges. The call for high value tourists is longstanding. Meanwhile, the Kantar TNS (2018) Mood of the Nation survey will continue to be an important mechanism for monitoring aspects of social license in communities that are becoming more aware of the negative social and environmental impacts that are often associated with sustained high growth tourism.

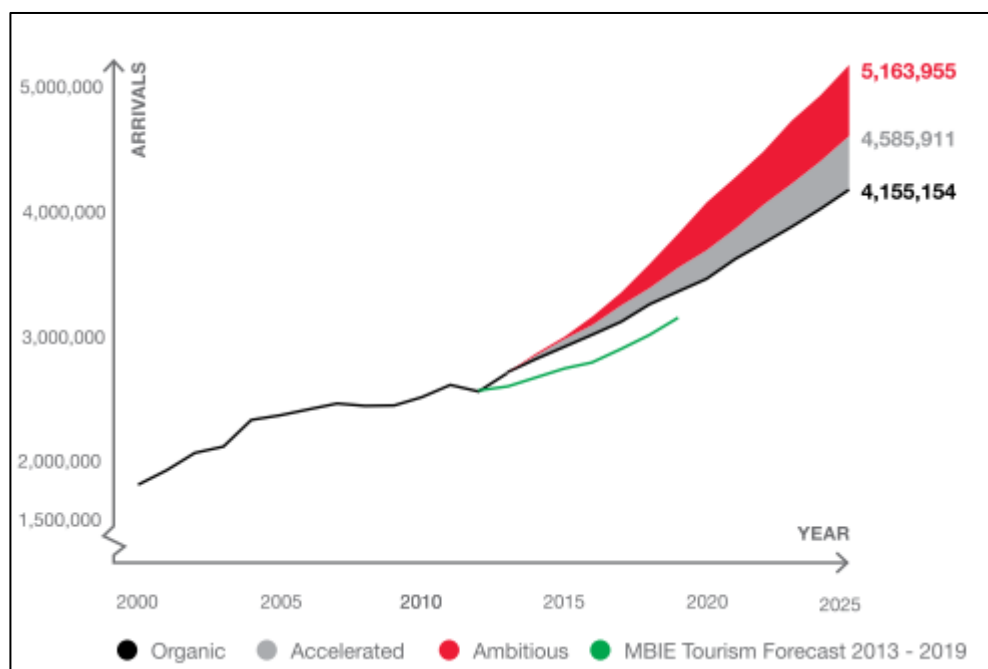


Figure 29: New Zealand tourism forecasts: Organic, accelerated and ambitious (Auckland Airport, 2014).

The New Zealand Tourism Industry Association, Tourism Industry Aotearoa, outlines the importance of the value of tourism in the document titled Tourism 2025: Growing value together (TIA, 2014). This document articulates the goal of \$41 billion total tourism revenue in 2025, which is to be achieved "by

improving the competitiveness of New Zealand's tourism" (p.2); specific goals to achieve this: grow international tourism by 6% per year and domestic tourism by 4% per year. The focus on growth is evident again, with increasing the value of tourism evidently more challenging than increasing visitor arrivals. The Tourism Industry Association does recognise the importance of increasing the focus on revenue rather than tourist numbers, noting that

"Over the past ten years global wealth has doubled - from US\$113 trillion to US\$241 trillion. And that growth is projected to continue, at an annual rate of 6.5%. By 2025, it is expected that the world will reach an extraordinary tipping point: there will be more middle class people in the world than poor people. Hardly surprising then, that the outlook for tourism globally is bright." (p.8)

The importance of domestic tourism is recognised by the TIA, which forecasts that increased domestic travel is expected by 2025 as the New Zealand economy grows and population ages but is healthy with more time and money for travel. The number of New Zealanders aged 65+ is expected to double between 2013 and 2025 and this represents an increased opportunity to market tourist experiences for active New Zealanders engaging in such activities as riding cycle trails.

The importance of continued growth in visitor arrivals is clearly evident. Airlines and airports are recognised as important partners in this strategy as they can "unlock potential" by providing more (and more convenient) flight schedules. Valuable growth opportunities that have been identified as part of the Tourism 2025 strategy include:

- tapping into the Chinese market, aiming for longer stays, more activities and spend; also other emerging markets, i.e. Indonesia, India, Latin America
- international students and their families/friends (number could double by 2025 from 92,000 in 2013)
- Business events as an opportunity to get high value visitors during off-peak periods
- Restoring lost capacity in Christchurch, re-establishing it as destination and gateway
- Tapping into the global growth of the cruise industry

These strategic imperatives foreshadowed continued growth in visitor arrivals which will further challenge the environmental sustainability of the sector particularly as it relates to tourism emissions and the wider environmental impacts of the cruise industry (see Spatial/Global scale). The Tourism 2025 Planning Framework has 5 themes, and these do also allude to the imperative of growth of capacity and increasing the value of tourism:

- Productivity for profit
- Drive value through excellent visitor experience

- Grow sustainable air connectivity
- Prioritise insight to track and drive progress
- Target for value (target opportunities with biggest economic benefit)

Two years later the TIA (2016) produced *'Tourism 2025: Two years on'* noting that "growth is already so strong it's exceeding all expectations; tourism expenditure has grown by 20.1% in 2 years and was expected to reach \$32.5b by March 2016 from \$27b, which is much higher than the target growth rate". It noted that the value of tourism to the New Zealand economy had grown faster than its volume; both international and domestic tourism grew during those two years. Progress had been made in each of the five growth themes that formed a core part of the Tourism 2025 strategy:

- Air connectivity: more airlines operating more flights into and out of New Zealand and matching investment in airport facilities; also a more competitive domestic market with the result of increased capacities and lower fares;
- Increased productivity of tourism operators to meet the demand but only a small shift towards a reduction of seasonality and almost no change to regional dispersal; the iconic destinations continue to grow faster than second and third tier destinations;
- Continued evidence of high quality visitor experience;
- Increased expenditure, driven by China and US; more emphasis on emerging markets

'Tourism 2025: Two years on' also highlights some of the key environmental challenges facing the industry. While increased airline capacity continues to be one of the growth strategies, "... there are risks to growth that need to be taken into consideration. [...] New Zealand tourism is also exposed to the longer term risks and opportunities that will emerge as the global systems tackle the issues of carbon use and climate change [...].but on the other hand they present enormous opportunities for us to be at the forefront of the transition to a carbon-neutral world." (p.11). The growth in tourism has been associated with greater reliance of both international and domestic tourists on high carbon transport modes, while the challenge of dispersing spatial and temporal (e.g., seasonal) travel flows to ease pressure on destinations and environments that remains unresolved.

The urgent need to move tourism onto a sustainable emissions path is particularly acute, given recent research that indicates that global tourism between 2009 and 2013 accounted for 8% of global greenhouse gas emissions, much higher than previously estimated (Lenzen et al., 2018). If the global tourism industry continues with business as usual, it can be estimated that annual tourism-related emissions would be around 6.5 Gt CO₂-e by 2025; if changes are made (i.e. reducing the carbon footprint or carbon intensity), it could be limited at 5 Gt CO₂-e. While this paper notes that high

emissions associated with tourist transportation, food and shopping (i.e. commodities purchased by tourists), it includes a range of other sources of tourist-related emissions that have been excluded from previous studies. It also notes that island destinations tend to have high sector emissions per capita due to due to reliance on high carbon global aviation and, generally, distance of travel. Thus tourism growth inevitably comes "with a significant carbon burden" (Lenzen et al., 2018 p.526). Given forecast (continued) strong growth in New Zealand's international inbound markets to 2023, monitoring the carbon footprint of the sector is critical. How the "...enormous opportunities" available to New Zealand to lead the transition to a carbon-neutral world, specifically as it relates to the tourism sector, will be achieved also demands urgent attention and action.

The importance of sustainability is recognised by the TIA. The 'New Zealand Tourism Sustainability Commitment' (TSC) was published in 2017, noting that "The New Zealand tourism industry can and must develop strategies to ensure it is demonstrably committed to looking after its economic future and the resources it uses to operate. To achieve this, sustainability must become a genuine ethical underpinning of the industry." (TIA & TINZT, 2017, p.16). "The Tourism Sustainability Commitment aims to ensure economic, environmental and social sustainability becomes a genuine ethical underpinning of our industry". The TSC comprises of eight sustainability goals and 14 commitments (economic, visitor, host community and environmental), supported by a measurements system. Two Sustainability Advocates are charged with promoting uptake and supporting businesses in advancing the 14 Commitments. Launched in November 2017 it had the commitment of 220 signatories as of May 2018, representing most of the large tourism businesses. It aims to have the commitment of 1,000 tourism business by the end of 2018 and that the TSC becomes a standard feature of the tourism industry. It aims "...to see every New Zealand tourism business committed to sustainability by 2025" (see Figure 30). The dissemination of best practice case studies is a feature of the Tourism Sustainability Commitment¹⁸.

¹⁸ <http://www.sustainabletourism.nz>

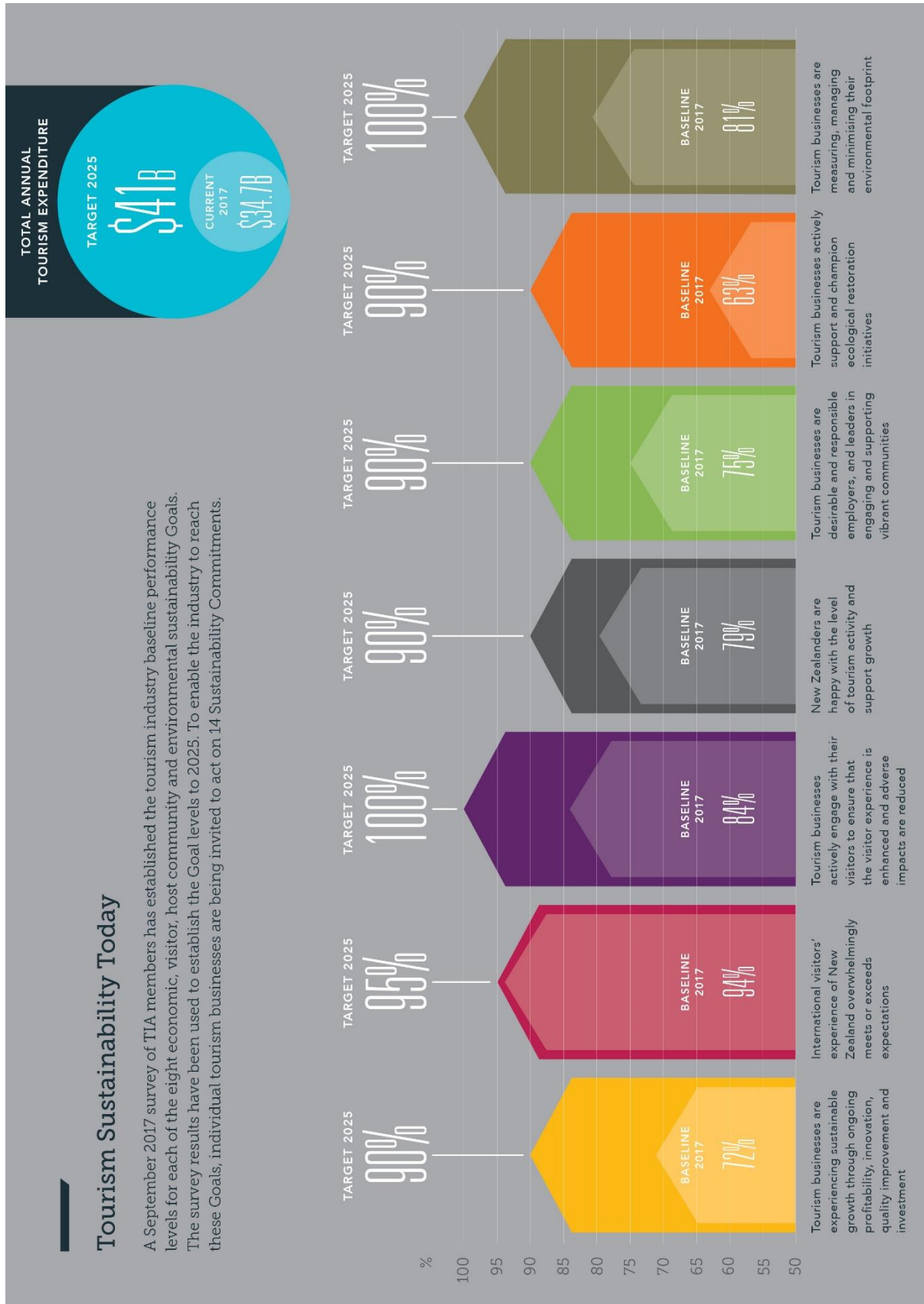


Figure 30: New Zealand tourism sustainable commitment (Source: TIA & TINZT, 2017)

Tourism New Zealand (2017) plays a critical role in the growth of international tourism markets. Its Four year strategic plan notes that the tourism industry continues to grow fast, and that it is "...well on track to exceeding the industry's Tourism 2025 goal of \$41bn of total tourism revenue by 2025" (p.2). It notes that its previous four-year strategy forecast "...2.8m arrivals for the year ending June 2016, versus an actual 3.4m arrivals in the fourth year of the strategy, more than 500,000 above forecast." (p.5). Continued high growth is forecast by TNZ which notes that " Over the next four years, our strategy plans for a further half million more visitors, increasingly from China, for a total of approximately 4.5 million arrivals for the year ending June 2021" (p.5). It also recognises that current growth places pressure on some destination regions, committing to a focus on regional dispersal, driving shoulder season growth and changing visitor behaviour (p.7). It states that "Tourism New Zealand will also work more closely with industry in product development, information sharing and addressing broader sector concerns so the visitor experience is enhanced and New Zealanders continue to back the industry." (p.7).

However, the pressures of growth at regional gateways is exacerbated by the fact that "growth is not equally distributed across New Zealand with international spending skewed towards the four main gateway regions; Auckland, Wellington, Christchurch and Queenstown (covering 65 percent of overall tourism spending in the June 2016 year). The proportion of international visitors travelling to non-gateway regions has remained fixed over the past several years at around 35 per cent" (Tourism New Zealand 2016). New Zealand also remains a destination of seasonal extremes (Tourism New Zealand, 2016). It appears that the sustained high growth model, as expressed principally in terms of tourist arrivals, remains unquestioned by the key government and industry bodies. If so, addressing regional dispersal and temporal (seasonal) imbalances in tourism are critical challenges in terms of continued growth in visitor arrivals. These are long-standing concerns that have not been successfully addressed. They suggest the need for a critical review of tourism growth, distribution, productivity and economic value in relation to environmental and social sustainability.

In addition to the key government and industry bodies, various other sources offer tourism forecasts for the coming years. Inside Tourism (Coventry, 2018) outlines tourism forecast data from a BMI report on tourism in New Zealand which states that 5,414,650 visitor arrivals and a \$24,990 million spend is expected by 2022. "The report says there will be 7.2% growth in international arrivals this year, 6.9% in 2019, 6.5 and 6.4 in 2020 and 2021. This will rise to a 9.9% increase in 2022" (Coventry, 2018, p.1). The same report states that eco-tourism is considered a key growth market over the coming years, but the BMI report also warns that poor management of eco-tourism in New Zealand, poses a threat to the environmental sustainability of the sector. Poor management of ecotourism is a global phenomenon that arises from largely unregulated growth in demand for fragile ecologies, in

settings that tend to have extremely high conservation values and that, by definition, offer finite nature experiences. The Department of Conservation notes in its 'Budget 2017' that "Overseas visitor numbers are set to reach 4.5 million by 2022", possibly drawing on the Tourism New Zealand forecast figure for June 2021. The implications of such numbers of visitors, many of whom are active and multiple users of the conservation estate during their New Zealand itineraries, must be more critically considered in relation to DOC funding and the sustainable management of tourist experiences in areas designated for conservation.

Other sources of relevance to this section extend to those with interests in continued high growth in tourism, and those that may influence future growth in visitor arrivals. The latter include Lonely Planet (2017) which publishes its list of 'Top Countries: Ten countries you need to visit next year'. Lonely Planet ranked New Zealand as number 5 of the top 10 countries to visit in 2018 which is likely to influence further growth of visitor arrivals. Lonely Planet's ratings and recommendations have been considered a factor in growth in tourist arrivals to New Zealand, while also influencing the itineraries and experiences of visitors to New Zealand. The Lonely Planet (2018), for example, specifically mentions the new Paparoa Track and Pike29 Memorial Great Walks.

Auckland Tourism, Events & Economic Development (2018) provides forecasts, and responses to the challenges of growth, in 'Destination Auckland 2025'. It forecasts 4.1 million visitors (58% increase), 107,000 international students (26% increase), and 171 cruise ship visits (64% increase) in 2025. In doing so, it also recognises concerns for sustainability in its strategy, and aims to grow Auckland as a destination not only economically but also socially and environmentally. It notes that in the 21st century there has been a shift from destination marketing to destination management in Auckland. Indeed one of the six strategic imperatives is 'Making Auckland a sustainable place', specifically "A region recognised as a world-leader for taking action on sustainability." (p.11). It expresses the goal "to focus more on value whilst maintaining sustainable volume growth" (p.11). Sustainability actions include a zero waste policy for all major events and business events and, like other places, it aims to reduce seasonality and targets high value tourism over high volume tourism.

One aspect of tourism that clearly emerges as critical in terms of the growth and sustainability of tourism over the period to 2025 is the transport sector. Transport policy and the commitment of transport service providers will shape the future of New Zealand tourism, and bear heavily upon the extent to which a sustainable emissions path is achieved. It is apparent that transport, growth and sustainability in the tourism sector are inextricably linked. New Zealand airport authorities measure success largely in terms of aircraft and passenger movements and as a result the key gateway destinations are likely to experience further pressures of tourist arrivals. The Auckland Airport (2014)

'Ambition 2025' strategy draws on the TIA (2014) 'Tourism' 2025 strategy noting that "Visitor arrivals have the potential to increase by 91% between 2013- 2025 to reach a total of 5 million annually by the end of 2025. This represents a doubling of visitor arrivals by 2025 and an annual cumulative average growth rate (CAGR) of 5.52%." (p.6). "Australia, China, USA, India and the combined region of Argentina, Brazil and Chile present the greatest real visitor growth opportunities" (p.7), with visitor arrivals expected to be Australia: 1,977,934 (38.3% market share), China: 893,198 (17.3%), US: 353,857 (6.85%), UK: 273,221 (5.29%) and India: 119,274 (2.31%). As the major international aviation gateway serving the New Zealand tourism industry, Auckland Airport is planning for the future in accordance with these growth forecasts. Meanwhile a proposal to extend the Wellington Airport runway has met with strong resistance on environmental and climate change grounds.

In the South Island, Queenstown Airport has achieved phenomenal growth since the Christchurch earthquake sequence began in September 2010. Queenstown Airport is also planning a new terminal and significant growth in visitor arrivals, forecasting 3.2 million passenger movements (up from 1.8 million in 2016) with 25,000 aircraft movements (up from 14,000 in 2016) (Queenstown Airport, 2017). The future growth of Queenstown Airport presents a number of environmental challenges that are outlined in the Queenstown Airport Masterplan¹⁹. Christchurch Airport is planning a significant extension. "The plans provide a potential blueprint for airport developments out until 2040, and over that period aircraft movements were expected to increase 65 per cent to 111,000 annually, with passenger numbers almost doubling" and handling up to 12 million passengers/year (Cropp, 2017).

High dependence on aviation, and forecast growth in the aviation sector, coupled with the technical limitations of meaningfully reducing aviation emissions (Peeter et al., 2016) poses an enormous challenge to the New Zealand tourism industry. The global fleet of civil aircraft has more than double every twenty years since 1970²⁰. It is expected that by 2030 a global fleet of 40,000 civil aircraft will produce 10,000 billion revenue passenger kilometers (RPK) per annum (Boeing, 2014). This equates to humans flying the equivalent distance to the sun 67,114 times in a calendar year. These figures confirm the need for aviation emissions to be addressed in a global agreement, although the ICAO has failed to achieve meaningful measures to address aviation emissions in its proposed CORSIA scheme (Higham et al., 2018). In the absence of a global measure to stabilize and reduce aviation emissions, it will be necessary for New Zealand to act upon this challenge while remaining a part of the global aviation socio-technical system (Young et al., 2015).

¹⁹ <https://www.queenstownairport.com/assets/masterplan/Queenstown-Airport-Master-Plan-Options.pdf>

²⁰ The global fleet of civil aircraft has grown from 3700 in 1970, to 9100 in 1990 and 21000 in 2010 (Boeing 2014). During this time revenue passenger kilometres (RPKs) have increased ninefold, from 500 billion RPK in 1970 to 4500 billion in 2010 (Airbus, 2014).

Given the limited scope for airlines to reduce 'in the air' emissions under current aviation technologies, a sector wide approach to emissions mitigation will be critical. Investment in intercity rail systems, sustainable public transport, urban cycle ways and tourist cycle trails will be a part of this approach, as will succession of vehicle fleets (private and rental) to electric. The current government's target is for 64,000 EVs by the end of 2021, which is to be achieved by at least doubling the fleet every year (Welvaert, 2018). The Ministry of Transport "...estimates that electric vehicles will make up 40% of the fleet by June 2040. For this proportion to be reached, well over half of cars imported and sold in New Zealand will be electric vehicles." (Welvaert, 2018). "GM Chief Executive Officer Mary Barra said her company will sell more than 1 million electric vehicles per year profitably by 2026." (Naughton, 2017). Tourism business leaders are underway in acting upon the need for sector leadership, innovation and fleet succession.

4) The environmental effects of tourism: A spatial analysis

4.1) Local

It may be argued that New Zealand has been more focussed and effective in its international marketing, a key factor in the sustained growth in inbound visitor arrivals, than it has been in managing tourism growth. In the Tourism New Zealand briefing for the incoming minister (December 2016) it was noted that the "Government's funding for Tourism New Zealand is \$117.85 million for FY 2017. For the 2015/16 financial year, additional financial and non-financial contributions of around \$25.4 million were added to Tourism New Zealand's marketing investments through a variety of partnership agreements. The strong focus on international marketing, and sustained growth in tourism arrivals has not been matched historically by a commitment to investment in infrastructure which is lagging significantly behind, with various local tourism sites being subject to increasing pressures of visitor demands. Furthermore, it has been noted that tourism growth is not equally distributed across New Zealand with visitor travel and spending patterns heavily skewed towards the main gateways and iconic regional destinations (e.g., Bay of Islands, Rotorua and Queenstown) where pressures on local infrastructure and services, attractions and environments continue to build. Local experiences of tourism are closely tied to the spatial flows which define the distribution of tourist stays, expenditures and impacts. The spatial analysis of tourism (and tourism impacts), and the measures that may be taken to spatially redefine tourism in New Zealand, are issues that clearly continue to challenge the social and environmental sustainability of New Zealand tourism.

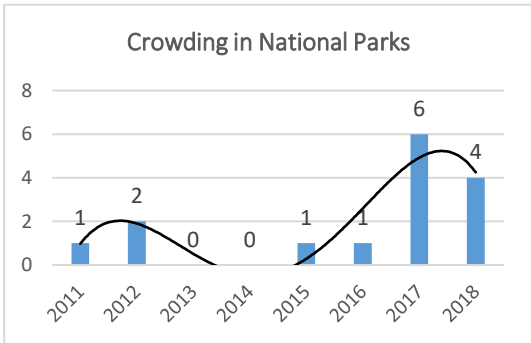
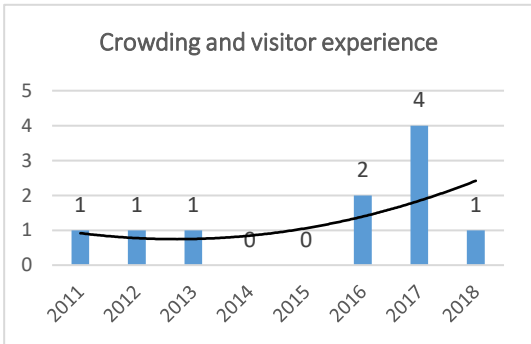
In part in response to this, Tourism Industry Aotearoa has initiated in recent years the biannual *Mood of the Nation* survey (Kantar TNS, 2018), which aims to measure and monitor over time New Zealander's perceptions of international visitors. The *Mood of the Nation* survey is commissioned by Tourism Industry Aotearoa and Tourism New Zealand as part of the *Tourism 2025* strategy and the goal to increase the value of international tourism. The value of New Zealand tourism is affected by visitor experiences, and it is recognised that New Zealand residents play a critical role in the visitor experience, so it is important to know what New Zealanders think of tourism growth. The recent *Mood of the Nation* survey (March 2018) notes that "The percentage of New Zealanders who think that international tourism puts too much pressure on New Zealand has been increasing since December 2015, with the trend now stabilising." The reasons behind this pattern of increasing concerns include pressures on infrastructure, accommodation shortages, perceived environmental damage, freedom camping, increased traffic congestion, and the concern about the increased number of road accidents involving tourists.

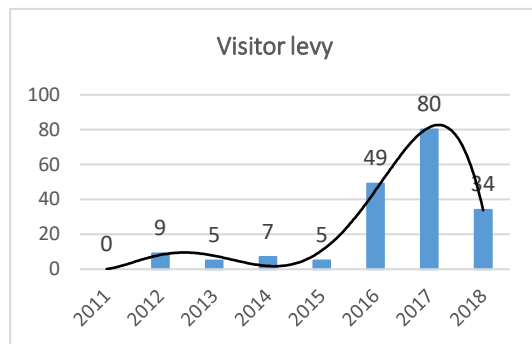
In an article titled *'Don't cap visitor numbers'*, Inside Tourism issue 1,169 (Coventry, 2018) reported upon an invitation among its readership to comment on growing tourism pressures. The comments of various industry interests were informative. Highlighting the spatio-temporal imbalances of national tourism flows, Chris Roberts (Tourism Industry Aotearoa CE) commented that instead of limiting the number of visitors coming into the country, there is a need to provide infrastructure that can deal with the number of people at peak times and in peak locations. Lyn Cheyne (Tourism Consultant) expressed the view that a general cap would not be a solution but numbers of visitors to particularly vulnerable places could be limited or reduced by increasing prices. "The issue in New Zealand is playing catch-up on infrastructure and other visitor service requirements - training and education, community understanding and effective relationships between territorial authorities and promotional agencies. We've been caught out by not being prepared for the numbers in place and yet Tourism New Zealand has been sharing forecasts for years" (p.3). Various suggestions proffered including charging visitors through GST, a tourist levy, differential pricing, limiting annual visitor numbers to "threatened environments and parks", and the charging of location management fees for specific locations that are under particularly acute visitor pressure. Despite these expressed views, it is evident that an increasing number of New Zealanders are worried about the pressure that high growth tourism has exerted and is now exerting upon infrastructure and services, and iconic natural areas and sites.

Factiva New Zealand media analysis

A media analysis (2011-2018) was performed to obtain insights into local experiences of high growth tourism in New Zealand in recent years. The methods employed in this exercise were the same as those outlined in section 3.2 (Temporal: 2011-2018). The results of the media analysis are presented in Tables 7 and 8.

Table 7: Factiva New Zealand media analysis (2011-2018): Searches with > 10 results

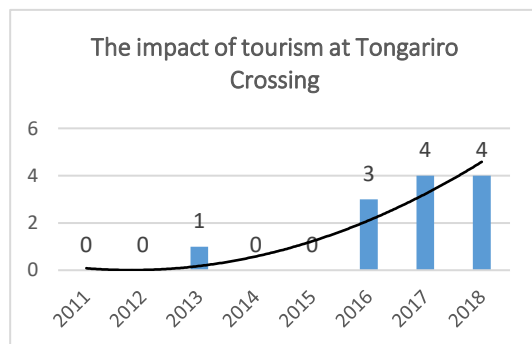
Graphics	Search terms	Annotations																		
Crowding in National Parks <table><thead><tr><th>Year</th><th>Count</th></tr></thead><tbody><tr><td>2011</td><td>1</td></tr><tr><td>2012</td><td>2</td></tr><tr><td>2013</td><td>0</td></tr><tr><td>2014</td><td>0</td></tr><tr><td>2015</td><td>1</td></tr><tr><td>2016</td><td>1</td></tr><tr><td>2017</td><td>6</td></tr><tr><td>2018</td><td>4</td></tr></tbody></table>	Year	Count	2011	1	2012	2	2013	0	2014	0	2015	1	2016	1	2017	6	2018	4	Crowding / Overcrowding / Congestion + National Park / Conservation Area	
Year	Count																			
2011	1																			
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Crowding and visitor experience <table><thead><tr><th>Year</th><th>Count</th></tr></thead><tbody><tr><td>2011</td><td>1</td></tr><tr><td>2012</td><td>1</td></tr><tr><td>2013</td><td>1</td></tr><tr><td>2014</td><td>0</td></tr><tr><td>2015</td><td>0</td></tr><tr><td>2016</td><td>2</td></tr><tr><td>2017</td><td>4</td></tr><tr><td>2018</td><td>1</td></tr></tbody></table>	Year	Count	2011	1	2012	1	2013	1	2014	0	2015	0	2016	2	2017	4	2018	1	Crowding / Overcrowding / Congestion + Visitor experience	• see notes on individual national parks below (same articles)
Year	Count																			
2011	1																			
2012	1																			
2013	1																			
2014	0																			
2015	0																			
2016	2																			
2017	4																			
2018	1																			



Tourism/tourist tax
OR
Tourism/tourist levy
OR
Visitor charge/levy

- Main topics:
 - Opposing opinions: will bring more money for conservation and to deal with the problems of increased tourism numbers but may deter tourists and damage local businesses
 - Raise money for conservation projects, i.e. protection of native birds
 - Residents who do not want to pay higher local taxes to fund tourist facilities support the levy
 - Could be used to reduced overcrowding and displacement
 - Around 2013: specifically Stewart Island visitor levy

- Lots of attention during the general election in 2017



Results from 2 searches:

[Crowding/Congestion/Displacement +
Tongariro]

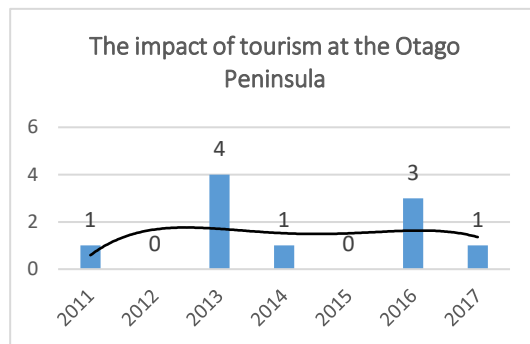
AND

[Tourism / tourist
+
Impact / problem
+
Tongariro Crossing]

- Problem first reported on in media in 2013 in relation to vehicle congestion in track carparks
- “The Department of Conservation reported large numbers of visitors to Tongariro National Park this summer, with vehicle congestion forcing the temporary closure of Mangatepopo Rd.” (Jamie Morton Science, 2013)
- “Crowding is one of the challenges facing New Zealand's national parks, which have more visitors than ever before, at all times of the year.” “At Tongariro National Park in the central North Island, visitor numbers have reached breaking point. Tourists bring about \$20 million a year to the region, but crowding has started to devalue the experience.” “The number of visitors walking the Tongariro Alpine Crossing has risen from 20,000 in 1992 to 109,000 last year - a 450 per cent increase.” “Crowding was now a major complaint, and was referenced in 40 per cent of online visitor reviews on the crossing, Keys [DOC scientist] said. More visitors brought more risks, which added costs to the free rescue service run in the park.” (Mitchell, 2016)
- “Visitor numbers for the crossing have climbed more than tenfold since 1990, peaking at 125,000 in 2015.” “the growing numbers have created three problems: congestion on the roads; congestion at the toilets; congestion on the track.” “DoC has

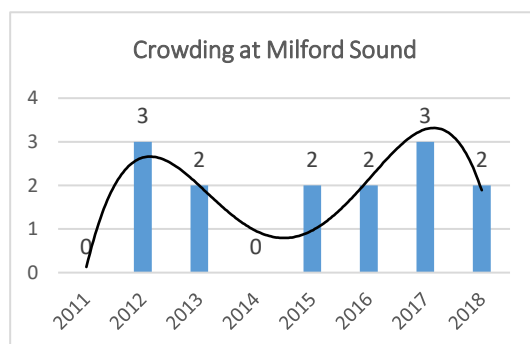
a strategic review in place for the Tongariro Alpine Crossing that includes infrastructure upgrades and attempting to spread the number of trampers out over the day to better manage the flow of visitors.” (Carville, 2017)

- DOC “spent \$155,000 on road management at the Tongariro Alpine Crossing” (MacDonald, 2018)
- Suggestions for solutions and measures taken: expansion of Great Walk system and more day walks to take the pressure of current walks, DOC clamps wheels of any car parking at start/end of crossing for more than 4 hours to reduce crowding of carpark (2017), promoting nearby alternative tracks



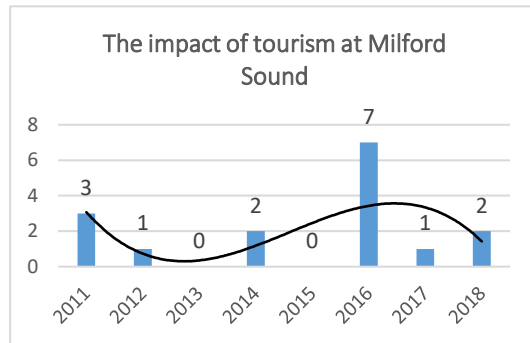
Tourism / tourist
+
Impact / problem
+
Otago Peninsula

- Problems mentioned: freedom camping, disrespectful tourists, i.e. using drones above Albatross Colony, the impact of penguin deaths on tourism operators on the Peninsula
- One article (Anonymous, 2017) talks about the threats to yellow-eyed penguins which are linked to tourism



Crowding / Congestion / Displacement
+
Milford Sound

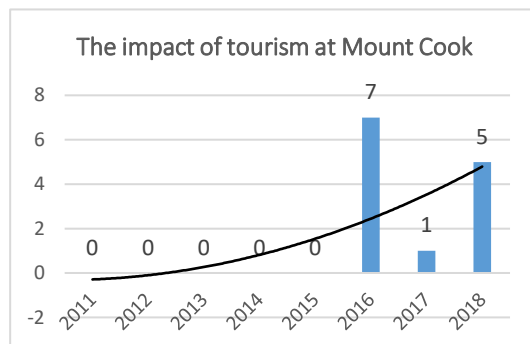
- “New Zealand Transport Agency (NZTA) statistics show average daily traffic on the road [to/from Milford Sound] throughout the year was 608 in 2010, rising to 697 last year. Just over 80% of traffic was passenger vehicles or camper vans” (Beckham, 2015)
- “A leading New Zealand tourism consultant says a park-and-ride system is urgently needed at Milford Sound to reduce traffic congestion at peak times.” “A park-and-ride system would require people to leave their cars at a designated point and catch a bus.” “It’s reaching a tipping point during the peak visitor season and those peak hours of the day where the visitor



Tourism / tourist
+
Impact / problem
+
Milford Sound

experience will become compromised, and no-one wants that.” (Beckham, 2016)

- Results including the keywords but only relating to the tunnel/Monorail developments have been included (see notes in other media analysis) unless directly related to the environment
- Very few relevant articles until around 2016 when general (and increasing) tourist numbers become a concern and potential impacts are discussed
- “The Department of Conservation is satisfied any effects Milford Sound's new \$6 million harbour have on the environment will be minimal.” (Caldwell, 2011)
- “The environmental impact of tourists has been compared to that of dairy cows, so do we really want another million of them by 2023?” (Cropp, 2017)



Tourism / tourist
+
Impact / problem
+
Mount Cook

- “As tourist numbers soar, concerns have grown about how the Department of Conservation (DOC) is meeting its dual responsibilities to look after visitors and protect the environment” (Daly, 2018)
- “In some areas, DOC has been forced to close toilets on popular tracks in high season because they fill up so quickly. Their time is increasingly taken up with emptying toilets through the summer to such an extent they have little time for anything else.” (Hobbs, 2016)
- Also impact around Lake Pukaki (on the way to Mt Cook); vehicles on the lake front carve deep groves into the ground, toilet paper is in the bushes, etc.
- “Visitors to Aoraki/Mt Cook National Park have increased 25 per cent from last year. Half a million would soon visit the park annually, during times that were once quiet.” (Mitchell, 2016)

Table 8: Factiva New Zealand media analysis (2011-2018): Searches with < 10 results

Search terms	Number of results	Annotations
Crowding / Congestion / Displacement + Mt Roy / Mount Roy / Roys Peak	6	• All very recent, one article in 2016 and 2017, four in 2018 • "Extra parking to help ease overcrowding at the foot of the Roy's Peak Track" "Doc is unable to charge or limit the number of people using its tracks." (Miller, 2016) • "Parking issues at the start of the Roy's Peak Track are continuing, despite a second temporary car park opening last month." "The parking issue arose last year after the hike to Roy's Peak summit was heavily promoted on the Lake Wanaka tourism website and social media." "Roy's Peak has become a victim of our own marketing success" (Waterworth, 2017). • "Foreign visitors have swamped eco- tourism sites in the South Island, largely to the exclusion of New Zealanders." (Foley, 2018). • "Roy's Peak - where there are now 40-minute queues for photos" "The department is also battling the Instagram effect - you can invest thousands in new toilets, only to find a single Instagram photo suddenly drives crowds to a completely new location. That's what happened with Wanaka's Roy's Peak, Sanson [Director-general of conservation] says" (Anonymous, 2018).
Tourism / tourist + Mt Roy / Mount Roy / Roys Peak + impact / problem	5	• All recent • Problems: parking (car park always full despite extension, cars parking along narrow Mt Aspiring Rd), freedom campers defecating in nearby paddocks, rubbish blowing onto farms • Solutions suggested: fee for track usage, paid parking, marketing of alternative locations, general tourist levy, daily limits • "Conservation Minister Eugenie Sage rates tourism pressures on conservation land as an 8 out of 10 problem." (Anonymous, 2018)
Crowding / Congestion / Displacement + Cathedral Cove / Te Whanganui-A-Hei	3	• "A park-and-ride system has been introduced at Cathedral Cove, but Hahei residents say their quiet peaceful village is still being turned into a car park. With up to 8000 cars a day, "the numbers we've got coming have just gone out of all proportion to our ability to deal with it", says local Bill Stead." "Because at Cathedral Cove we don't have walkers just coming down the normal way; there's a water taxi which carries about 800 people a day, then there's all these tour boats operating out of Whitianga over Christmas

		and they all trundle round the marine reserve.” (Anonymous, 2018) • “Figures showed there had been a 61 per cent increase in visitors to popular Coromandel beauty spot Cathedral Cove last year” (Dennett, 2017)
Tourism / tourist + impact / problem + Tekapo / Church of the Good Shepherd	8	• “Tourists defecating and leaving rubbish near the Church of the Good Shepherd has sparked frustration among Tekapo locals and tourism industry experts recently.” (Hudson, 2016) • “Issues with parking, overcrowding and vehicle noise are damaging the tourism hot spot, as well as presenting safety risks” (Anonymous, 2017) • “The Church of the Good Shepherd at Lake Tekapo now attracts 300,000 visitors a year and there are issues with security, safety, rubbish and hygiene.” “The church this year banned photography inside because of crowding and congestion.” (Bradley, 2015)
Crowding / Congestion / Displacement + Banks Peninsula / Lyttelton	2	• Akaroa’s crowding is due to cruise tourism; article refers to survey of local residents: “66 per cent identified problems caused by the visits, including a strain on facilities and amenities (137 mentions), overcrowding and congestion (121 mentions), and traffic and parking congestion (119 mentions)” (Meier, 2013) • “The Lincoln University survey, Community Attitudes to Cruise Ship Arrivals (Dec 12) actually states that 66 per cent of residents are concerned about overcrowding, traffic congestion, buses, visitor management, environmental degradation, damage to the town's amenities, the displacement of the local community around the wharf and harbour and the displacement of other visitors. Others were concerned about the town's inability to cope with large number of visitors and the town's tired and dirty appearance. Their solution is to limit the number of cruise ships” (Andrews, 2014)

Department of Conservation: Key front country sites under pressure

Inside Tourism issue 1,168 (Coventry, 2018) presents an article titled ‘DOC welcomes increasing numbers, but nature needs to be protected’. In this piece it is noted that “An estimated 3.9 million or 80 percent of all New Zealanders visit public conservation lands at least once a year. In addition, a record 1.75 million or 52 percent of all international tourists visited a national park in the year ending March. This was an increase of five percent.” (p.10). The numbers of visitors (international and domestic) to conservation areas in New Zealand

are predicted to grow further and challenge capacities, quality of experience and protection of nature and heritage sites. The power of social media in drawing visitor attention to new sites in a short period of time is increasingly challenging. Examples of growth in visitor numbers for the year to March 2018 at selected South Island sites include (Coventry, 2018):

1. Franz Josef glacier (Westland): 9% growth to 750,000 (up to 6,000 visitors/day with 30 minute waits for parking during peak times);
2. Milford Sound (Fiordland): 9% growth to 810,000 (over 4,500 visitors/day during peak times);
3. Roy's Peak (Wanaka): 27% growth to 75,000 (including anecdotal reports of queuing for 30-40 minutes to take photographs of the lake from an iconic vantage point);
4. Aoraki/Mount Cook National Park: 17.5% growth to 945,000, including a 35% increase in the use of the Hooker Track.

It has also been reported that helicopter traffic at Franz Josef Glacier has breached noise limits beyond consent conditions to the point that it may be a health hazard for local residents and a cause of impact upon other uses of the environment²¹.

DOC's response last season included an extra 50,000 staff hours during the summer season, and increased on-ground presence (e.g., to share local knowledge, clean toilets, maintain tracks, check that hut/campsite fees have been paid and check tourism operators have the concessions required). Concern remains that DOC may have to commit an increasing proportion of its budget to tourism management. The DOC (2012) - Aoraki/Mt Cook National Park Management Plan made three amendments to the previous 2004 plan, focusing on visitor management in the Lower Tasman Valley, Blue Lakes carpark & Tasman Valley Rd, and Blue Lakes walking track. A new Aoraki/Mount Cook NPMP was due to be prepared and made public in 2018.

Department of Conservation: Social and environmental impacts on backcountry tracks

Backcountry tracks, which usually necessitate visitors to stay at least one night on public conservation land (some use backcountry tracks for day walks), present a different range of site management challenges. These challenges vary between the high profile, high use 'Great

²¹ <http://www.stuff.co.nz/national/105414489/Helicopter-noise-at-Franz-Josef-called-elder-abuse-as-spotlight-thrown-on-enforcement?cid=app-iPhone>

Walks'²², which are an iconic element of the experiences of many international visitors, and the second and third tier backcountry tracks. The Great Walks offer closely managed multi-day tramping experiences in various New Zealand national parks. The Great Walks are relatively easy tramps and through efforts to facilitate access and encourage tramping the Great Walks, new user types have emerged. "This situation has led to what appears to be growing concern that DOC has become a tourism promoter at the potential expense of maintaining and sustaining a wide enough suite of local public recreation resources" (Fagan & Kearns, 2017, p.178).

The "challenge for DOC [is] to balance traditional user expectations, their own recreational mandate and commercial pressures, particularly when the 'front-country' provides revenue and the 'back-country' does not." (p.178). The displacement of the 'locals' who "seek remote locations and rudimentary conditions" (p.178) but who are faced with decreasing investment in back-country facilities, remains a challenge. Kiwi trampers have felt undervalued (Fagan & Kearns, 2017) in the face of high DOC attention paid to high use tracks that are used increasingly by international tourists. Although not the case on Great Walks during the summer season, elsewhere where there is no on-ground presence of DOC staff, compliance with the payment of hut and camping site fees is low. The Fagan & Kearns (2017) survey results suggest the need for more close and critical attention to be paid to the role of DOC in tourism management, and the resourcing of DOC to adequately meet is varied and, to an extent, competing demands (Table 9).

Table 9: New Zealanders as a proportion of total of Great Walk visitors (2016/17)

Great Walk	Total visitor numbers	New Zealanders (%)
Routeburn	17,010	27
Milford	7,473	36
Kepler	14,020	24
Rakiura	6,124	46
Heaphy	8,166	62
Abel Tasman	43,116	35
Waikaremoana	6,512	66
Tongariro	8,515	34
Whanganui Journey	8,477	56

²² <https://www.doc.govt.nz/great-walks>

The focus on tourist use of backcountry settings falls almost entirely on aspects of social sustainability, specifically managing visitor expectations, visitor experiences, crowding, displacement, and compliance. By contrast remarkably little attention has been paid to the environmental impacts of tourism and recreation in backcountry settings. This may arise from the fact that the high use tracks are 'hardened' against the most immediate environmental impacts of high visitor demand. Well designed and graded tracks and trails, board walking and benching in fragile alpine and wetland ecologies and well drained tracks, in combination with management presence (i.e., hut wardens), signage and visitor interpretation (including word-of-mouth advice from hut wardens), are such that the environmental impacts of foot traffic tend to be well managed on the high use tracks. Much less is known about the wider impacts of increasing tourist use of the conservation estate. Anecdotal evidence indicates that pressures of visitation may be associated with increases in littering, and evidence of human waste along track margins at some sites. The relationship between tourist intrusion and biodiversity in fragile natural areas is poorly understood and worthy of much more critical attention than has occurred to date. Biosecurity, and the distribution of invasive plant species, wasps, mammalian predators and waterborne pathogens, which are commonly associated with increasing presence of recreationists and tourists in natural settings, are also poorly researched.

Coastal and marine environments

The Environment Foundation (2015) notes that "Historically, most of New Zealand's marine environment has been protected from intensive recreational and tourist use by its inaccessibility. This has changed over the past four decades and almost all parts of New Zealand's coastal environment are now accessible for recreation." With the increasing scope and intensity of tourism this poses a threat to marine environments. The impacts of increasing tourism and recreation in coastal and marine settings may include wildlife disturbance and the potential for wildlife habituation (Higham & Shelton, 2011), anthropogenic noise in the marine environment (Wright et al. 2007), vessels strikes (e.g., Lammers et al., 2013), trampling, marine pests, anchor damage, rubbish, wastewater/sewage, conflict between user groups, and impacts on the near-shore environment (McCrone, 2001; Environment Foundation, 2015). Marine tourism has also been recognised as a contributor to greenhouse gas emissions and, therefore, a driver of climate change (Higham & Neves, 2015). While evidence of these impacts has been increasingly widespread internationally, analysis of tourism impacts on the marine environment in the New Zealand context, extending to growing tourist pressures,

evolving tourist demands on the marine environment, distribution of impacts, the scale of impacts and management responses, is currently lacking.

Set against these significant environmental impacts, the Environment Foundation (2015) also observes that coastal and marine recreation and tourism may foster appreciation for the importance of the marine environment and the effects that human interaction can have on it. The challenge of balancing visitor access to coastal and marine areas for recreation and tourism, and their potential negative impacts, lies with the DOC which is charged with protecting the marine and terrestrial areas it manages, including marine reserves and marine protected areas. As the number of visitors to New Zealand coastal and marine areas increases, visitor activities diversify and visitor demands intensify, so the need for marine protected areas, effective legislation, management strategies and further research also increases.

One of the key marine tourism challenges facing the DOC is the sustainable management of human interactions with marine wildlife species. In the New Zealand marine tourism context the key species include marine mammals including Sperm whales (*Physeter microcephalus*), Southern Right whales (*Eubalaena australis*), bottlenose dolphins (*Tursiops*), dusky dolphins (*Lagenorhynchus obscurus*) and Hector's dolphins (*Cephalorhynchus hectori*), and marine bird species including Northern Royal Albatross (*Diomedea epomophora sanfordi*), Yellow-eyed Penguins (*Megadyptes antipodes*), Little Blue penguins (*Eudyptula minor*), and Australasian gannets (*Morus serrator*), among others. These species may vary in terms of genetic isolation, population health, protection status, intensive management and commercial or public access. For example, at the Northern Royal Albatross Colony at Taiaroa Head (Otago Peninsula) albatrosses nest within a Department of Conservation wildlife reserve, under a science programme that dates back to the conservation efforts of Dr. Lance Richdale in the mid-1930s, and an intensive conservation management programme, and in close collaboration with the Otago Peninsula Trust. The same arrangements now afford the close monitoring and management of Little Blue Penguins at nearby Pilots Beach under the Pukekura Trust. Income from tourists visiting the Blue Penguins funds a science and predator trapping programme, and the penguin population, which was at risk of disappearing five years ago, is now thriving.

By contrast, human interactions with endangered Yellow-eyed penguins at nearby Sandfly Bay, or endangered Hector's dolphins in the surf of Curio Bay (Catlins) occur under an access regime that is open (public) and unmanaged. In many cases, unregulated access to wild animal populations has given rise to instances of unlawful or inappropriate visitor conduct. While

occasional instances of illegal wildlife trafficking have occurred (e.g., jewelled geckos²³), it is more commonly the case that unacceptable tourist conduct threatens the mortality/morbidity of protected species, and causes anger and resentment among local residents. Recently video of tourists 'dancing' with protected sea lions²⁴ at Sandfly Bay (Otago Peninsula) received widespread attention in the national media and condemnation on social media platforms.

The urgency of sustainable wildlife management in the tourism context is expressed by WWF International (November 2018), which notes that "Our planet is at a crossroads and we have the opportunity to decide the path ahead. On one hand, we have known for many, many years that we are driving the planet to the very brink. This is not a doom and gloom story; it is reality. The astonishing decline in wildlife populations shown by the latest Living Planet Index – a 60% fall in just over 40 years – is a grim reminder and perhaps the ultimate indicator of the pressure we exert on the planet" (WWF International, 2018: 5). At the same time, WWF International notes that the science is clear and there is no excuse for inaction. This is the case in wildlife tourism, where in many instances human-wildlife interactions, and the consequences of those interactions for individual animals and populations, are well researched (e.g., see Lusseau 2004; Lundquist et al., 2012). Such studies clearly highlight the need for regulation and close management of wildlife tourism. WWF International (2018: 5) noted that "today, we have the knowledge and means to redefine our relationship with the planet. There is no excuse for inaction. We can no longer ignore the warning signs; doing so would be at our own peril. What we need now is the will to act – and act quickly".

The challenges presented by unregulated access to wildlife breeding areas, where viewing wild animals occurs at no cost to the visitor, is well illustrated by the case of Yellow-eyed penguins (McClung et al., 2004). The disturbances caused by unregulated tourist interactions with Yellow-eyed penguins in the wild include delays in coming ashore (and crossing crowded beaches from the water to the dunes) among individual birds attempting to return to their nests, causing reduce food availability to chicks, compromised chick growth and fledging mass, and compromised survival rates (Ellenberg et al., 2007; McClung et al., 2004; Wright, 1998). At the cellular level the disturbances caused by unregulated and unmanaged human interactions include elevated heart rate and elevated levels of stress hormones which

²³ <https://www.radionz.co.nz/news/national/320134/rare-gecko%27s-smuggling-ordeal-over>

²⁴ https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12135385

might, according to Ellenberg, Mattern, & Seddon (2013) have implications for the energy budget of individual birds. It has been suggested that the relative absence of negative visitor impacts on reproductive success at regulated (commercial) wildlife tourism sites is due to the habituation of penguins to controlled human presence (Ellenberg et al., 2009). By contrast, unregulated and unmanaged wildlife tourism is less likely to result in habituation, and more likely to cause sensitisation, as indicated by elevated corticosterone concentrations in breeding birds at tourist-exposed sites (Ellenberg et al., 2007).

Two contrasting examples of commercial marine mammal viewing illustrate the importance of understanding the circumstances under which humans interact with marine mammals. Lusseau's research addresses management of the impacts of dolphin-based tourism, specifically human interactions with Bottlenose dolphins in Doubtful Sound (Fiordland) through the definition of critical habitats. In doing so he describes a small (50-60 individual animals), genetically isolated dolphin population, with a range limited to Doubtful Sound that, at the time of his research, was a population in decline and on an extinction trajectory (Lusseau, 2003; Lusseau & Higham, 2004). His research highlighted the extreme susceptibility of that population to human impact, and was critical to the adoption of management interventions and the creation of closely managed dolphin protections zones (DPZs) in 2008 (Department of Conservation, 2008). The creation of the DPZ, supported by the commitment of tour operators, has been successful in reducing dolphin-boat interaction times, protecting the critical behaviours identified by Lusseau (2003), and have stabilised the decline of the population²⁵ (Guerra & Dawson, 2016).

By contrast, Lundquist et al. (2012) report on the behavioural responses of dusky dolphins to tourist vessels in Kaikoura. They note that this population numbers several thousand (estimated 12,000-13,000 individual animals), existing in a range that extends from the upper South Island west coast, through the Marlborough Sounds and down the South Island east coast as far as Banks Peninsula, has limited interactions with tourist vessels, and is sufficiently large and wide-ranging to allow individual animals within the population the discretion of occasionally interacting with tourist vessels, or not. Lundquist et al. (2012) conclude that

²⁵ <https://www.doc.govt.nz/nature/native-animals/marine-mammals/dolphins/bottlenose-dolphin/doubtful-sound-bottlenose-dolphins/>

<https://www.doc.govt.nz/Documents/conservation/marine-and-coastal/marine-protected-areas/fiordland-marine-reserves.pdf>

<https://www.doc.govt.nz/Documents/conservation/native-animals/marine-mammals/doubtful-sound-bottlenose-dolphin-brochure.pdf>

tourist interactions with Dusky dolphins are unlikely to have any negative impacts on individual animals and/or population fitness. These examples offer contrasting insights into the likelihood of tourist impact in different contexts, while also highlighting the importance of scientific insights to inform a detailed appreciation of impacts, and the importance of management interventions that are informed by science, and monitored to ensure the effectiveness of management interventions over time (and the modification of management interventions if and when required), given that the health of wild animal populations is susceptible to a wide range of tourism and non-tourism related anthropogenic factors (Higham, Bejder & Lusseau, 2009; Guerra & Dawson, 2016).

Funding tourism infrastructure

Managing the local environmental impacts of tourism has been challenged by sustained high growth in visitor arrivals, combined with a general sense that investment in tourist infrastructure has been largely neglected over the course of the last decade. Queenstown offers a vivid example of the challenges that arise from sustained high growth tourism, when tourist arrivals are not evenly distributed in space and time. Each year Queenstown receives 120 tourists for every ratepayer. Record tourist numbers have continued to put pressure on services and accommodation within the Queenstown CBD and on the outskirts of the town, especially towards the airport. "Mayor Jim Boulton says the resort town needs to keep its infrastructure development ahead of the growth curve" (Goosselink, 2018)²⁶. "We've got 16,000 ratepayers," Mr Boulton says. "Last year we have 5.5 million visitor nights in the town. The infrastructure costs for that just does not come out of 16,000 ratepayers. I'm a strong proponent of a visitor levy" (Goosselink, 2018). This Newshub report noted similar issues at other key tourist sites including Waiheke Island, Fiordland (especially Milford Sound), the Routeburn track, and the Westland glaciers.

Debates around the need for international visitors to contribute to the funding of conservation and tourist infrastructure are not new. In past decades the case has been made for initiatives such as a 'green tax', tourist levy and bed tax (among others), which have generally been resisted by governments and industry (on the grounds that any such levies would undermine the competitiveness of New Zealand as a tourism destination). After many years of neglect and resistance, and in the face of a growing chorus of demands by some local authorities, the funding of tourist infrastructure became a general election issue in 2017, with

²⁶ <https://www.newshub.co.nz/home/new-zealand/2018/01/queenstown-looks-to-expand-to-cope-with-tourist-levels.html>

Labour promising to develop a 'Tourism and Conservation Infrastructure Fund', National suggesting the need for higher 'Great Walks' fees for international visitors and the Green Party suggesting a tourist levy as part of its 'Protecting our Environment' policy²⁷.

The fact that action has been taken on all these fronts in the first months of the Ardern coalition government suggests, as many have argued, that such measures are long overdue. MBIE (2018) reports on the recent development of the Tourism Infrastructure Fund. This includes up to \$25 million funding every year for tourism-related infrastructure such as freedom camping facilities, car parks, sewage works and the like. It is intended to help communities with a small ratepayer base but high tourism growth (domestic and international) and whose facilities are put under pressure by tourism growth. Projects (or groups of projects) are approved by the Minister of Tourism. "After a period of exceptional growth in the tourism sector, infrastructure is a priority for the industry and central and local government." "The Tourism Infrastructure Fund is intended to protect and enhance New Zealand's reputation both domestically and internationally by supporting robust infrastructure which in turn contributes to quality experiences for visitors and maintains the social licence for the sector to operate." (MBIE, 2018). Initial recipients, the majority of which address toilet, car park, waste water, rubbish disposal and freedom camping facilities, have included²⁸:

- ❖ MacKenzie District Council: "\$294,000 of funding for the construction of a new carpark and walkways to redirect vehicle and pedestrian access around the Church of the Good Shepherd."
- ❖ Westland District Council: "\$394,320 of funding for the construction of new toilet facilities, dump station, shelter, bus depot, and carpark at the Haast township."
- ❖ Tasman District Council: "\$335,000 of funding for the provision of toilet/shower facilities and rubbish compactors at key tourist spots in the Tasman District"
- ❖ Southland District Council: "\$220,565 of funding for the provision of freedom camping facilities in the Lumsden town centre."

²⁷ <https://tia.org.nz/resources-and-tools/lobbying-toolkit/httpstia-org-nzresources-and-toolslobbying-toolkitlobby-an-mpstagestage/>

²⁸ <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-infrastructure-fund/round-one-funding-recipients>

Tourist levy

A tourist levy to address the infrastructure costs of the tourism industry is to be introduced in the second half of 2019 at the rate of approximately \$35 for visitor arrivals staying twelve months or less. "The levy would collect around \$57 million to \$80 million in its first year, which will be split between tourism infrastructure and conservation activity" (Newshub, 2018a). The Government's case for such a levy is to ease the burden on communities and ratepayers to fund tourism infrastructures such as toilets and public parking, as well as to acknowledge the wear and tear on public infrastructures associated with high volume tourism (Newshub, 2018a). The Minister of Tourism has argued that "The previous government failed to invest in infrastructure to keep up with the tourism boom, and ignored calls to find a regular income stream for communities to cope with costs." The Minister of Conservation also stated that "This government is determined to support councils and operators so they can continue to prosper and provide the jobs this country needs."

The opinions of industry on the proposed tourist levy were surveyed by Inside Tourism (June 2018). Opinions were generally mixed with many noting that their support would depend on how the money that is raised is distributed between regions and between infrastructure and conservation. Chris Robers (TIA CE) noted that "Ensuring the extra tax revenue to be collected from some international visitors is spent wisely will be the focus of the tourism industry". "No final decisions have been made on the split between conservation and tourism, what sort of projects should be funded or how the decisions should be made." (p.7) The key priority is to ensure the funding is directed to where it will make the most positive change and relieve pressures of growth. Some, such as Ben Thornton (Bush & Beach MD) and Bruce Garrett (Brooke Serene MD) expressed the view that the government already has a surplus of income from foreign tourists, that should be directed to regional infrastructure projects. Susanne Becken (Director of the Griffith Institute for Tourism and professor of sustainable tourism) observed that it would be good for New Zealand's reputation to be seen to be 'doing something' in the face of growing sustainability concerns. Others felt that the proposed arrangement do not go far enough. James Helmore (Lake Wanaka Tourism GM) argued that only New Zealand passport holders and residents should be exempt and that all international visitors (including Australian and Pacific Island residents) should be subject to the levy. The view was also expressed that a higher levy should be imposed; perhaps \$100 pp. "A fund of \$50-\$70 million annually won't go far enough to address all the issues in a quick-enough timeframe" (p.3). Clearly the local impacts of tourism at key sites has reached a critical point

that will require a systematic response that is coordinated among a widely defined range of key stakeholders.

4.2) National

4.2.1) Conservation policy and planning context

The conservation policy and planning context in New Zealand is primarily the domain of the Department of Conservation (DOC), the central government agency mandated with responsibility for the administration of more than 30 per cent of New Zealand's terrestrial environment, and a significant portion of coastlines and adjacent marine areas. DOC has the mandate of protecting natural and historic heritage and providing for the public enjoyment of these resources, a duality clearly reflected in the allocation of financial resources *vis-à-vis* Vote Conservation (see Figure 31). The vast majority of DOC's budget of approximately \$NZD400 M is divided between its nature protection (50%) and recreation delivery (40%) roles. The expenditure ratio between these two core functions has remained relatively static over time.

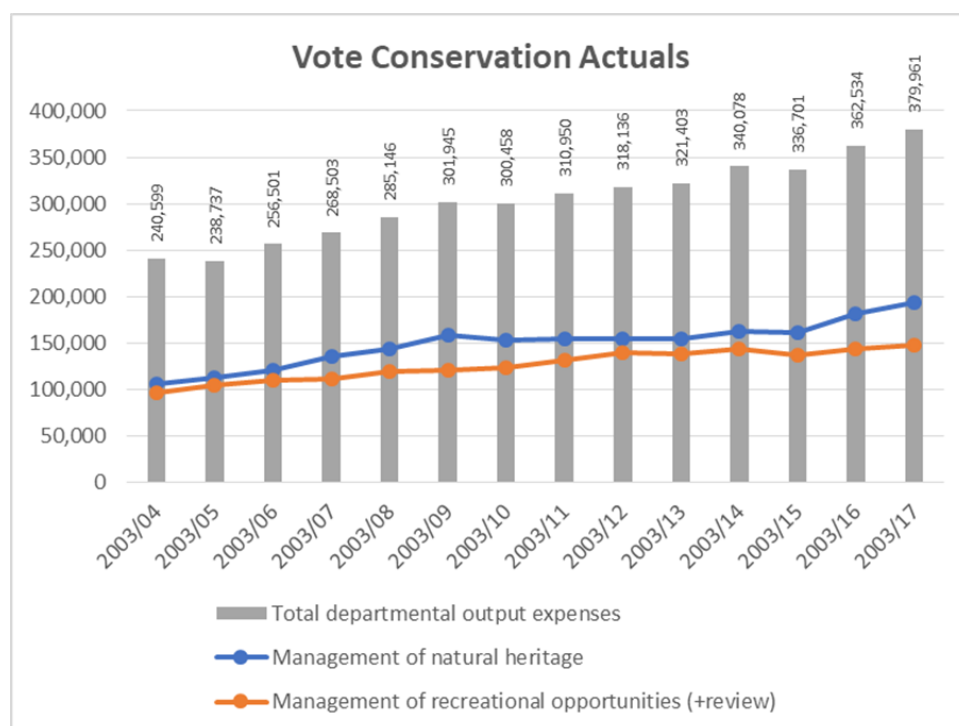


Figure 31: DOC's budget 2018 – itemised in terms of tourism / recreation (Source: own)

The single agency approach to the management of natural heritage alongside provision of recreation (and tourism) opportunities is a relatively unique arrangement in international terms. Institutional arrangements in other (similar) countries typically divide these responsibilities among various central government (or state level) agencies. To a certain extent this was also the case in New Zealand until 1987, when state sector restructuring

resulted in the disestablishment of the Forestry Department, the Wildlife Service, Department of Lands and Survey and the New Zealand Historic Places Trust into a single agency – the Department of Conservation. This arrangement has integrated the management functions in publicly owned conservation lands, but is not without its critics, and calls for the current department to be separated along tourism / recreation and bio-protection lines have been made at various points over time, including recently (see Williams, 2018).

Legislation and strategy documents

Tourism and recreation activities on New Zealand's public conservation lands are governed and managed through a variety of Acts of parliament, policies, plans and frameworks typically administered by the Department of Conservation. At the core of these activities, is the requirement that regard is given to protection of the nation's natural heritage, while at the same time, opportunities are created for public enjoyment, through recreation and tourism.

The Conservation Act (1987/1991), National Parks Act (1980) and Reserves Act (1977) are the primary legislative mechanisms through which the governance of public conservation lands used for recreation and tourism is affected. These Acts, through the relevant General Policy, require DOC, the New Zealand Conservation Authority, Conservation Boards and sometimes others, to prepare regional conservation strategies and plans giving long-term direction to the management of New Zealand's natural and cultural resources, including the management of recreation and tourism. Conservation Management Strategies and National Park Plans, for instance, set the broad (ten-year) parameters for regional and site-specific management of operational issues including aircraft landings, mechanical noise and recreation opportunities. Approaches to the management of recreation and tourism on public conservation lands and water are also informed by documents including the Department of Conservation *Visitor Strategy* (1996) – currently under review – and other high-level strategic documents, such as the *Statement of Intent* (see below).

The National Parks Act and the Conservation Act both emphasise the primacy of preservation and protection of natural and historic resources, for their 'intrinsic' value, but also for the benefit, use and recreational enjoyment of the public. This apparent paradox, enshrined in the legislation, provides a challenge for conservation managers to negotiate an appropriate balance which allows current use and development, alongside safeguarding resources for future generations. In particular, the wording of the Conservation Act (1991, section 6e)

creates a degree of ambiguity around DOC's role in tourism where it states that, among other things, the Department's function is:

to the extent that the use of any natural or historic resource for recreation or tourism is not inconsistent with its conservation, to foster the use of natural and historic resources for recreation, and to allow their use for tourism

The terms 'foster' and 'allow' (nor 'recreation' or 'tourism') are not defined in the Act, but have been the subject of some debate since the establishment of the legislation, with some commentators claiming that DOC has gone beyond the 'allowing for tourism' specified in the Conservation Act to a position more akin to 'promotion' of tourism (Fagan & Kearns, 2017).

In order to meet its obligations under the Conservation and National Parks Acts, DOC outlines its priority areas of delivery through strategic documents such as its Statement of Intent documents (SOI). Analysis of the SOIs published between 2010 and 2016 (the most recent), shows that DOC has consistently promoted 4 or 5 primary goals, initially referred to as 'operating intentions' with Natural heritage: The diversity of our natural heritage is maintained and restored remaining unchanged, and at the top of its list of priorities. In descending order, the remaining goals refer to protecting and enhancing engagement with historic heritage; delivering recreation opportunities; engaging the public in conservation; and engaging businesses in conservation.

In 2015, the Department renamed the operating intentions as 'stretch goals and priorities', with a 10 year timeframe in mind. Some specificity was then added to the primary target goals, for example: "50% of New Zealand's natural ecosystems are benefiting from pest management" (p.5); "50% of international holiday visitors come to New Zealand to connect with our natural places"; and "90% of New Zealanders' lives are enriched through connection to our nature". In the 2010 SOI, DOC included the goal: "more business opportunities delivering increased economic prosperity and conservation gain". This goal was reworded in 2015 to "every business fosters conservation for this and future generations" (p.5), but removed as a standalone entry in the 2016 iteration of the document. The business-related goals in the 2016-2020 SOI are incorporated under the 'Intermediate outcome statement': New Zealanders connect and contribute to conservation, where specific reference is made to developing an additional set of six national business partnerships and more than 50 regional partnerships in the next four years (p.14).

The SOIs and stretch goals are an important indicator of how the Department interprets its role in delivering conservation and recreation outcomes to New Zealanders. In line with its legislative mandate, the SOIs reflect the inherent, often competing aims of protecting and restoring natural heritage alongside promoting opportunities for the public to experience these resources. While the development of these conservation performance indicators is standard practice in many organisations, it is less clear how the stretch goals were arrived at. In particular, with reference to DOC's mandated requirement to foster recreation and allow for tourism (Conservation Act, 1987), aiming for 50 per cent of international holiday visitors connecting with natural places might be interpreted as promoting tourism, assuming that the aim is to increase international visitation to conservation areas. DOC is linking success in its recreation mandate with half of all international holiday visitors connecting to natural places – presumably irrespective of how many people arrive here. What is not clear from these strategic documents is what happens if more than 50 per cent of internationals connect with natural places? In this sense, the assumption must be that the 50 per cent goal is a minimum, rather than an ideal. How success against these goals is being measured is uncertain.

Conservation – tourism partnerships at the national scale

An important theme in the current SOI document, and an established dimension of DOC's contemporary organisational structure (see Figure 32), is a commitment to partnership approaches (with business, iwi and the wider community) in order to meet its stated obligations. In the tourism context, among the most visible of these business sector collaborations are the 'national partnership' arrangements with sponsors including Air New Zealand (promoting New Zealand's Great Walks since 2012); Dulux (supplying paint for DOC hut maintenance since 2013); and Toyota (supporting a nature interpretation programme for children since 2016)²⁹

In order to meet some of its other objectives in the tourism and recreation sphere, DOC collaborates with a range of agencies in the public and private sectors, including Tourism Industry Aotearoa (TIA), Federated Mountain Clubs (FMC), Mountain Safety Council (MSC), Walking Access Commission, New Zealand Fish and Game, and the Game Animal Council. Of particular relevance here is *Project Groundswell* – a formal DOC/TIA initiative "...to support a partnership that is positive, enduring and a win/win for tourism and conservation" (also see section below on TIA).

²⁹ <https://www.doc.govt.nz/about-us/our-partners/our-national-partners/>

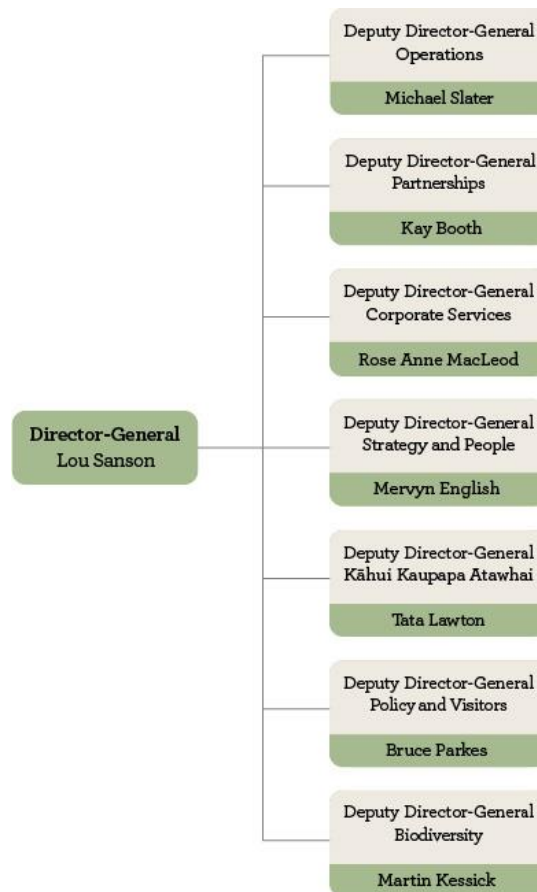


Figure 32: DOC's organisational structure (DOC, n.d.)

Concessions

In addition to the Acts of Parliament that set out the core legal arrangements for conservation land and waters, and the general policies that interpret this legislation, a number of other key statutory and non-statutory processes influence tourism in these settings. Of particular relevance to this report is the concessions process that applies to management of the commercial uses of public conservation areas. While individual members of the public have unlimited access to conservation land for legitimate recreational purposes, commercial operators and businesses require a permit to use public conservation land. This is a requirement under Part 3B of the Conservation Act (1987), and implemented through DOC's concession process. The number, type and management of concessions approved by DOC may offer useful insights to potential environmental impacts.

The concession process is designed to ensure that those businesses operating in publicly owned and administered conservation areas provide an appropriate financial return to the New Zealand tax payer. As such, concessions are "a tool for managing commercial activities on public conservation land and enabling appropriate business opportunities, while delivering conservation outcomes and a return to the public" (DOC / The Concessions Processing Review Working Group (2010) - Concessions Processing

Review p.10). Commercial activities commonly handled via the concessions process include guiding, parking, filming, sporting events, aircraft landing, extraction and occupation (DOC, n.d (Visiting Conservation Land), p.2). Fees and conditions for each concessionaire vary depending on the activity.

In addition to the requirement to comply with relevant legislation (including, for instance, the Occupiers' Liability Act, the Health and Safety in Employment Act, and the Health and Safety at Work (Adventure Activities) Regulations), critically in the context of this report, concessionaires need to provide an Environmental Impact Assessment (EIA) with their application, part of which includes consideration of the environmental effects of the proposed activity. Applicants must provide details about the activity, the social and physical conservation values affected by the activity, potential positive and negative effects, measures proposed to avoid, remedy or mitigate any adverse effects, and (where relevant) describe a programme to monitor ongoing effects (DOC, DOC (n.d.) - Managing your concession (DOC website).

In 2009, the Minister of Conservation requested a review of concessions processing in order to identify ways in which to streamline the concessions process, provide greater certainty and reduce compliance costs for applicants, and ultimately recommended improvements to transparency and timeliness of responses to concession applications (Concessions Processing Review Working Group, 2010). The review also reported that, as of April 2009, the Department managed more than 3500 concessions (2,993 low impact, 522 high impact), approximately half of which (43%) were for recreation or tourism activities associated with guiding, aircraft landings, boating, and access. At the time, DOC received approximately 1100 concession applications per year, more than half of which (54%) were for Otago (18%), West Coast / Tai Poutini (13%), Canterbury (12%) and Southland (11%).

According to data made available under the OIA, in 2002, DOC received a total of 1110 concession applications, 96 per cent of which were approved. In the 16 years between 2002 and 2017 (inclusive), DOC processed more than 30,000 concessions, approving 93 per cent of all applications. A quarter of these approvals were granted between 2009 and 2011. Concession applications processed by DOC have doubled between 2002 and 2017 (from 1110 to 2151), and while concession approval rates remained between 93% and 98% until 2014, after that time, the approval rate appears to have declined slightly (89% in 2016 and 77% in 2017).

The Department of Conservation's current approach to concessions management has drawn some recent criticism, including Dinica (2017; 2018) who argued that the agency has adopted a relaxed stance towards approving concessions, with a pattern of issuing more and longer contracts, sometimes in exchange for contributions from the concessionaires (to address conservation, environmental and infrastructural issues, through donations, or voluntary business actions). Dinica (2017) claimed that there is limited evidence that these contributions are anything more than

symbolic, and argues instead for the inclusion of environmental and biodiversity responsibilities in concessionaires' contracts, via the legal mechanisms that already exist in legislation.

Furthermore, Dinica (2018, p.156) contends that, in monitoring only 15 per cent of active concessions each year, and favouring a standardised concession contract for most activities, the environmental measures required by DOC of tourism operators "...are often not very extensive". Using the example of an aircraft-based sightseeing concession, Dinica (2018, p.156) claims that, once the concession is issued, there is "... no expectations for businesses to adopt innovations or enhance their environmental performances. The only requirements available refer to recovery from pollution events" (p.156).

According to Dinica (2017, p.1826), New Zealand's Department of Conservation is working within "...an outdated legal framework that fails to stimulate a holistic environmental approach to NP management...", and is struggling to raise revenue from tourism beyond that generated through "small concession fees and donations" (ibid.). Dinica (2017) identifies a raft of issues of weakness in governance which collectively contribute to "...a tipping point towards unsustainability for tourism development in New Zealand's NPs". Specifically in relation to concessions management, Dinica (2017) attributes the problems to the departmental restructures since 2009, resulting in fewer staff "...to deal with increasing concession-related workloads", and "significant centralisation of concession services", although more broadly she argues that tourism development has grown as a priority within DOC, and claims an "...increasing financial and human resources from DOC, while conservation outcomes remain disappointing".

Conservation and tourism legislation

It is apparent that in key strategic documents, DOC is aligning its goals with close regard to its obligations under the Conservation and National Parks Acts. These documents, and the annual budget allocation through Vote Conservation, clearly illustrate DOC's commitment to natural heritage conservation *and* to recreation (and tourism), with specific reference made to international holiday visitors (a goal, incidentally, that has already been achieved). The period between 2010 and 2015 was associated with an increased emphasis on the role of 'businesses in conservation – both in terms of corporate responsibility and commercial opportunity. While this explicit business emphasis has now been removed from the specific governance documents, a close and strengthening relationship between DOC and the tourism sector is evident in the establishment of partnerships such as 'Groundswell', the development of specific tourism roles within the Department's organisational structure, and the high number of recreation concession applications received (and approved) by the Department. While there is limited data to illustrate what effect these developments have had on the

environment, in combination with well-documented increases in international visitors to New Zealand, there is sufficient justification for a closer examination of these outcomes in the future.

Several academic commentators have made the claim recently that DOC is working with outdated legislation, or that the legislation is being misinterpreted, favouring tourism over protection of the environment (Dinica 2017; 2018; Fagan & Kearns, 2017). The evidential base of these views remains to be comprehensively examined, but it is worth emphasising in relation to the former contention, that the National Parks Act (1980) was first drafted in 1952 and, at the time, represented an important progression in the management of public conservation lands that attempted to satisfy the dual mandates of preservation and use. For the first time in New Zealand, the new Act enshrined into legislation the importance of recreation, but the Act also made it clear that the primary purpose of national parks was the preservation of natural heritage. Critically for New Zealanders, the National Parks Act of 1952, and the revised Act of 1980, also protected the 'freedom of access' principle, a provision widely interpreted as meaning free of charge – as well as freedom to use. It's worth emphasising here that, when the freedom of access principle was first established in the National Parks Act (1952), the pool of potential park users was much smaller than it is today. In 1952, the resident population of New Zealand had just reached two million (Wilson, n.d), and annual international visitors numbered fewer than 65,000 (two thirds of whom were vessel crew, rather than holiday-makers). There were just 10, 768 tourists to New Zealand in 1950 (NZ Census and Statistics Department, 1951). When compared with the current resident population of 4.9 million (Statistics New Zealand, 2018), and the arrival of 3.8 million international visitors annually, the potential recreation demand for national parks cannot have been anticipated when this legislation was first written. Even at the time of the revised National Parks Act (1980), when New Zealand's population was approximately three million people, visitor arrivals only numbered around 500,000.

Along similar lines, in commenting on the current review of the *National Parks Policy* as part of a news media article (Huffadine, 2018), the Conservation Authority noted how New Zealand's social, economic and technology environments have shifted since the policy had been reviewed, necessitating a fresh look at how the Act is interpreted:

The 'world' for conservation management has changed significantly since [the 2005 review]: for example, Treaty settlements are largely completed; rapid growth in tourist numbers; partnerships with business and philanthropy to attract new investment for conservation; Internet enabled technology to support improved visitor awareness and experience; and, new legislation and heightened accountability for health and safety.

Having provided a brief review of key legislation and core strategic documents pertaining to the governance of New Zealand conservation areas, alongside some interpretation of how these laws and

processes might influence tourism and its impacts, it is also important to note that the recent change in central government is likely to be accompanied by a change in outlook in relation to conservation and its relationship with tourism. There is already some evidence of the new government's interest in mechanisms to increase the revenue generated from visitors to New Zealand, including a border tax, differential pricing for some DOC facilities and new infrastructure funding arrangements. These examples are part of wider initiatives and emerging debates in New Zealand communities responding to the increased visibility of tourism and perceptions about its impacts. It is noteworthy that elsewhere internationally it is quite normal for visitor charges to apply for access to national parks, use of facilities (including parking sites) and access to day walks and scenic sites that are subject to particularly high demand. Such charges are necessary mechanism to manage high tourist demand, set a ceiling on visitor numbers at quite natural sites, and fund the provision of visitor facilities to ensure high quality visitor experiences.

4.2.2) Tourism governance and strategy at the national scale

Despite its economic prominence, and its acknowledged presence in the daily lives of many New Zealanders, the tourism industry is a very 'open system' - loosely coordinated, fragmented and hard to clearly define. This characteristic of tourism led Neil Leiper (1990) to describe tourism as only 'partially industrialised' and is one of the traits that contributes to the challenges of tourism governance. As Leiper (1990, p.166) noted: "To the extent that tourism is non-industrialized it is not being managed by anyone other than tourists themselves [...]. The industrial element in many tourism systems is too small, in comparison to tourists' activities, for its managers to deal effectively with all of the problems and opportunities arising from those activities". According to Leiper (1990, p.277) if governments "...leave tourism matters to the whim of "the market" [...], then nations and regions will fail to optimize the benefits of tourism and will have to cope with more environmental damage". Following MacCannell (1976), Leiper (1990, p.163) contends that tourism "...has expanded using a wide range of resources, but its institutionalized support (the tourism industry) is generally insufficient to cope effectively with the expansion and the problems created". Notwithstanding this partially industrialised state, tourism in New Zealand has some coordination and strategic focus through the efforts of central government and through initiatives taken in the private (commercial) sector. The most visible of these groups are the Ministry of Business, Innovation and Employment (MBIE), Tourism New Zealand (TNZ) and Tourism Industry Aotearoa (TIA).

Recognising the economic value in an emerging global traveller class, New Zealand was among the first countries in the world to dedicate a government department to the interests of tourism, establishing the Department of Tourist and Health Resorts in 1901. Across the intervening 120 years

since, government involvement in tourism has shifted between various departments and ministries, including the Tourism and Publicity Department, the Ministry of Commerce, an Office of Tourism and Sport within the Department of Internal Affairs, and Ministry of Economic Development (Green, n.d). For a short period in the early 1990s, New Zealand had a small Ministry of Tourism, which acted as a policy unit within the much larger Ministry of Commerce (Pearce, 2001). Despite the general absence of a full Ministry, the New Zealand government cabinet has retained a Minister of Tourism since the mid-1960s, although the cabinet ranking of this role has typically been low, until relatively recent times, when the significance of the sector appears to have been more comprehensively recognised. The three most recent Ministers of Tourism (John Key, Paula Bennett and Kelvin Davis) have all held concurrent roles as either Prime Minister or Deputy Prime Minister. The New Zealand government's current involvement in tourism is through two primary agencies: the Ministry of Business, Innovation and Employment (MBIE); and Tourism New Zealand (TNZ).

MBIE

MBIE consists of seven business groups that work collectively towards improved economic performance among New Zealand's people, industries and sectors. Tourism, under the 'Labour, Science and Enterprise' group, is one of the sectors of focus for MBIE (MBIE, 2018 - Our structure). Among the tourism responsibilities carried out by MBIE are tourism policy and regulation, advice on and evaluation of government investment in tourism, and liaison with other government departments on key tourism policy issues (such as freedom camping, and the proposed international tourist levy) and tourism research and statistics (TNZ, About the Industry). In particular, the Ministry provides advice to the Minister of Tourism "...on how it can create the right environment for enhanced productivity and growth in the tourism sector in order to increase tourism's contribution to the New Zealand economy and regions around New Zealand" (MBIE, 2018 Tourism). Further illustrating the relatively narrow focus of tourism governance in New Zealand, the Department of Prime Minister and Cabinet description of responsibility for the Minister of Tourism is stated as "...supporting and promoting tourism".

As part of its role MBIE also collects and analyses tourism data and tourism forecasts and publishes reports on international visitor arrivals and expenditure. In addition to these roles in sector growth, MBIE is responsible for the recently established *Tourism Infrastructure Fund*, and contributes to tourism strategy through initiatives such as *Tourism 2025* (see below). MBIE administers the *Tourism Infrastructure Fund*, established in 2017 in order to help address the increasing demands visitors were placing on basic community infrastructure in small towns and relatively remote scenic attractions where the ratepayer base is too small to cover the cost of necessary upgrades to public amenities. In establishing the fund, the Ministry acknowledged that infrastructure is a priority, following "...a period

of exceptional growth in the tourism sector” (MBIE, 2018 Tourism Infrastructure Fund). According to the Ministry, the Tourism Infrastructure Fund is intended “...to protect and enhance New Zealand’s reputation both domestically and internationally by supporting robust infrastructure which in turn contributes to quality experiences for visitors and maintains the social licence for the sector to operate” (*ibid.*). The fund provides for up to \$25 million each year for tourism-related infrastructure, such as freedom camping facilities, car parks, sewage works etc. In its first round (2017), MBIE funded 34 applications for, a total of approximately \$14 million – the vast bulk of which was invested in toilets, waste systems and carparks. A small proportion of the funds was directed towards enhancement of public access to natural attractions (Table 10).

Table 10: Allocation of the tourism infrastructure fund (source: own)

District Council or City Council	Amount	Carpark	Walkways	Toilet facilities	Wastewater management	Freedom camping facilities	Rubbish management	Other
Far North	\$147,905			x				
Gisborne	\$1,269,300	x	x					
Grey	\$601,039		x	x				x
Hauraki	\$215,830				x			
Hurunui	\$2,250,000				x			
Mackenzie	\$294,000	x	x					
Masterton	\$111,470			x				
Matamata-Piako	\$221,000	x						
Nelson	\$135,000	x		x				x
New Plymouth	\$708,500	x		x				
Opotiki	\$279,895	x		x				
Ruapehu (multiple applications)	1,003,500	x	x	x (2x)	x			
Selwyn (multiple applications)	\$155,650			x	x			
Southland (multiple applications)	\$455,765				x	x		
South Wairarapa	\$112,000			x				
Tasman	\$335,000			x			x	
Taupo (multiple applications)	\$296,000		x	x		x		
Tauranga	\$1,000,000							x
Thames Coromandel	\$103,500	x						x
Waikato	\$868,000			x			x	
Wairoa	\$56,250					x		x
Westland (multiple applications)	\$3,253,990	x (3x)		x (3x)	x			x
Whanganui	\$120,000			x		x		
Whangarei (multiple applications)	\$229,000	x (3x)		x				
Total	\$14,222,594	14x	5x	18x	6x	4x	2x	6x

Tourism New Zealand

Tourism New Zealand is a Crown Agent governed by the Crown Entities Act (2004), and mandated to market New Zealand as an international visitor destination for the long-term benefit of New Zealand (TNZ, 2018). Created under the New Zealand Tourism Board Act (1991), and governed by a board of directors appointed by the Minister of Tourism, the entity’s specific statutory functions include the development, implementation and promotion of strategies for tourism; and the provision of advice to New Zealand’s government and tourism industry on matters relating to those strategies (*ibid.*). While this stated mandate appears to provide considerable scope, to date, these functions have been interpreted as almost exclusively focussed on international marketing and public relations activities,

the most well-recognised theme of which is '100% Pure New Zealand'. Funded by a central government allocated budget of \$117 million (TNZ, 2018), Tourism New Zealand focuses on '...improving tourism's contribution to economic growth for New Zealand by increasing the number and mix of international visitors, when they arrive, the regions they travel to, how long they stay and how much they spend' (TNZ, 2018, p.2).

Tourism Industry Aotearoa

The *Tourism Industry Aotearoa* (TIA) is the leading example of national strategic direction for New Zealand tourism offered via the private sector. The TIA is an independent association that seeks to represent the diversity of New Zealand's tourism industry, across a range of tourism-related sectors including hospitality, accommodation, activities, attractions and retail, airports and airlines, as well as related tourism services (TIA, 2017). The primary role of TIA is to be the voice of the tourism industry. This includes working for members on advocacy, policy, communication, events, membership and business capability (*ibid.*) The association's mission is to achieve tangible benefits for the tourism industry and New Zealand, through leadership, influence and action (TIA, 2018a). In addition to its private sector base, the TIA has developed significant connections across the wider tourism industry and associated sectors, including with MBIE, Tourism New Zealand, DOC, and various other central and local government agencies.

TIA has been very active in the strategic space, collecting data on tourism trends and identifying threats and opportunities facing the sector. Observing global shifts in wealth distribution, a burgeoning global middle class, more healthy, wealthy and retired New Zealanders, and airlines and airports poised to "unlock potential" through more convenient flight schedules, the TIA predicts a "bright" future for tourism (p.8). Perhaps mindful of criticisms around social and infrastructural capacities, TIA's recent focus has been on increasing financial return, rather than increasing numbers of visitors to New Zealand. In its document *Tourism 2025: Growing value together* (TIA, 2014), the agency envisioned an industry delivering \$41 billion in tourism revenue to New Zealand's economy, achieved by growing international tourism by six per cent per year and domestic tourism by four per cent per year. A 2016 stocktake of the industry (TIA, 2016) revealed that two years on from its *Tourism 2025* document, tourism growth in New Zealand was "already so strong it's exceeding all expectations; tourism expenditure has grown by 20.1% in 2 years and was expected to reach \$32.5b by March 2016 from \$27b, which is much higher than the target growth rate". TIA's State of the Industry report (TIA, 2018) further demonstrates the extent to which the 2014 aspirations are being met, with revenue reaching \$36 billion (an increase of 1.9% over 2016) and visitor arrivals up nearly nine per cent over the same period. The same document reports little to no movement in seasonality or regional

distribution of expenditure, with approximately 35 per cent of all international visitors arriving between December and February, and the two thirds (65%) of all tourism spending occurring in Auckland, Wellington, Christchurch and Otago.

While the TIA strategic documents present a sophisticated range of data on visitor arrivals; tourist expenditure (domestic / international; urban / regional), accommodation; and visitor satisfaction, there is limited focus on data reflecting the environmental or social costs of tourism in New Zealand. To some extent, this weakness is acknowledged by the TIA (2018b, p.25):

...although it is relatively easy to communicate the economic benefits of tourism, the repercussions on local host communities and the environment are often harder to measure. The net impact of an increase of visitors on the local environment and local communities should consider the following environmental issues:

- *Water usage*
- *Waste generation*
- *Global warming*
- *Oil dependency*
- *Carbon emissions*

While the TIA documents do not indicate any plans to collect such data from the businesses it represents, since 2015 the organisation has conducted a bi-annual (March and November) *Mood of the Nation* survey to monitor the New Zealand public's attitude to international tourism. According to the TIA (2018c), 96 per cent of New Zealanders agree that international tourism is good for New Zealand, but 40 per cent think that international visitors "...put too much pressure on New Zealand". Among the concerns raised by the survey respondents, were "...pressure on infrastructure, traffic congestion, road safety and environmental damage" (TIA, 2018b). The recent TIA strategic documents place increasing emphasis on 'value over volume' (TIA, 2018b) and advocate for additional capacity development, improved tourism infrastructure, and sustainability in the sector:

The New Zealand tourism industry can and must develop strategies to ensure it is demonstrably committed to looking after its economic future and the resources it uses to operate. To achieve this, sustainability must become a genuine ethical underpinning of the industry." (p.16) (--> New document released in 2017: New Zealand Tourism Sustainability Commitment)

Of particular relevance to the current report is the success of the TIA in establishing a formal partnership with the Department of Conservation (DOC, 2015). Key among the TIA's declared advocacy priorities in this partnership are: increased influence over DOC's forthcoming Visitor Strategy; improved access and opportunities on public conservation lands for tourism operators; greater consistency and transparency in tourism concession application processes; and a review of the department's funding models "...to ensure DOC remains a significant contributor to, and enabler of, the visitor experience..." (TIA, 2018d). This partnership illustrates the growing collaboration between public sector conservation and recreation, and the private, commercial sector. The TIA has positioned itself very effectively to represent the commercial interests of tourism in New Zealand, and is sufficiently well-connected with central and local government to have considerable influence in the management of the resources that support tourism.

Freedom camping: A national-scale issue in New Zealand tourism

One of the flashpoints of New Zealand tourism in recent years, and a useful illustration the challenges of managing tourism in sensitive environments, has been the issue of 'freedom camping' (Cropp, 2016; Stylianou, 2016; Jones, 2017; see also section on media reporting on this topic). According to the New Zealand Government website, freedom camping "...is when you camp on public land that isn't a recognised camping ground or holiday park" (NZ Government, 2018). Concerns raised about the social and environmental impacts of this activity initiated some involvement from central and local governments – hence its inclusion in this section of the report.

For historical and cultural reasons not dissimilar to the freedom of access principle reflected in the national parks legislation, many New Zealanders have long-held the expectation that they can camp freely near rivers, lakes, coastlines and other open spaces, and spend a few days communing with nature without the formalities associated with well-provisioned holiday parks or other organised campground facilities (Collins & Kearns, 2010). Like other common pool resource situations, however, freedom camping remains relatively unproblematic until the demand for the activity exceeds the availability of the resource, or the impacts of the activity threaten to undermine critical aspects of the social and bio-physical environment. Moreover, there is a mismatch between the cost and benefits associated with freedom camping: freedom camping is not 'free' but does incur costs that are usually met by local rate payers. The question of who gains and who loses is important. The benefits accrue where campers spend money, but the costs manifest as financial burdens on local councils (rate payers) and as lost opportunities for local residents (RCWG, 2018):

[Freedom camping] is changing the use patterns of public infrastructure and spaces by putting increased pressure on facilities, leading to displacement (communities feel unable to use their local spaces due to the volume of campers), and is negatively impacting New Zealanders' perceptions of the value of tourism to their communities and the social licence of tourism to operate. (RCWG, 2018, p.7)

In a review of available literature on freedom camping, Angus and Associates (2017) reported a recent increase in demand for camping in general among international visitors, with a nearly 80 percent increase in campervan hires between 2012 and 2015. The review also revealed that, while the majority of visitors don't exclusively freedom camp, there were 60,000 international visitors spent at least one night freedom camping in the 2013-15 period. Over the same timeframe, the number of New Zealand freedom campers has fallen.

While Angus and Associates (2017) note significant gaps in existing information, constraining the development of strategies to successfully manage freedom camping, they find 'strong evidence' of anti-social behaviours in freedom camping areas, and claim that many visitors ignore the requirement of a self-contained vehicle for freedom camping, risking a fine. Among the New Zealand public, "...the biggest complaint about freedom camping in recent years is around the impact that freedom campers have on the environment where they stay, with complaints around noise, littering, incorrect wastewater disposal and defecation common" (p.15). Such issues have been reported all over New Zealand but regions with the highest tourist numbers, including Fiordland, Otago, the South Island West Coast, Southland, Coromandel, Bay of Islands and Nelson-Marlborough have the biggest challenges.

In order to help address the adverse effects of camping in locations not designated as campgrounds, the Freedom Camping Act (2011) entered into New Zealand law. At the time the Bill was introduced to parliament, these adverse effects were thought to be increasing as growing numbers of people were freedom camping in unsuitable places such as beaches and car parks, leaving behind refuse, including human waste. According to the Local Government and Environment Committee that reviewed and recommended the Bill, this behaviour is "... offensive to people, creates a public health hazard, and undermines New Zealand's image as a clean, green tourist destination" (Local Government and Environment Committee, 2011, p.1). Through enacting the legislation, the Government made it an offence to: i) freedom camp in an area where it is not permitted; and ii) deposit waste of any kind on local authority or public conservation land.

The Freedom Camping Act (2011) establishes the public's right to freedom camp in all areas unless specifically restricted or prohibited. The Act enabled local authorities to create bylaws that define areas where freedom camping is restricted or prohibited in order to protect the environment,

public access and/ or the health and safety of visitors to the area. The bylaws for freedom camping vary from council to council, with some permitting freedom camping in a carpark for one night, while others require campers to be at least 1 kilometre away from any town. Freedom camping is typically allowed only if the vehicle is fully self-contained, which means it must have a toilet, fresh and waste water storage and a closed rubbish bin (NZ Government, 2018). A local authority may not make bylaws that have the effect of prohibiting freedom camping in all the local authority areas in its district (Freedom Camping Act, 2011, s.12). Freedom camping is permitted on any conservation land unless freedom camping is restricted or prohibited on the land (ibid. s.15).

In April 2018, the Minister of Tourism set up the Responsible Camping Working Group (RCWP) to provide recommendations on policy, regulation and implementation options for the management of freedom camping in New Zealand (RCWG, 2018). The Group's report reaffirmed the place of 'responsible' camping in the nation's recreation offerings, but noted that the current approach to managing camping in public places needs a better system. More specifically, the working group recommended a review of the Freedom Camping Act (2011); the articulation of nationally consistent rules for camping, including the establishment of four camping 'zones'; a reassessment of compliance regimes to ensure effective deterrents are in place to dissuade unwanted behaviour; and an improved administrative mechanism to determine the standard for 'self-containment' of motor vehicles used for camping. As a result of the RCWG report, the Government (via the MBIE *Tourism Infrastructure Fund*) has set aside \$8.5 million to fund several initiatives to be in place before the 2018/19 peak tourism season. The initiatives include infrastructure, education and enforcement projects; a marketing and education campaign managed by Tourism New Zealand to provide information to campers on expected behaviour; and a data and technology driven pilot that will provide real-time updates on the availability of campsites in some important tourist destinations (MBIE press release August 15th, 2018).

New Zealand's Freedom Camping Act (2011) has established a legal framework for enshrining the public value of free camping and for creating restrictions on this activity where warranted. In devolving responsibilities for regulation to local authorities, it is possible that a lack of coordination and consistency between regions has led to confusion among tourists. The RCWG (2018, p.7) report appears to recognise this, noting that "The system is fragmented, and campers are often unclear about where to camp and what is expected of them...". The proposed national campaign should reduce ambiguity for prospective freedom campers and, in combination with improvements in certification and compliance monitoring, help mitigate some of the most undesirable social and environmental impacts of tourism in affected regions. It has also been observed that while some councils have created dedicated sites with facilities for overnight use

by freedom campers, traditional camping grounds that charge a modest fee for power and facilities for overnight stays have been bypassed.

Assessing the national 'yield' from tourism

Another dimension relevant to the national scale analysis of tourism and its impacts in New Zealand, is the identification of data that might be used to better understand the sector's total 'yield'. The economic impacts of tourism are now well-documented in terms of FTE, GST, GDP etc., but less appears to be known about the costs (environmental, cultural and social) of achieving these fiscal outcomes. For instance, the burden that international tourism places on public infrastructure and facilities (such as roads, sewer systems, DOC sites, museums and galleries), the environment and natural resources (e.g., water, threats to biosecurity, carbon costs) and society and services (e.g., Customs and Immigration, Biosecurity New Zealand, congestion in towns and national parks, emergency services, search and rescue volunteers,) are typically unaccounted for. In other words, what is the nation's 'yield' from tourism?

There is limited up-to-date information available to address this important question, although Lincoln University produced some data on this theme in the mid-2000s (Becken & Simmons, 2008; Lincoln University, 2007). According to Becken & Simmons (2008, p.421), in the tourism context, 'yield' can be understood as a measure of net benefit of tourism activity: "...the net gain for the host society, taking into account the costs of providing public sector infrastructure and other non-market costs, such as the use of environmental services in tourism production and consumption". In the case of the community as a whole, "...yield encompasses not only the jobs provided by tourism firms but also the broader social and environmental impacts of tourism. Tourism involves a lot of travel, and travel generates significant non-market environmental and social costs including accidents, congestion and greenhouse gas emissions" (Lincoln University, 2007, p.5).

The Lincoln University research calculated the financial benefits (\$NZD 613M) and costs (\$NZD 184M) of tourism to central government for the 2003/04 period, concluding that the sector was a "net financial contributor", mostly due to GST revenue (Lincoln University, 2007, p.1) (Table 11). 'Costs' in this part of the analysis were limited to the financial costs associated with tourism marketing, research and policy (\$NZD 81M), and the provision of access to culture, recreation, conservation and heritage (\$NZD 103M). The study found that tourism was generally cost neutral for local government. Additional analysis was undertaken of the transport sector within tourism – as an example of the environmental costs typically not scrutinized when assessments of the value of tourism are made. Using 2001 data, the authors examined the costs of transport externalities including CO₂ production, congestion, road accidents and other social and environmental costs of

transport. The estimated value of non-market costs associated with transport in New Zealand's tourism sector (2001) was \$NZ 223 million.

Table 11: Cost of tourism to New Zealand (Lincoln University, 2007)

Government (national, regional, local)	Social	Environmental
○ supply of infrastructure ○ Customs & Immigration ○ biosecurity ○ DOC visitor services and facilities ○ related policies and research ○ promotion / marketing ○ road provision and management/maintenance, and road congestion cost ○ buses ○ museums and art galleries ○ tourism marketing/research and policy/major regional initiatives ○ culture, recreation, conservation and heritage access	○ locals being crowded out (i.e. parking, road congestion, use of parks or public facilities) ○ increased crime ○ loss of cultural integrity ○ higher number of traffic accidents ○ higher demands on volunteers	○ water use ○ trampling of fauna ○ "encroachment into sensitive areas" ○ higher risk of disease spread and biosecurity breaches ○ carbon costs

4.3) Global

Extending the spatio-temporal scale of tourism environmental impact analysis

On Saturday 14th November 2009, when looking ahead to the looming Copenhagen climate negotiations, Fred Pearce wrote in *The Guardian* that “My prize for the most shameless two fingers to the global community goes to New Zealand, a country that sells itself around the world as ‘clean and green’”. Eighteen months later on Tuesday 10th May 2011, then Prime Minister (and Minister of Tourism) John Key defended New Zealand’s clean, green image in the face of intense criticism from Stephen Sackur on BBC Hardtalk³⁰. Global perceptions of New Zealand as a tourism destination are important. While the ‘100% Pure’ brand is primarily tourism focused, it has relevance across New Zealand’s export markets due to its associations with high quality, environmentally sustainable export products (Hopkins et al., 2016). Stephen Sackur’s (2011) interrogation of species extinctions, polluted rivers and high GHG emissions signalled that New Zealand’s global brand is increasingly subject to legitimate international scrutiny. New Zealand is vulnerable to climate change scrutiny given its ‘100% Pure’ brand, high reliance on access to global markets, and the energy intensive nature of the tourism industry due to sheer distance from global tourism markets.

Writing thirty years ago, Professor Geoff Wall and Geoff McBoyle (University of Waterloo) are credited with the first contributions to the study of climate change in the context of tourism and recreation (Wall et al., 1988). In the last decade the tourism academic community has increased the focus of its attention on the global impacts of tourism. The publication of *Tourism and global environmental change* (Gössling & Hall, 2006) drew attention to the global environmental footprint of the tourism industry. Exploding the myth of tourism as an environmentally benign, smokeless industry, as perpetuated by the UNWTO in the post-war years, Gössling & Hall (2006) highlighted the high dependence of tourism on natural resources that are globally threatened or at risk (e.g., charismatic wildlife, biodiversity, water, stable climate, snow). Gössling and Hall (2006) observed that the scale and extent and rate of global environmental change has expanded and accelerated, and that tourism is implicated as a major driver of environmental change. The environmental sustainability challenges arising for the tourism industry are captured in a number of the UN’s Sustainable Development Goals (SDGs)(2015-2030), including SDGs 7 (Renewable Energy), 12 (Responsible Consumption), 13 (Climate Action) and 14 (Life Below Water).

In terms of temporal scale, Timothy Morton’s (2010, 2013) work also offers an important point in terms of the timescales of sustainability. Sustainable development is defined as ‘development that

³⁰ <https://www.bbc.co.uk/programmes/b010x77b>

meets the needs of the present without compromising the needs of future generations...' (World Commission on Environment and Development, 1987, p. 43). Within this context limited temporal constraints are usually applied in popular approaches to sustainability. The Organisation for Economic Co-operation and Development (OECD) (2004) used the year 2030, later extending predictions to 2050, as the time horizon for considering sustainable transport in their report 'Mobility 2030: Meeting the challenges to sustainability.' However, Morton (2013) draws attention to the fact that our species consumes non-renewable resources, particularly oil, that required millions of years to form, and we produce materials and pollutants that will outlive us by tens of thousands of years. A Styrofoam cup used today will outlive us by over 400 years; the half-life of the plutonium-239 used in the production of nuclear weapons is 24,100 years; and 25% of the carbon compounds associated with global warming will still be in the atmosphere in 30,000 years' time (Morton, 2013). Any treatment of the impacts of tourism is clearly incomplete without consideration of the expanded spatial and extended temporal dimensions of environmental sustainability (Spector, Higham & Doering, 2017).

Overtourism

In recent years, and particularly in recent months, we have witnessed increasingly widespread concerns about various aspects of global tourism that relate to both continual growth in global tourism demand, and the emergence of new technologies and apps that are disrupting the global tourism system. "Global platform players are emerging with business models and sufficient scale to disrupt traditional brands and local businesses, for example accommodation (Airbnb), taxis (Uber) and media (Google and Facebook) who are also increasingly focussed on the consumer travel market." (TNZ, 2017, p.5). In 2017 mass tourism in some parts of the world was confronted by resident resistance and public protests over what has come to be known as 'overtourism'³¹. Pannett (2018) reports anger over tourists swarming cities and vacation hot spots sparking a 'global backlash' initially in Venice & Barcelona and then elsewhere in Europe during the summer of 2017 (Figure 33). International tourist arrivals globally grew to 1.3 billion in 2017, according to the United Nations' World Tourism Organization, increasing from 278 million in 1980 and 674 million in 2000. The drivers of overtourism are considered to be low cost air travel, the established high mobilities of long standing global markets combined with the emergence of increasingly mobile middle classes in new global markets such as India and China, social media and technology raising awareness and increasing access to distant places. Pannett (2018) describes the example of the 'Lord of the Rings effect', describing the swarming of busy Lord of the Rings sites around New Zealand which can be readily accessed via the GPS coordinates of 'Rings locations'.

³¹ <https://www.responsibletravel.com/copy/what-is-overtourism>; <https://www.responsibletravel.com/copy/overtourism-documentary>

In 2016 Fodor, the world's largest English language travel guide, began publishing a "No Go" list reflecting concerns that tourism was destroying the world's best places. Featured in 2018 were the Galápagos Islands and parts of Thailand, and a designation for "Places That Don't Want You to Visit" because their governments are trying to combat overcrowding." Examples of overtourism, and responses to overtourism, including the nine month complete closure of Bay on Koh Phi Phi Leh (location of 'The Beach') because of the high impact of tourist numbers on the marine environment. In the Philippines Boracay, "an island once known for crystal-clear waters", has been closed for six months because of pollution. Overtourism is becoming a problem in New Zealand³² as well as globally. New Zealand has been historically shielded from the excesses of mass tourism, but is now part of the global tourism boom. "Increasing global mobility and connectivity and the strengthening global backdrop remain key drivers in New Zealand's tourism boom" (Anonymous, 2018). Auckland airport experienced an 8.5% increase in passengers in 2017, Christchurch 5.9% and Wellington 2.9%. In recent years there have been growing concerns about the impact of tourism and personal leisure transport on coastal environments, with doubt surrounding the sustainability of mass tourist transportation and the personal leisure transport (Hopkins & Higham, 2016). The former includes the construction of coastal roads, golf resorts, jetties and marinas, as well as mega cruise ships dwarfing some ports of visit, and accessing increasingly remote and fragile coastal destinations. The latter include growth in marine activities such as SCUBA diving causing "measurable deterioration in the world's coral ecosystems despite good management practices." (Davenport & Davenport, 2008: 280).

New Zealand is also no longer shielded from the reputational risk of overtourism, which is becoming a problem in New Zealand³³ as well as globally. In January 2017 *North and South* published an article titled 'The road less travelled', noting that "Tourism New Zealand estimates by 2022, overseas visitors will outnumber locals". Many of those visitors adhere to the 'typical international visitor route': "arrive in Auckland and head north to the Bay of Islands, or south to Waitomo and Rotorua, via Hobbiton. Some peel off to the Coromandel beaches, causing sand-central-station at Cathedral Cove and Hot Water Beach. The Tongariro Alpine Crossing reaches "peak crossers" over the key summer period (as many as 3000 a day), as do the South Islands' Great Walks. In the South Island, from December to early March, Queenstown, Wanaka, Tekapo, Milford Sound and Punakaiki on the West Coast heave with motorhomes, tourist buses, backpackers and nervous rental car drivers." (North and South, *online*). The article concludes with a suggestion for locals: seek alternative places to travel to in summer to avoid the tourist hordes, places such Taranaki, East Coast circuit, Western Bay of Plenty, Lake Ohau, Bannockburn, and Stewart Island.

³² <https://www.wsj.com/articles/anger-over-tourists-swarming-vacation-hot-spots-sparks-global-backlash-1527000130>

³³ <https://www.wsj.com/articles/anger-over-tourists-swarming-vacation-hot-spots-sparks-global-backlash-1527000130>



Figure 33: The overtourism backlash 2017

Biodiversity: Globally significant species

Global environmental change occurs when tourism impacts “a significant fraction of the total environmental phenomenon or global resource” (Gössling & Hall, 2006, p.1). The ‘astonishing decline in wildlife populations’ globally over the 40 years has been recently documented by WWF International (2018). In the New Zealand context, tourism is implicated in global environmental change in terms of biodiversity and the conservation of globally significant species. This includes not only globally unique native bird species, but also globally threatened or endangered species such as Hoiho Yellow-eyed penguins (*Megadyptes antipodes*), Hector’s dolphins (*Cephalorhynchus hectori*) and New Zealand sea lions (*Phocarcotos hookeri*). With these important points to the fore, Becken and Schellhorn (2007) critiqued global ecotourism development in relation to both closed system (local) and open system (global) impact perspectives, observing that ecotourism can be simultaneously considered locally sustainable and globally unsustainable.

To illustrate, some of the complexities of the open system approach are explored by Higham and Neves (2015) specifically in relation to whale-watching. In 2010 it was estimated that whale-watching had rapidly expanded into a \$2.1 billion a year global industry, with 13 million whale-watchers, supporting 13,000 full time equivalent jobs (O'Connor, Campbell, Cortez & Knowles, 2010). This level of growth has created new tourism oil dependencies (Hall, 2007). International ecotourism flows largely originate from developed countries, in particular Europe, which accounts for 57.8% of all international travel. While 'North-South' flows are comparatively minor (about 11% of all international travel (Scott et al., 2011), they are of critical economic importance to ecotourism destinations in the global South (Becken & Schellhorn, 2007; Hall, 2007). Little scholarly attention has been paid to the relationship between whale watching and global climate change (Lambert, Hunter, Pierce & MacLeod, 2010) although Neves (2010) does contemplate the ecological footprint of 10 million ecotourists. Flying, which is a necessary requirement for most ecotourists to reach their destinations, is explicitly material (i.e. it has a high carbon cost) (Peeters & Williams, 2009). This raises important questions about the dispersed and global environmental risks associated with travel consumption (Higham, Cohen, Peeters & Gössling, 2013), and the relationship between tourism and the environment at the global scale.

These aspects of the relationship between whale watching and climate change pose an inescapable challenge to global nature-based tourism destinations. In the New Zealand context, it has been noted elsewhere that a new emerging 'tourism and conservation' paradigm offers considerable scope for tourism development that may contribute in diverse ways to the environmental management and the conservation of endangered species (e.g., funding science, conservation volunteering etc.). For example, New Zealand has become an increasingly attractive destination for WOOFING and environmental volunteer work, especially for young European travellers who stay in New Zealand for longer than average, i.e. during a work and travel (gap) year. This has become a niche market in itself³⁴. It is important that this is the case, given the potential for unsustainable tourism to compromise the self-identity of the environmentally responsible consumer, not only due to the material environmental impacts of air travel (Barr et al., 2010; Higham & Cohen, 2011), but also where tourism is associated with negative impacts on wildlife populations (Higham & Neves, 2016). Perversely, nature-based tourism may be driving a short-term environmental fix in terms of 'extinction tourism'. This is referred to as 'last chance tourism' (Lemelin et al., 2011) whereby capitalist value is explicitly derived from the prospect of imminent disappearance (Leahy, 2008).

The global ocean commons

³⁴ <https://www.straytravel.com/new-zealand-travel-guide/work-and-travel-in-nz/volunteering-work/>
<https://www.backpackerguide.nz/volunteer-department-conservation-new-zealand/>

The sustainability of high volume, high velocity, long distance transportation is under intense scrutiny (Peeters & Dubois, 2010; Creutzig et al., 2015; Lenzen et al., 2018). The consequences for nature-based tourism destinations have been addressed in reference to the northern high latitudes (Johnston, 2006), Antarctica (Eijgelarr, Thaper & Peeters, 2011), ski resorts (Hopkins, 2013), snow-covered vistas (Lemelin et al., 2008), coral reefs (Scott, Hall & Gössling, 2012) and polar bears (Dawson et al., 2010). The current evidence relating to whale-watching signal changes in the distribution and abundance of cetaceans in response to modified sea surface temperatures, with implications for the presence and frequency of cetacean species and migration patterns (Lambert et al., 2010). Acidification of the world's oceans due to the absorption of atmospheric carbon presents the possibility of wholesale food chain alteration (Lambert et al., 2010). More broadly, the contribution of tourism to the health of the marine environment extends to the production and consumption of food, which in some forms is responsible for the production of vast quantities of single-use plastic (Figure 34), much of which are likely to contribute to the global issue of marine plastic pollution. It is also worthy of note that on 1 May 2018 Hawaii became the first state of America to pass legislation that prohibits the sale of sunscreens containing the chemicals oxybenzone and octinoxate which are linked to coral bleaching when washed off in the ocean, to come into effect on 1 January 2021³⁵. We have arrived at a critical moment in the relationship between tourism, recreation and leisure and the health of the global marine environment.



Figure 34: A single airline meal service that produces upward of eighteen pieces of plastic

The crisis of the global cryosphere

³⁵ <https://www.nytimes.com/2018/05/03/travel/hawaii-sunscreen-ban.html>

Globally the cryosphere is in crisis and with this comes a range of global environmental threats, not the least of which is the crisis of global fresh water storage (Yao et al., 2004). The cryosphere is of enormous importance to the tourism industry. In many parts of the world the industry is confronting the overwhelming challenges of climate-induced environmental change (e.g., glacial retreat, changing snow elevations, changing water regimes, altering water flow and flood risk, changing distributions of wild animal populations, increased fire risk, and changing vegetation regimes) (Hayward & Walker, 2018). The case of the Columbia Icefields is striking. The Columbia Icefields are located in the Canadian Rocky Mountains on the continental divide between British Columbia and Alberta. The icefields have historically sustained eight glaciers³⁶, feeding rivers that issue into the Pacific, Atlantic and Arctic Oceans (via Hudson Bay), as well as supporting provincial tourism industries and iconic tourism attractions such as glacier tours (by Athabasca Glacier snow coaches) and glacier walks. Figure 34 illustrates the relentless and irreversible retreat the Athabasca glacier over the course of the last century. Figs. 34(a) and 34(b) offer 1918-2011 comparative images that show not only the retreat of the glacier, but also the decline in volume (see 34(b) lateral moraines). Figs. 34(c) and 34(d) illustrate the reality of tourism industry adaptation to climate-induced environmental change, by way of the creation of post-glacier tourism activities, specifically the anatomy of a dying glacier (Fig 34(c)) and the new post-glacier Athabasca Valley skywalk visitor attraction (Fig. 34(d)).

In New Zealand glaciers of global significance, not to mention great importance to the national and regional tourism economies, continue to experience sustained seasonal ice volume loss and terminus retreat (Purdie & Fitzharris, 1999; Purdie et al., 2014). Geographer Dr Heather Purdie (University of Canterbury) has been monitoring Fox Glacier since 2005 and has expressed “deep concern about the impact that climate-driven glacier retreat would have on glacier tourism and regions reliant on glacier-related products.” (Stewart et al., 2016). Media attention has tended to centre on the impact of glacier retreat on the tourism industry, rather than the reverse.

Westland Glacier tourism exists within an environment of dynamic change due to range of other climatic and natural hazards. Espiner, Orchiston and Higham (2017) identify a range of threats to the glaciers in Westland National Park on the West Coast, and the associated tourism industry. They include the effects of climate on the accessibility of the glacier attractions and potential for natural hazard events, most notably flood risk and seismic risk. A continuing challenge has been the closure of walking access to the glacier due to rapid glacial retreat and increased risk of calving at the terminus of the glacier. In response, “...glacier tourism operators had to change their business practices, leading to sharp increases in both fixed wing scenic flights and glacier landings by helicopters” (Espiner et al.,

³⁶ The six largest are the Athabasca, Castleguard, Columbia, Dome, Stutfield and Saskatchewan glaciers.

2017, p. 9). They also note that “While such business adaptations may represent an entrepreneurial response to the problems of limited physical access and changing climate, questions remain about the medium- and long-term sustainability of this approach given predicted future energy costs, ‘acceptable’ aircraft noise levels and emission regulations” (Espiner et al., 2017, p. 9). This course of events raises the issue of climate change maladaptation (Hopkins, 2014), which is a term that describes “a cure that is worse than the disease” (Scheraga & Grambsch, 1998, p. 86). Maladaptation arises when responses to climate-induced challenges result in increased greenhouse gas emissions, disproportionate impacts upon vulnerable communities, high opportunity costs (economic, social or environmental) compared to alternative choices and/or limits the opportunity to adapt by creating dependencies (e.g., entrenching path dependencies through large infrastructural investments). Hopkins (2014) addresses the equally high potential for maladaptation in the ski industry, where there is also considerable scope for negative rebound effects (e.g., dedicated skiers having to fly further in search of desirable snow/ski conditions), as ski fields adapt to accelerating climate change.



Figure 33 (a-d): Then and now. 34a). The Athabasca Glacier 18 August 1918. 34(b) The Athabasca Glacier comparative image 18 August 2011. 34(c) The death of the glacier interpretive walk. 34(d) Life after the glacier: The Athabasca Valley sky walk

Inside Tourism (Issue 1,165) reported that 'global momentum is gathering for climate change action in tourism', and that there is now a "heightened sense of urgency and commitment" (p.9) around climate change in the travel and tourism industry. This issue highlighted that tourism business are very vulnerable to climate change, and noted the "announcement of a partnership between the WTTC and the United Nations Framework Convention on Climate Change (UNFCCC)" (p.11). Inside tourism noted the high relevance of climate change for the tourism sector in New Zealand due to high reliance on air travel and the vulnerability of eco-systems that are critical to the tourism. "Understanding climate risks and future-proofing the sector for a world of more climate extremes is timely" (Inside Tourism, 2018, p.11). Inside Tourism issue 1,168 (2018) asked if climate change is the biggest issue we currently face, noting that "there's a link between the increasing volatility, scale and destructiveness of extreme weather, with the starvation, poverty, disease, migration and conflict that it causes." (p.16).

The Paris Climate Agreement (December 2015) came about following the 21st Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). It embodies the commitment of 196 countries (Parties to the Agreement) to the goal of stabilising global average temperatures below +2°C relative to pre-industrial levels (UNFCCC, 2015), with many Parties to the Agreement indicating a commitment to do all possible to stay within a +1.5°C target. The *State of the Climate* (National Oceanic and Atmospheric Administration [NOAA], 2016) report leaves no doubt about the magnitude of this challenge. Signatories must now develop policies that align with 2030 emission reduction goals as expressed in Intended National Determined Contributions (INDCs) (UNFCCC, 2015). Given the failure of earlier climate negotiations (Vidal *et al.*, 2009), the Paris Agreement has been described as one of the '*world's greatest diplomatic success*' (Harvey, 2015 online) and as a '*remarkable international consensus*' (Scott, Hall & Gössling, 2016:1). Clearly the success of Paris lies in the execution of 2030 INDCs (Cléménçon, 2016). The meeting of 2030 INDCs will determine the extent to which anthropogenic climate change, already in train (NOAA, 2016), can be mitigated and the most severe consequences of climate change avoided (Scott *et al.*, 2016; Bailey & Inderberg, 2016). The hard-edged physical reality of accelerating climate change is illustrated in Figure 35.



Figure 34: Historical parts per million (ppm) CO (NASA, 2013)

The 'Elephant in the room'

"...[T]he truth of it is that we shouldn't turn away from that uncompromising analysis; the hard-edged physical reality of accelerating climate change tells us that there's absolutely no way emissions from aviation can keep on growing indefinitely into the future, especially when the carbon footprint of every other aspect of our lives is simultaneously being driven down and down. And that's the dilemma for anyone who cares passionately about addressing the multiple threats of climate change; either stop flying altogether (the logical but somewhat unworldly idealist's position), or fly as little and as discriminatingly and responsibly as possible (the often uncomfortable pragmatist's position)"

Sir Jonathon Porritt (Chair, Air New Zealand Sustainability Advisory Panel) (2017)³⁷.

Transportation currently accounts for approximately 23% of total global energy related CO₂ emissions and transport emissions are projected to double by 2050. Air travel produces a large and growing portion of the world's greenhouse gas emissions (Creutzig et al., 2015). Aviation has a disproportionately large impact on the climate system. A paper recently published in Nature Climate Change quantifies the carbon footprint of global tourism by way of an analysis of global carbon flows between 160 countries (Lenzen et al., 2018). It finds that in the five-year period from 2009-2013 the carbon footprint of global tourism increased from 3.9 to 4.5GtCO₂-e (8% of global GHG emissions), representing a fourfold increase on previous estimates. This footprint is closely tied to affluence, with an overwhelming proportion of the carbon footprint of global tourism exerted by and attributed to high income nations. While this paper addresses transport, shopping and food as key contributors to

³⁷ <https://indd.adobe.com/view/ba876813-8fcc-4c0a-bff9-bd8dae07b0aa>

the global footprint of the tourism industry, it highlights the specific transportation challenge facing New Zealand tourism, due to high reliance on aviation and distance from key markets.

Increasing aviation routes to New Zealand remains a key tourism growth strategy, and a post-Paris (2015) issue that cannot be ignored. In the Tourism New Zealand briefing for the incoming minister (December 2016) it was noted that “... in recent years there has been a 10 per cent increase in airline capacity, primarily from China and the USA. New routes have increased China airline capacity by 13 per cent for the 2017 financial year and 60 per cent for 2016. New routes from the USA increased capacity by 29 per cent in FY2017 and opened up opportunities in the East Coast”. Global passenger demand for air travel continues to grow at 5-6% per annum (Bows-Larkin et al., 2016), while efficiency gains have consistently failed to meet the 1.5% per annum target (2009-2020) set by the International Civil Aviation Organisation (ICAO). “Even under the most aggressive technology forecast scenarios, the anticipated gain in efficiency from technological and operational measures does not offset the expected growth in demand driven emissions” (ICAO, 2016, p.12; see also Peeters et al., 2016). In 2016 ICAO conceded that “...aviation emissions are expected to grow by up to 300% by 2050 unless action is taken” (EFTE, 2016, p.2). Public pressure is building for the air transportation sector to significantly reduce aviation greenhouse gas emissions (Sgouridis, Bonnefoy & Hansman, 2011).

Unconstrained and accelerating emissions associated with air travel threaten everyone's wellbeing (IPCC, 2014b). However, transport is an expensive and difficult sector in which to reduce energy demand (Anable et al., 2012). Various command-and-control, market-based and soft policy measures are available to try to achieve reductions in transport emissions (Friman, Larhult & Gärling, 2013; Sterner, 2007). Yet there remains a significant implementation gap due to social lock-in in transport policy (Banister & Hickman, 2013). High carbon transport use is entrenched and institutionalised (Randles & Mander, 2009). Deep cut emission reductions in aviation will require responses at the global/sub-global policy, business and individual levels:

Collective action: Global and sub-global policy responses

Aviation has “...historically found itself in a parallel universe when it comes to the industry’s contribution to the fight against climate change. Airlines have been operating in a world where they pay no fuel taxes, are VAT-exempt, face no legally-binding fuel efficiency requirements, and have no limits placed on their emissions”

(Eickhout & Taylor, 2016).

High carbon transport use is a social convention that entrenches suboptimal social and environmental outcomes for everyone. Such conventions can only be ended by coordinated action, since any unilateral exit simply disadvantages those leaving without affecting the convention itself (Mackie,

1996). Effective transition from social conventions requires policy-led coordination among players (Banister & Hickman, 2013; Schwanen, 2016), which in turn promotes our moral duty to seek collective action through urgent global or sub-global policy leadership (Higham et al., 2018).

At the global level, the UN International Civil Aviation Organization (ICAO) has taken some initiatives since COP21 to try and get industry agreement to plans to reduce their carbon emissions. This includes a global market-based measure (GMBM). However, the International Coalition for Sustainable Aviation (ICSA) states that while the agreement to establish a GMBM contains some good provisions and there are also a number of troubling elements that fall short of ICSA's longstanding recommendations to strengthen the GMBM. The ICAO GMBMs are expressed in the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) (see Higham et al., 2018), but this is considered to fall well short of the deep-cut emissions reductions in aviation that are required under COP21 (Higham et al., 2018).

If, indeed, CORSIA is considered a failure of ICAO due to the inability to stabilise and reduce emissions at source, then sub-global (national) policy responses will be required. Wide-reaching regulation of air travel will be possible once vanguard countries step up to lead the way. It has been argued that countries that adopt air transport carbon charges that return to the maintenance (e.g., environmental conservation) and enhancement (e.g., deep cut emission reductions) of their tourism sectors will enjoy immediate short-run advantages over their competitors in the sector, as they will be replacing marginal and relatively invisible price advantages under the old regime with highly visible and marketable low-carbon advantages under the new one (Higham et al., 2018). This is a global issue, but given the distance tourists must travel to visit, and the concomitant carbon emissions, the New Zealand tourism industry faces a major challenge in re-orientating itself to offer low carbon international travel, domestic transportation and visitor experiences. As the carbon budget tightens globally it will become ever more urgent to address the energy intensity of the tourism industry. At the national level, lessons may be learned from the failure of the Australian carbon tax on domestic aviation (Markham et al., 2018).

Anticipating and perhaps promoting this shift would be one way the industry could help future proof itself. In the absence of game-changing aviation technologies (Peeters et al., 2016), carbon limits will ultimately mean that air travel cannot remain the cheap, convenient, fast and regular form of 'everyday' travel that it is today. The current cost and convenience of different transport modes favour the less environmentally and socially sustainable options. Smith and Rodger (2009) note that at that time Australia provided 37% of all international visitors to New Zealand and 13% of CO₂-e (carbon dioxide equivalent) attributable to international visitor air travel. By contrast, New Zealand's European inbound tourism markets represented 18% of total visitors and 43% of CO₂-e attributable to

international visitor air travel (Smith and Rodger, 2009, p.3444). Distance from markets is a critical variable. Future TNZ tourism marketing campaigns should be informed by the profiling of international and regional markets in terms of distance and international air travel emissions, length of stay, expenditure/yield and tendency to engage in low-carbon visitor experiences. Such a move would give heightened importance to proximity markets (such as the eastern states of Australia) and domestic tourism. Low-carbon transitions must extend to domestic tourist transportation, urban transportation and visitor experiences. The Jucy Rentals e-Campervan French experiment is one inspiring example³⁸. The New Zealand Cycle Trail initiative³⁹, initially a regional development response to the global financial crisis, is now recognised as an exemplary example of infrastructure development that fosters slow tourism, low carbon and active transport interests.

Business responses

In terms of aviation emissions, it has become clear that Air New Zealand is a global leader in terms of sustainability strategy, planning and implementation⁴⁰. Air New Zealand operates at the very top end of fleet energy efficiency, has pioneered the testing of alternative biofuels, transitioned to an increasingly electric ground transport fleet, and entered into a corporate partnership with the Department of Conservation, which receives offset payments made by Air New Zealand passengers to invest in conservation programmes that capture and store carbon from the atmosphere, among many other initiatives. It is interesting to contemplate a future scenario under which the New Zealand government considers the sustainability of airlines in the negotiation of Air Service Agreements (ASAs) to operate passenger services in and out of New Zealand. ASAs could require airlines operating into New Zealand to match Air New Zealand's commitment to energy efficiency, traveller awareness, and emissions mitigation. While technically there is no immediate prospect of transitioning aviation to sustainable energy sources (Peeters et al., 2016), Air New Zealand is exploring a future of short haul domestic aviation that involves autonomous electric personal flight. The current technology-imposed constraints on aviation emissions mitigation certainly demands a sector-wide approach to climate action.

Individual action

Ambitious reductions in all transport CO₂ emissions can be achieved by reducing total global demand for high carbon transportation. Consumers should be encouraged to reduce their own personal emissions profiles, but should not be held solely responsible for responding to the challenge of aviation emissions. This is why aviation fuel needs to be included in the Tax Scheme. Consumers should

³⁸ The first Juicy EV <https://www.jucy.co.nz/useful-stuff/jucy-ev/article/>

³⁹ New Zealand Cycle Trail <https://www.nzcycletrail.com>

⁴⁰ <https://indd.adobe.com/view/ba876813-8fcc-4c0a-bff9-bd8dae07b0aa>

be encouraged to consider and act upon energy intensity (fuel efficiency), carbon intensity (fuel shift), modal shifts (to lower emitting forms or modes of transport) and change in consumer travel behaviours (reduced frequency, speed and distance of travel). The fact that the Air New Zealand Sustainability Advisory Panel has acknowledged that *'anyone who cares passionately about addressing the multiple threats of climate change should either stop flying altogether, or fly as little and as discriminatingly and responsibly as possible'* (Porritt, 2018)⁴¹ is a remarkable example of corporate social and environmental responsibility that should be applauded. A mix of increasingly transformative approaches will be required, including offsetting (for emissions that cannot be avoided using other strategies), reduction (through improved efficiency), replacement (of high carbon energy sources with low or zero carbon sources), and avoidance (avoiding carbon intensive activities) (University of Otago, 2017)⁴².

⁴¹ <https://indd.adobe.com/view/ba876813-8fcc-4c0a-bff9-bd8dae07b0aa>

⁴² <https://www.otago.ac.nz/coo/otago664842.pdf>

5) Analysis and interpretation

5.1) The past (1990-2010)

In the initial phase of our temporal analysis (1990-2010) we traverse tourism development and environmental (and social) impact management in New Zealand from 1990-2010, reflecting upon the 1980s pre-development stage and subsequent growth of international visitor arrivals to New Zealand from under 1 million visitors in 1990 to approximately 2.5 million visitors per annum by the last quarter of the review period. Across the two decades, Australia remained the single largest market, although in the same period, the growing importance of the Chinese visitor market became increasingly apparent. Also noteworthy from this time, was the increasing dominance of high energy intensity tourist transport modes. In particular, the rapid growth in use of private cars and vans since 2003 reflected the increasing independence of travelers to New Zealand, and the flexibility offered by this form of transport. The availability of relatively cheap second-hand vehicles, the absence of compulsory vehicle insurance and a national transport authority system that readily recognized almost any international driver license, made independent motor touring a very attractive option for many visitors. The lack of a comprehensive public transport network in New Zealand, coupled with a perception that there are many opportunities to freedom camp, also created a considerable incentive for tourists to use private or rental cars (note that the sustained period of growth in freedom camping corresponds directly to the trend in private car use - see Figures 8 and 9).

This historical section of the report highlights the differing roles and evolving relationships between key agencies, and their systems and processes. The period under review began with promising signs of a willing collaboration between DOC and the New Zealand Tourism Board (NZTB - now Tourism New Zealand) in the early 1990s; a collaboration that did not endure due to the lack of strategic alignment and likely philosophical differences between conservation and tourism development interests in the early- mid-1990s. From its inception, the NZTB adopted a strict interpretation of its role as the international marketing arm for New Zealand tourism. With a focus on the anticipated economic benefits, ambitious growth targets were set, with little regard or concern for the possible social or environmental costs. As early as 1991, however, the NZTB did acknowledge the potential for tourism to create negative impacts, and the need for improved infrastructure at several key sites, which, even at the time, were seen by the NZTB as at or approaching capacity at times. Given these acknowledgements, it seems that an opportunity was missed in the mid-1990s to set a strategic path that helped ensure New Zealand's tourism infrastructure was equipped to meet future demand and to establish appropriate research and monitoring programmes to evaluate the anticipated impacts over time.

Table 12: Tourism and environmental sustainability: Past (1990-2010)

Key issues	Management challenges/opportunities	Policy instruments Challenges/opportunities	Research and monitoring needs
Length of stay as determinant of impacts at various scales	Foster deeper regional engagement	Foster new forms of tourism; education, volunteerism (WOOFFing)	Market trends; opportunities to target niche markets.
Dominance of private vehicles in tourism	Modal shifts to low-carbon transportation	Infrastructure investment; development of public transport services; cycle way investment; continued development of cycle trails.	
Lack of integrated planning between TNZ and DOC		TNZ marketing strategies to be integrated with conservation management planning	Marketing strategies linked to regional development and conservation management objectives.
Ecological impacts	Crowding, overuse of car parks; effluent and waste management	Funding mechanisms for investment in facilities at high use sites	Monitoring environmental impacts at key sites.
Impacts of commercial tourism on wildlife	Wildlife tourism development only in association with robust wild animal populations	Research-informed management; Scientific monitoring of impacts; Tourism-funded wildlife science	Development of tourism and wildlife management informed by science.
Systematic (and longitudinal) monitoring of impacts limited	Build into management plans	DOC management plans	Develop indicators for monitoring long-term
Compromised and degraded wilderness values	Crowding and displacement Disperse demand from high use tracks Mitigate seasonal demand	Management planning frameworks to protect wilderness values Booking systems	Monitoring wilderness perceptions; Social carrying capacity; Crowding and displacement.
Loss of 'natural quiet'	Manage overflights; helicopter access	National Park Management Plans	Visitor experiences
Protect back country and wilderness from 'overuse'	Concentrate use and increase physical capacity	Conservation Act; National Parks Act; National Park management plans; De-emphasise 'back country'; avoid dispersal models; access charges; pricing; differential charging.	Research on back country and wilderness experiences

While the tourism industry remained firmly focused on growth in visitor numbers throughout the 1990s and into the new century, DOC clearly emerged as the key agency in managing the sustainability of growth in tourist demand for nature experiences. On the back of the newly minted '100% Pure New Zealand' global marketing campaign, high growth in tourism arrivals in the late 1990s and early 2000s led to questions about specific environmental effects (e.g., sustainable interactions with wild animal populations; managing growing tourist demands upon national parks), set alongside specific concerns relating to social impacts of increasing recreational and tourist use of natural areas, growing commercial pressures, the degrading of important qualities of nature experience (including natural quiet and solitude), and the bio-physical and social flow-on effects of displacement caused by crowding and conflict. The implementation of DOC management frameworks and systems during this time illustrated some foresight of future challenges, although the fulsome application and regular review of these frameworks appear to have been generally compromised by limited resources, conflicting conservation management priorities, competing recreation and tourism management outcomes, and periodic restructuring (with the associated loss of social science expertise and recreational management experience). Through its Visitor Strategy (1996) and other strategic and research publications, DOC demonstrated clear awareness of the need to safeguard New Zealand's natural heritage and visitor experience opportunities against growing challenges associated with increased tourism, although its capacity to comprehensively address these issues may have been compromised by weakening coordination and communication between central government departments at the time (PCE, 1997).

By the mid-2000s, there was clear evidence of concern among some sectors of the public and within DOC about the impact of increasing tourism in national parks, wilderness areas and other protected natural areas. Growing business interest in commercial opportunities to showcase New Zealand's nature, through scenic flights, helicopter-assisted alpine activities, river jetboating etc., alongside burgeoning interest among international tourists in DOC's Great Walks, led to questions about environmental consequences, as well as the impact of these uses on 'traditional' wilderness values, especially those held by domestic backcountry recreationists (Table 12). Some of the remedies offered at the time included more rigorous application of DOC's Recreation Opportunity Spectrum (ROS) and Beneficial Outcomes Approach (visitor management frameworks), implementation of robust 'indicators and standards' models (for assessing carrying capacities) and the establishment of a 'green levy'. With the exception of ROS, these frameworks have not been comprehensively adopted, making it harder to manage incremental environmental change at vulnerable sites, and more challenging to prioritise and achieve the social outcomes of conservation management. The suggestion of a 'green levy' was largely dismissed at the time amid concerns within the tourism industry (presumably

accepted in political circles) that such a tax would have an unacceptable impact on New Zealand's international competitiveness as a tourist destination.

The review of the 1990-2010 period also highlights what appears to be a missing link between the extensive research conducted by the PCE (1997) on the impacts of tourism on the environment and the conservation estate and the fact that the DOC strategic plans published in 1998 and 2001 barely mention specific objectives and targets relating to the increasing pressures from international tourism. Similarly, (with the notable exception of monitoring aircraft noise at key sites) the period is characterised by a sequence of independent studies of impact, rather than a coordinated, longitudinal research and impact monitoring agenda, a feature compounded by DOC's reduced resourcing and loss of social science research capacity in the latter part of this timeframe.

5.2) The present (2011-2018)

The second phase of our temporal analysis (2011-2018) is clearly a period of sustained high growth in international visitor arrivals. Tourism growth was a strategic government response to the global financial crisis, with initiatives such as the New Zealand Cycle Trail an example of investment in regional tourism development, and employment through tourism growth. It may also be seen as a period of complacency regarding the impacts of tourism on New Zealand's environment (social and natural). This complacency, which arises from a dedicated focus on tourism growth, has been challenged in the latter part of this period as multiple agencies have become increasingly aware of the challenges of increased numbers of visitors, and members of the public have experienced firsthand the lack of preparedness to deal with the social and environmental effects of tourism growth. With economic recovery and growth in key international markets have come a form of tourism that presents a range of management challenges that have not been adequately address and, indeed, are difficult to resolve. While growth in key markets has been generally welcomed, the challenge of length of stay as a determinant of tourism impacts at various scales in the tourism system, remains unresolved. Increasingly length of stay has been identified as a key challenge facing the sector. Not only is length of stay linked to visitor expenditure, but it is also implicated in the spatial travel flows of visitors in New Zealand, with those constrained by time more likely to only visit the most iconic tourist destinations and visitor attractions, and less likely to achieve the more dispersed regional tourism flows that are identified as so important to sustainable tourism under sustained high growth scenarios (Table 13).

Tourism New Zealand market analysis, target marketing and promotions aimed specifically at fostering and encouraging greater length of stay markets, informed and measured against clearly stated targets for discrete markets, is required. While the need to increase length of stay (and visitor yield) has been

recognised for three decades, little or no progress has been made on this important aspect of tourism. This period is also characterised by the growth in independent transport use by international visitors, including rental vehicles, campervans and private vehicles. Free and independent travellers, particularly freedom camping, represents a form of largely unregulated tourism that has been the cause of increasingly widespread expressions of public concern due to growing public awareness of social and environmental impacts. Objections have been raised over the use of public money to provide tourists with free camping areas in parts of New Zealand, when space and full services are available in existing camping grounds for a modest overnight fee⁴³.

Visitor management complacency in the face of sustained high growth tourism extends to the increasingly intensive pressures of use of natural areas in New Zealand. This report highlights the dominance of nature-based visitor experiences among international visitors, which comes as little surprise given the marketing of New Zealand's '100% Pure' experiences and New Zealand's international reputation for relatively pristine, 'clean and green' nature. The greatest increases in visitor demand have occurred among the key nature-based physical activities and at locations that include beaches, glaciers, national parks and geothermal parks. Growth in independent travel, as outlined above, has afforded the opportunity to tourists to visit areas that are largely unregulated in terms of weight of visitor demands and aspects of visitor behaviour. Some of the very few exceptions are the Department of Conservation Great Walks, where in some cases booking systems have been implemented to address growing imbalances in supply and demand. The Great Walks booking system model offers insights into some of the challenges that arise with the implementation of such a model (e.g., displacement of New Zealander's; differential pricing for international visitors), which may in future need to extend to caps for international visitors to protect opportunities for New Zealanders. It is in the domain of nature-based tourism that New Zealand has most acutely experienced the 'overtourism' phenomenon that emerged as a critical issue in Europe in the summer of 2017. In previous years (1990-2010) the greatest concerns were expressed for aspects of wilderness experience, loss of solitude, increasing evidence of crowding and displacement, and environmental impacts of tourism in relatively remote back country settings, such as the first and second tier tracks of the national parks. While this remains a challenge in some settings (Abel Tasman National Park, Tongariro Crossing), it is evident that during the current period (2011-2018) the growth in unregulated demand for 'local' nature (adjacent to tourist travel routes close to popular destinations, and often promoted informally through the online social networks of tourists) and front country sites in the conservation estate have become acute.

⁴³ <https://www.odt.co.nz/regions/wanaka/objection-public-funded-'hubs'>

Table 13: Tourism and environmental sustainability: Present (2011-2018)

Key issues	Management challenges/opportunities	Policy instruments Challenges/opportunities	Research and monitoring needs
Length of stay as determinant of impacts at various scales	Increase length of stay within key markets.	Incentivise longer stays; Tourism New Zealand market analysis; target marketing; set targets	Monitor length of stay among discrete markets; analysis of propensity for increased length of stay within discrete markets (e.g., public holiday policies; annual leave provision).
Growth in rental vehicles in tourism	Increase tourist use of shared/public transport systems.	Investment in public transport systems; Manage growth in rental vehicle and camper van fleets;	Tourist responses to shared/public transport; Implications of the uptake of connected and autonomous vehicle use for urban form, tourist flows and tourist experiences.
Growth of freedom camping	Social impacts on local communities; Responsible Camping Strategy Environmental impacts (effluent; litter, water quality)	Freedom Camping Bill 2011; Freedom Camping Working Group;; Responsible Camping Strategy collaboration (QLDC, DOC, NZTA, LINZ, MBIE, Southland and Otago District Councils); MBIE Tourism Infrastructure Fund (investment in infrastructure and facilities); Tiaki Promise.	Have the freedom camping issues been resolved? Monitor the effectiveness of the Tiaki Promise initiative. Monitor public concerns and acceptance of freedom camping over time. Monitor public perceptions in local communities.
Dominance of nature activities	Shift from unregulated to increasingly regulated access to and conduct at natural settings; manage demand; manage visitor behaviour	National Parks Act 1980; Conservation Act 1987/1991; Kaupapa Māori product development; Regulation of access to nature; Regulation of visitor conduct; Tourism Sustainability Commitment; Tiaki Promise	
Growing demand for key front country sites	Crowding; noise, congestion of facilities; overtourism	Territorial Local Authorities; Department of Conservation;	Monitor and manage demand at key sites.

		Tourism Investment in infrastructure (e.g., parking space) and facilities e.g., public toilets) at high use sites; MBIE Tourism Infrastructure Fund (investment in infrastructure and facilities)	
Analysis of media illustrates growing concerns about tourism's impact	Increase public awareness of growth in tourist demand for 'local' sites.	Territorial local authorities; Public engagement in local/regional tourism strategies.	Continue to monitor public perceptions of the management of iconic local sites.
Significant growth in international use of National Parks	Coping with growth (facilities and systems)	Processes for dealing with concessions – given commercial interests in capitalising on boom; Cap international use of huts; booking allocations for New Zealanders/domestic tourists.	Understanding social and physical effects
Great walks; imbalance of supply and demand	Implementation of booking systems Displacement of New Zealanders	Differential pricing; Preferential booking; Expand 'Great Walks' system; Develop new tramping/hiking and mountain biking tracks	Monitor costs and income for delivery and sustainable management of premier nature-based tourism experiences for international visitors.
Tourist engagement with endangered species	Environmental care codes Awareness and environmental education (distance)	Department of Conservation designation of wildlife sanctuary status; designation and enforcement of wildlife protection zones; spatio-temporal closures to allow ecological recovery; Shift from unregulated to regulated tourism.	Management informed by spatial ecology; Analysis of the role of social media in shaping tourist demand for unregulated nature experiences.
Tourist engagement with species at risk of local/regional extinction	Management actions and interventions aimed at implementing 'regenerative' tourism	Advance 'regenerative' tourism (e.g., DOC concessions; local conservation trusts);	Tourism models that fund local science and research programmes;

		Enforced spatio-temporal closures (e.g., threatened wildlife); Sanctuary status (no public access unless by permit) in cases of 'at-risk' local wildlife populations	
Biosecurity risks	Tourism, recreation and biosecurity Introduction and spread of <i>Didymosphenia geminata</i> in New Zealand waterways; Kauri dieback	Biosecurity New Zealand; Territorial Local Authorities and Department of Conservation; Spatio-temporal closures.	Effectiveness of public communication and education programmes.
Commercial conservation; Public-private partnerships	DOC funding pressures; Commericalisation of nature	Conservation Act 1987/1991	Public perceptions of neoliberal conservation governance; International comparisons of conservation policy and tourism management (e.g., unlimited free access to national parks).
DOC's infrastructure challenges	Funding for conservation management, recreation and tourism.	Conservation Act 1987/1991 Vote Conservation	Conservation funding models.
DOC's partnerships with business – ensuring appropriate 'fit' and accurately assessing where the costs and benefits accrue	'Growing conservation'	SOC Statements of Intent	Net value of business partnerships
Growing social media influences on patterns of visitor demand; Social media as influencer	Instagram influencers Social media and social network recommendations; Responding to Insta[ant] 'icons'		Social science research; Social media, social networks and tourist experiences; Monitoring effects of Apps; How can Apps be utilised to help rather than hinder
Carbon intensity of travel and contributions to climate change	Opportunities to educate visitors; leverage off the 'clean	Incentives for operators (and travellers) using 'mass transport'	Monitor appetite among tourists for less carbon intensive travel and activities?

	and green' brand; promote longer stays	Foster low carbon transportation modes and encourage modal shifts; Foster slow tourism, regional destinations and length of stay.	
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Table 13 highlights the fact that during this period the Department of Conservation has advanced a commercial conservation strategy, in part through commercial partnerships and the further development of concessions. Conservation legislation (as it relates to tourism and recreation), conservation funding, commercial conservation, and the growing influence of social media on visitor demands and tourist experiences, as addressed elsewhere in this section (*see spatial/national*), clearly need to be critically reviewed. Heightened awareness of the energy intensity of tourism and the interplay of the current tourism system and climate change (in terms of both cause and effect) also arises in this temporal period (2011-2018), but is addressed elsewhere in this section (*see spatial/global*).

5.3) The future (2019-2025)

Growth of 4.2-4.9% per annum is forecast over the next 5-7 years, with an expected 4.861 million visitor arrivals by 2023. With this will come further intensification of the pressures of tourist demand that have been reported here, which will in turn require the planning and management of visitor sites, attractions and facilities to accommodate increasing demand. Anticipating and managing the social and environmental impacts, anticipating in excess of five million international visitors per annum, is the critical challenge facing the tourism industry (*see Table 14*). Projected growth in visitor numbers will create further environmental and social impacts, and it is critical that the management of visitor pressures and environmental impacts are given immediate priority. There is some evidence to suggest that this priority is now being recognised. The 2017 general election focussed attention on the issues of sustainable tourism, and the coalition government has responded with various mechanisms that are directly or indirectly relevant to tourism. The tourism infrastructure fund, which is administered by MBIE, the proposed tourist levy, and additional visitor management and facility developing funding for the Department of Conservation are indicators of this new priority.

Beyond this starting point, modelling future tourism growth and planning accordingly is required. Such modelling of the tourism system would produce scenarios that can be discussed and debated, and then implemented and pursued. Modelling can address critical questions raised in this report. What is likely to happen under the status quo; continued high growth in international visitor arrivals? What future impacts can be anticipated at destinations, attractions and sites that already under pressures of excessive visitor demand? What management initiatives and interventions are required at high use sites? What actions are, and what further actions will be, required to protect vulnerable or at-risk sites (and wildlife species)? Beyond these immediate questions, the modelling of future growth in the tourism sector may address five fundamental and inter-related questions (Table 14):

Table 14: Tourism and environmental sustainability: Future (2019-2025)

Key issues	Management challenges/opportunities	Policy instruments Challenges/opportunities	Research and monitoring needs
Sustained high growth in international visitor arrivals	Growth of 4.2-4.9% per annum (2018-2023). 4.861 million visitors forecast for 2023.	Sustained growth model remains largely unquestioned; Concentration and dispersal (space and time)	What are the social and environmental costs of 5 million international visitors?
Modelling a sustainable New Zealand tourism system	Model the tourism system; Managing growth; Managing discrete markets;	Increase border tax; limit tourist visas; reduce independent vehicle use; Transport policy	Scenario planning (visitor arrivals, domestic tourism, concentration/dispersal, productivity, yield and economic value); Discrete market analysis;
Concentration and/or dispersal (spatial and temporal)	Intensification of existing environmental and social impacts; Concentration at heavily used sites (increased infrastructure and systems); avoid dispersal as strategy; Seasonal patterns of tourism phenomena; Responding to the climate challenges confronting seasonal/winter tourism destinations.	Tourist infrastructure planning Tourist transport policy National strategies to support local government responses (e.g., freedom camping) Tourism Industry Aotearoa Conservation Act 1987/1991; DOC Visitor Strategy; Urban and regional event planning; Climate change planning and adaptation.	Monitoring current environmental and social impacts; Social licence to operate; Mood of the Nation; Indicators of 'acceptable change'; Analysis of international and domestic tourist seasonality; managing seasonal patterns of tourism.
Economic value of tourism in 2025 expected to be \$41B	Re-invest in tourism infrastructure Increase productivity of the tourism sector	MBIE Tourism Infrastructure Fund; Tourist levy; Department of Conservation visitor services funding. Tourism Industry Aotearoa	
Productivity and yield	Maximise tourism sector productivity (value) while relieving pressures of growth in demand (volume)	Treasury Productivity Commission Tourism Industry Aotearoa	Tourism Innovation Hub; Research-informed action to increase tourism productivity.

		Territorial Local Authorities	Analysis of tourism yield (cost/benefit).
Social licence	Perceptions of environmental sustainability; Host community perceptions of social sustainability;	MBIE Tourism New Zealand Tourism Industry Aotearoa Local government (public consultation; responding to submissions on development proposals); Māori Tourism Council; Kaupapa Māori product development	Monitoring and responding to changing levels of support for tourism within host communities; Tourism Industry Aotearoa 'Mood of the Nation'
Opportunity to lead in transition to carbon-neutral tourism sector	Carbon mitigation; Reduce energy intensity of tourism; Overcoming climate change maladaptation Sustainable emissions pathways; transport planning. Integration of public/tourist transport systems/networks; Local governments fostering low carbon visitor experiences (e.g., e-bikes and cycle networks; cycle trails)	Zero Carbon Bill 2018; 2050 emissions reduction targets; Independent Climate Commission; Ministry of Transport; Electric Vehicle uptake programme; Local governments; Tourism New Zealand – explicit focus on lowest carbon markets (including domestic tourism). New Zealand Tourism Sustainability Commitment – transition to renewable energy sources.	Investigate realistic possibilities for uniquely New Zealand style of low carbon tourism; Tour business operator understandings and commitment to respond to climate change.

1. Modelling a sustainable New Zealand tourism system

Important questions have been raised in recent months as to the extent to which sustained high growth in international visitor arrivals is desirable. Informed by concerns raised by the 'overtourism' crisis experienced in a number of urban tourism destinations in Europe in the northern summer of 2017, sustained high growth in international visitor arrivals to New Zealand and the forecasted arrival of five million international visitors per annum in 2024 (or thereabouts), it is timely to question the extent to which sustained high growth in visitor arrivals over time is manageable, sustainable and desirable. It is now timely to consider the point at which the appropriate numbers of visitors are entering the New Zealand tourism system as it currently exists. This should be modelled against existing capacity constraints in the tourism system; giving consideration to capacity constraints of major international gateways (i.e., international airports and cruise terminals), urban infrastructure, services and accommodation, visitor attractions and activities, visitor services/facilities in national parks and other areas designated for conservation and local sites that are enjoyed by local residents, and increasingly visited by tourists.

Modelling of the tourism system (and its capacity constraints) will give consideration to the desirability and timeliness of further growth, which will in turn inform major investment priorities to support and maximise sector performance. This exercise can also inform approaches to strategically manage New Zealand's portfolio of discrete markets, including domestic tourism markets. Consideration of capacity constraints should raise questions about limits to growth, active management of international markets, and possibly de-marketing and de-growth. These questions will in turn require that consideration is given to what will replace the sustained high growth model that has been assumed and uncritically accepted to date. Scenario modelling must consider market growth in a way that accommodates productivity, yield, length of stay, visitor flows, and seasonal patterns of tourism. These have been identified as critical dimensions of social and environmentally sustainable tourism. The active management of visitor markets should also consider resilience in the face of global disruption. The global financial crisis, political change and security crises, public health crises and environmental disasters periodically disrupt the global tourism system. While many such disruptions cannot be predicted, they can be anticipated in relation to markets or fractions of markets that are resilient to disruption.

2. Concentration and/or dispersal (spatial and temporal)

The modelling of the New Zealand tourism system must extend to analysis, interpretation and management of tourist flows. Two scenarios have been contemplated in the past; concentration and dispersal, which can be viewed in both spatial and temporal terms. The spatial dimension of tourism

considers the international visitor itineraries, networks and nodes, which are usually defined by travel flows (distance between nodes), connections between nodes, and places of overnight stay. These itineraries and travel patterns can be spatially defined (mapped) and used to inform tourism policy, planning, investment and management. The concentration scenario sees increasing tourist flows into and between New Zealand's iconic tourism destinations and visitor sites. They include the key international gateways (Auckland, Christchurch and Queenstown), centres such as the Bay of Islands, Rotorua, Wellington, Aoraki/Mount Cook, Queenstown and Milford Sound), and a range of predominantly natural sites adjacent to the networks that connect these destinations. The concentration scenario, will see increasing visitor pressures at these destinations, which will continue to disproportionately face the challenge of managing the costs and benefits of tourism. The dispersal scenario is modelled upon spatially (regional) and temporally (seasonal) dispersed visitor flows. This model is considered critical to the sustainable management of tourism. It will relieve pressures of continued growth being experienced along the networks and at the nodes of concentrated tourism flows. While doing so, it also allows for the benefits of tourism to be felt in regional communities that have derived limited or no economic and employment benefits from the sustained high growth in tourism of the last eight years. The two scenarios are not mutually exclusive. While evolving over time, different visitor markets demonstrate a propensity towards one or the other of these scenarios. Length of stay, which has been highlighted in this report and elsewhere as a key determinant of sustainable tourism in New Zealand, is clearly a driver of the concentration and dispersal scenarios.

Concentration and dispersal are concepts that also apply to the management of visitor experiences in natural areas. Here, again, important questions must be comprehensively considered. Should visitor experiences of New Zealand's natural environment be concentrated (to avoid dispersing the social and environmental impacts of tourism to relatively untouched and undeveloped natural settings), or dispersed as a strategy to accommodate growing visitor demands? Should existing 'Great Walks', some of which already accommodate the demands of both independent and guided trampers, be further developed to accommodate more users? Or should new 'Great Walks', such as the Paparoa Track and Pike29 Memorial Track (opening in 2019) be added to the existing network of Great Walks, to disperse the growing pressures of tourist demand and foster regional tourism development? In contemplating these questions, it is important to consider the extent to which further facility developments change, compromise or destroy the visitor experience of natural areas? To what degree can larger facilities be developed in settings that are intended to offer qualities of experience that include naturalness, remoteness, solitude and natural quiet?

The same applies to regional tourism infrastructure and investment. Successful tourism destinations have regional differentiated tourism products, be the differentiated by regional destination imagery, branding, attractions and activities, iconic local/regional lifestyles, events programmes, and build

facilities (Becker, 2016). Inner city stadium developments in Wellington and Dunedin, are established examples of how tourism-related investments can contribute to the re-positioning of urban destinations and drive regional economic development through tourism.

The challenge of managing sustained high tourism growth extends to the temporal dimension of concentration and dispersal. Seasonality, as defined in relation to temporal imbalances in the phenomenon of tourism, is critical to the viability and performance of tourism businesses and the social and environmental sustainability of tourism. Seasonality is typically expressed in relation to numbers of visitors, timing of visitor arrivals, expenditure of visitors, use of infrastructure (e.g., transportation infrastructure), employment and admissions to attractions. Seasonality is one of the most common and yet one of the least understood aspects of tourism, and is usually uncritically viewed as a problem that needs to be fixed as opposed, for example, to an opportunity to regenerate exhausted natural, human and social capital at the end of a demanding tourist high season. A more critical analysis of tourist seasonality reveals that seasonal patterns tend to be more pronounced at regional rather than urban destinations, and at high latitudes/altitudes. Seasonal patterns also vary considerably at national, regional and local scales of analysis, and between destinations that may be close in proximity. Different seasonal tourism patterns found in different regions include single-peak seasonality, multiple-peak seasonality, and non-peak seasonality. Temporal imbalances in tourism phenomena have been identified as a critical challenge confronting the further growth in visitor arrivals to New Zealand, and at regional destinations in New Zealand. Addressing the challenges associated with seasonal patterns of tourism will require critical and nuanced analyses of international visitor arrivals and patterns of domestic tourism, as they exist at national, regional and local scales of analysis.

3. Productivity and yield

The economic value of tourism in 2025 is expected to be \$41 billion. This represents enormous growth in the economic value of tourism over the last decade, driven initially by the success of the Rugby World Cup (2011) and subsequently by the successful high growth strategy implemented by Tourism Industry Aotearoa (Tourism Strategy 2025). High growth in economic value has been driven at least in part by high growth in international visitor arrivals. Scenario planning is required to critically consider the relationship between growth in visitor arrivals and growth in economic value.

Re-investment in tourism is critical. Reinvestment must take several forms:

- (i) Public infrastructures that are developed principally for the use of New Zealand residents, but that are also used by increasing numbers of international visitors;

- (ii) Dedicated tourist infrastructure, facilities and services;
- (iii) Protection of public goods that are not intended for consumption by tourists;
- (iv) Tourism research to support innovations in tourism that nationally relevant and exportable;
- (v) Tourism education and employment.

Increasing the productivity of the tourism sector is recognised as a critical challenge and an important opportunity, to maximise the economic value of tourism at a time when further growth in visitor arrivals may need to be limited. The Queenstown Lakes District Council has actively explored the concept of a Tourism Innovation Hub which has been supported by key agencies (e.g., MBIE and Tourism Industry Aotearoa). TIA has recognised and supported the need for investment in tourism research and education, making a recommendation to MBIE that a fraction of the tourist levy, when in place, should be directed to tourism research and innovation. Studies of tourism yield are required to comprehensively address the economic (and non-economic) costs and benefits of international and domestic tourism.

4. Social licence

Sustainable tourism is predicated upon perceptions of social and environmental sustainability among host communities, and support for continued growth in visitor arrivals. Questions of social licence have been raised in some destination communities in New Zealand. Such questions are a timely reminder that the desirability of sustained high growth cannot be assumed. Social licence requires that communities and rate payers are consulted on development projects, and issues of importance to sustainable tourism. Local residents live with tourism, and personally experience not only the daily inconveniences of overburdened infrastructure and services, but also the first-hand experience of places that they have grown up with that may be compromised by tourism, through adverse environmental impacts and degraded aspects of experience. What levels of local support for tourism exist at destinations that are feeling the strain of sustained high tourism growth? What is the tipping point at which local support and social licence has been or will be compromised? Where have such tipping points already been approached or passed, and what has been done (and what more can be done) to address and alleviate the concern of local residents who are increasingly subject to exceeded and exhausted local infrastructure, and acutely aware of the potential and actual negative social costs of tourism? Recent consultation on the noise boundaries of Queenstown International Airport highlights the importance of social licence. Submissions were invited by the QLDC on the proposal from the Queenstown Airport Corporation to expand the existing noise boundaries of the airport to

increasing scheduled aircraft movements from 21,000 per annum (expected to be exceeded in the next 3-4 years), to 41,600 flights per annum by 2045 (doubling passenger numbers to 5.1 million). Of 1500 individual and 19 group submissions 96% opposed the proposal to expand the airport noise boundaries, leading to immediate Wanaka community opposition to the alternative 'dual airport approach' (expanding both Queenstown and Wanaka airports). Sustained high growth tourism requires that key agencies such as MBIE, Tourism New Zealand, Tourism Industry Aotearoa and local government must be conscious and responsive to local community perceptions of tourism as they relate to questions of social licence.

5. De-carbonisation of high-energy intensity tourism

A key aspect of tourism scenario planning for the next 5-8 years is the response to the high energy intensity and environmental footprint of the existing tourism system. Businesses will need to commit to a sector-wide approach to carbon mitigation. In response to the government's Paris 2015 Climate commitment and the Zero Carbon Bill 2018, which sets emissions reduction targets for 2050, the creation of an independent Climate Commission, and increasing demands by tourists to engage in low-carbon visitor experiences. Tourism scenario planning, and all aspects of tourism policy, planning and management should be aligned with a commitment to de-carbonisation of high-energy intensity tourism in the interests of environmental sustainability. The capacity constraints outlined above, which relate to urban transport infrastructure, international and regional airport expansions, and runway extensions, must be considered in ways that accommodate the need for high growth in low-carbon tourism (see also Table 14).

These questions must be addressed to inform the future of tourism policy, planning, marketing and management in New Zealand. To date, high growth in international arrivals has been assumed to be desirable, and has been celebrated as a mark of continued industry success. The current strong focus and successful track record of international tourism marketing and brand awareness, which has produced high growth in tourism arrivals in key markets, must now be balanced against desired future sustainable tourism scenarios. New measures of success will be required.

5.4) The local scale

The local scale analysis of tourism impacts in New Zealand highlighted the critical nature of many destination and site-specific issues arising from sustained high growth tourism since 2011. These issues must be addressed in the face of forecast continued high growth to 2025. The local scale issues include the pressures of growth in volume in gateway regions, and the pressures of tourist demand on front country key sites (e.g., Hauraki Gulf), as well as popular destinations (e.g., Milford Sound and

Aoraki/Mount Cook) and tracks/trails (e.g., Tongariro Crossing, Abel Tasman Coastal Track) in the conservation estate. The pressures of growth at regional gateways is exacerbated by the fact that growth is not equally distributed across New Zealand, with international spending skewed towards the four main gateway regions: Auckland, Wellington, Christchurch and Queenstown (65% of overall tourism spending in the June 2016 year). The proportion of international visitors travelling to non-gateway regions has remained fixed over the past several years at around 35 per cent (Tourism New Zealand 2016). New Zealand also remains a destination of seasonal extremes (Tourism New Zealand, 2016), which contributes to either congestion or under-utilisation depending on the time of the year (Table 15).

Tourism New Zealand's success in promoting the country's natural scenery, adventurous activities and friendly communities has put increasing demand on some localities, and contributed to the emerging perception that parts of New Zealand are experiencing 'overtourism' (Becker, 2016). Intense interest in such sites has created significant management challenges including pressure to create recreation opportunities at currently undeveloped sites; provide additional facilities to enlarge capacity at existing sites; and more active management of conservation settings in general. This latter point is especially salient in light of ensuring that visitors and tourism operators pay the appropriate fees for their use of public conservation lands and waters, and there is merit in additional future management and policy emphasis on realising this outcome. It is also noteworthy that Akaroa is now at the forefront of concerns for 'overtourism' as tensions rise between increasing cruise ship schedules, crowding, environmental impacts and noise. The response of the Southland Regional Council to similar concerns in Fiordland and Stewart Island has been to limit cruise ships in their waterways to no more than two at one time⁴⁴.

The range of tourism-induced challenges experienced at the local scale demand consideration of potential policy options, including the establishment of visitor charges (partially constrained by the National Parks Act), visitor levies and ballot or booking systems. Such funding mechanisms are common, well established and unquestioned by international tourists visiting destinations elsewhere in the world. A visitor levy has recently been confirmed by the New Zealand government for most international visitors. Booking systems exist for the most popular of New Zealand's walking tracks, some of which offer differential pricing weighted in favour of domestic visitors. It will be important to evaluate the effects of this latter system once the trial period ends in 2019, the results of which are likely to inform policy relevant to the management of resources that are scarce and under increasing user pressures. Other research ought to assess the impacts of tourism on local communities, including

⁴⁴ <https://www.pressreader.com/new-zealand/sunday-star-times/20181216/281590946660788>
<https://www.stuff.co.nz/business/109116102/tug-of-war-over-akaroa-cruise-ships-threatens-jobs>

better understanding of public health effects (including noise and community disruption associated with tourism activity) and the presumed social licence that New Zealanders extend to the tourism industry. While likely more contested, policy makers and researchers might also investigate the potential consequences of reducing or refining New Zealand's international tourism marketing effort. A review of the \$120M currently spent annually on attracting visitors to New Zealand might reveal other ways to legitimately invest in supporting a sustainable tourism future – environmentally, socially and economically.

Table 15: Tourism and environmental sustainability: Local

Key issues	Management challenges/opportunities	Policy instruments Challenges/opportunities	Research and monitoring needs
Overtourism: pressures of demand on key sites	Facility development at key sites Active management Disperse demand for front country experiences	Visitor charges; Tourist levy; Ballot systems; Booking systems; Limiting cruise ship arrivals; Managing cruise ship schedules	Host community impact perceptions Social licence Social and environmental impacts of increasing tourism at key sites.
Infrastructure lagging behind growth Ratepayers can't support tourist costs	Regional dispersal of visitor flows to relieve pressure at iconic destinations remains a critical challenge.	Increase border tax; Consider regional visitor levy; Long-term perspective to infrastructure development	Monitor impacts of new levies
TNZ as successful promoter of international tourism to NZ has led to social and environmental impacts	Managers have limited control over numbers of visitors arriving in NZ Managers must react quickly to growing visitor numbers	Does NZ need to 'de-market' itself internationally?	What would be the consequence of reducing / ceasing international marketing of NZ? How else could the TNZ \$120M be invested to support a sustainable future?
Impacts (perceived) of tourism at multiple sites is increasing	Freedom camping	Support for local authorities in developing appropriate and consistent approaches to govern freedom camping	Monitoring effects of changes to freedom camping regulations and the recommendations of the RCWG
Crowding and congestion in small towns and icon attractions	Relieve pressures on local resident rate payers	Introduction of a regional bed tax	Better information about infrastructure capacities
Noise, public health and quality of life	Managing airport growth		Better information about the effects of tourism-related noise on residents in tourism localities
Pressures on marine environments	Strict protection of marine species (e.g., Dolphin Protection Zones) Visitor Education; Awareness of species protection status and threats facing local populations.	Expansion system of marine protected areas (MPAs) Marine Mammal Protection Regulations (1992) Environmental Care Codes	Science/research to inform local management regimes

Tourist-wildlife interactions may be creating impacts that need to be managed		Tourism Sustainability Commitment; The Tiaki Promise (based on Visit Iceland Initiative)	Relationship between tourist use of backcountry and local biodiversity needs to be better understood. Monitoring needed to understand effects and value of any interventions The Tiaki promise – is it getting traction and changing behaviour?
Operators and visitors not paying fees for use of DOC sites	Compliance monitoring needs resourcing (concessions and facility fees)	DOC key site management approaches	Compliance monitoring

The local scale analysis has also revealed a general consensus that visitor infrastructure is lagging behind tourism growth, and that ratepayers cannot continue to bear the costs imposed by tourism in some areas. Recent developments of a tourism infrastructure and conservation fund, and a tourist levy are therefore overdue, and will go some way towards alleviating immediate infrastructure pressures at the most heavily used sites. However, this is different from what Jim Boulton has referred to as ‘keeping infrastructure development ahead of the growth curve’. A longer term perspective is required, given high tourism growth forecasts to 2025, and it is imperative that infrastructure is planned with a 2050 vision (and beyond), and that this aligns with a low-carbon future. Additional ratepayer relief, and crowding and congestion in general, may be addressed through the establishment of regional visitor levies (in the form of a bed tax, for instance). Infrastructure remains a critical challenge for the New Zealand tourism industry (and for the local, regional and central government agencies that support it) not only in terms of environmental management but also in terms of international reputation and the support of New Zealanders for continued tourism growth.

This section also highlights the need for local councils in New Zealand to be supported with national guidelines (sets of principles, national policy instruments and/or legislation), to inform and support local responses to issues of national importance. The Freedom Camping working group (MBIE, 2018) offers a good example of the development of sets of principles underpinning informed national action on an issue that ultimately must be addressed in coordinated local/regional level responses⁴⁵. Coordinated national guidelines, policy instruments and legislation that provide frameworks for local responses will become increasingly important as climate-related issues such as sea level rise and coastal inundation impose upon tourism industry operators and local/regional councils. High growth tourism highlights how important it is that local actors, including both local authorities and local/regional DOC offices, are supported by strong policy.

Another important feature of the report’s focus on the local scale has been the growth in demand for tourist experiences of specific wild animal populations. This comes at a critical time, given the recently released WWF Living Planet Report (2018) which highlights the ‘astonishing decline’ in wildlife populations shown by the latest Living Planet Index. The 60 per cent decline in wildlife populations over 40 years is described as “...a grim reminder and perhaps the ultimate indicator of the pressure we exert on the planet”. While glow worms (Waitomo), whales (Kaikoura) and viewing royal albatrosses (Dunedin) provide long-standing and iconic wildlife tourism experiences, growth in tourism has driven the diversification of wildlife tourism in New Zealand. This report highlights rapidly developing tourist demand to experience various species of dolphins, penguins, native birdlife and

⁴⁵ <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/freedom-camping>

numerous other marine mammal (e.g., seals and sea lions) and marine bird species. Here, again, the distinction between unregulated and regulated has been drawn into sharp focus as the growth of unregulated visitor access to populations of wild animals has been associated with clear and obvious evidence of environmental impacts. The distinction between unregulated and regulated wildlife tourism reflects the 'Great Walks' model that is touched upon above. Managing the gross imbalance of supply and demand, growing evidence of environmental impacts, and the importance of yield suggests an urgent need to transition from unregulated to regulated wildlife tourism under the current sustained high growth tourism model. Currently, free and independent travel combined with social media influences have driven high growth in demand for unregulated access to wild animal populations, which have been subject to the largely unmanaged impacts of human-animal interactions.

It is noteworthy that the pressures of unregulated wildlife tourism are usually most acute during wildlife breeding seasons, which is the tourist spring/summer tourist high season and the time of year when breeding animals are most predictably present and 'viewable' at breeding sites. Some such sites have been ascribed or have otherwise assumed the status of 'sacrifice sites' (sites which are essentially 'sacrificed' to tourism to protect adjacent wild animal populations). This represents an unsustainable form of tourism referred to here as 'exhaustive' wildlife tourism. Sustained growth in demand for wildlife interactions has accelerated the need for a new tourism model which may be referred to as 'regenerative' wildlife tourism. The regenerative paradigm shift is evident in some cases, and is perhaps exemplified by Whalewatch Kaikoura which is founded upon fundamental principles such as the protection of taonga and intergenerational wealth creation (among others). The Otago Peninsula Trust (Taiaroa Head Royal Albatross Centre) and the Pukekura Blue Penguin Trust are other notable examples of strictly regulated, actively managed and deliberately regenerative wildlife tourism projects.

Current examples of unregulated wildlife tourism include public access to unmonitored wild animal species, and have been associated with unmanaged growth in visitor access and pressures. This form of tourism has in the past been referred to as 'non-consumptive' wildlife tourism, a term that implies that focal animals (individuals and/or populations) are not adversely impacted by visitors, in contrast to 'consumptive' forms of wildlife tourism that include trophy hunting, big game fishing and angling. 'Non-consumptive' wildlife tourism has come to be associated with absence of impact and species conservation. This conceptualisation of wildlife tourism has been the subject of critique, particularly under scenarios of unregulated growth in visitor demands and unmanaged impacts of high volume tourism. The impacts of the assumed 'non-consumptive' wildlife tourism include impacts on site ecology, changes in individual animal behaviour, compromised breeding success and population level changes. In specific reference to tourist engagements with cetaceans, the phrase 'non-lethal consumptive activity' inclusive of tourism as a cause of sub-lethal anthropogenic stress, has emerged

as an alternative formulation. This formulation recognised that wild animal populations are, over time, subject to a range of environmental stressors (e.g., landscape use, habitat change, pollution, noise, displacement, climate extremes) and, in addition to these dynamic environmental factors, tourism may be a cause of additional sub-lethal anthropogenic stress. This is most likely to be the case when unregulated visitor access and unmanaged human-wildlife interactions occur. In some cases local volunteers have been engaged as a source of free labour to have a presence at wildlife tourism locations to oversee and ‘police’ tourist encounters with local wildlife. In recent weeks local site users have reported evidence of illegal wildlife encounters to local online and social media⁴⁶. Instances of wildlife smuggling have been recorded at some sites⁴⁷.

Regulated and regenerative wildlife tourism is, by contrast, defined by management features such as regulated access, careful site planning (including disability access), public closure or limited free access, public education, prohibited vehicle access, visitor guiding and interpretation and the generation of profit to reinvest in species conservation and ecological restoration work. Funding, in some cases, extends to scientific monitoring and research. This form of ‘regenerative’ wildlife tourism has considerable potential to deliver impressive conservation outcomes and ought to be considered by those with policy-making responsibilities. It may also be successfully linked to community conservation projects, ‘predator-free’ initiatives, the development of eco-sanctuaries, and local and visitor volunteerism. Such an evolution of wildlife tourism offers much potential, not only in terms of species conservation and impact management, but also in terms of length of stay (e.g., visitor engagement in local conservation programmes) and yield (e.g., conservation funding).

5.5) The national scale

The section examining the national spatial scale reviewed some of the key structures that guide the management and governance of both conservation and tourism in New Zealand. The legislation, agencies, strategies and processes that serve these purposes are an important contextual dimension of understanding the potential environmental impacts associated with tourism. For a generation now, New Zealand has employed a predominantly single-agency approach to the management and administration of public conservation lands and waters, on which the often competing demands of preservation and use both depend. While the nation’s conservation legislation, and DOC’s strategic documents, emphasise the primacy of natural heritage protection, these conservation settings are also critical to meeting growing tourism and recreation demand. In order to address the expectations

⁴⁶ https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12135385

⁴⁷ <https://www.newsroom.co.nz/2017/08/22/44064/three-ways-nz-can-save-its-native-geckos;>
<https://www.doc.govt.nz/news/media-releases/2013/green-geckos-get-greater-international-protection/>

of the tourism sector, and help share the responsibility for conservation and recreation opportunity provision, it is evident that DOC has invested considerable effort in the development of partnerships with business and with recreation and tourism sector groups. These relationships and partnerships present some challenges and opportunities, including the prospect of fostering a new tourism-conservation paradigm for New Zealand within which models of 'regenerative tourism' might be developed to integrate tourism with community conservation projects, charity fund-raising, and volunteering. Of course, there are also challenges to confront; and some of the recent partnerships have raised questions about the Department's interpretation of its core role. In particular, the Department's acknowledged connection with TIA, and the number of commercial concessions approved on conservation lands, has led to the criticism that the delicate balance between conservation management and tourism has tipped too far in favour of tourism development. Although there is limited evidence of any negative environmental impact attributable to these actions, future policy would be usefully informed through a review of the concessions system, the robustness of concessions monitoring and the income it generates.

In light of the recent developments in tourism, alongside shifts in conservation management more generally, a review of key conservation legislation and the place of tourism and recreation may be appropriate. Through the National Parks Act (1980) and the Conservation Act (1987), DOC is mandated with achieving a difficult balance between protecting places and species while, at the same time, promoting recreation and tourism experiences. A review of the legal framework through which tourism in conservation areas is governed is overdue, as is an overhaul of the *Visitor Strategy* (1996) - a policy document that has underpinned DOC's approach to recreation and tourism on public conservation lands and waters for more than twenty years (Table 16).

Table 16: Tourism and environmental sustainability: National

Key issues	Management challenges/opportunities	Policy instruments Challenges/opportunities	Research and monitoring needs
Conservation policy and tourism/ recreation management	DOC underfunding Compromised ecological/species focus Growing pressures of tourism management	Review legal framework for conservation/tourism management in New Zealand Conservation Act 1987 provisions for tourism	
	Develop new 'tourism/conservation paradigm in New Zealand Foster indigenous tourism models (regenerative/inter-generational)	Foster models of 'regenerative tourism'	Document international examples of successful regenerative tourism models Scope potential for uptake among businesses and visitors
DOC concessions management		Review concessions management (contracts; monitoring; income) Tighten contracts with concessionaires; increase monitoring of concessions; greater emphasis on environmental measures	What is the value of concessions to New Zealanders? Is the return on DOC concessions being maximised?
Appropriateness of current legislation governing recreation and tourism in conservation areas		Review of National Parks Act and Conservation Act in relation to how recreation and tourism are treated	
Tourism governance and strategy	Regional dispersal of tourist flows Regional cooperation Enhanced productivity/yield Length of stay Mitigate seasonal extremes in tourism phenomena	MBIE Strategy Tourism Innovation Hub	Monitor 'Mood of the Nation' (Tourism Industry Aotearoa); Better understanding of domestic tourism market

Absence of national-level government strategy for tourism (in an holistic sense).		Expanded role for Minister of Tourism (beyond “supporting and promoting tourism”); wider interpretation of the roles of Tourism New Zealand	Monitoring the outcomes of the New Zealand Government Tourism Strategy (2018)
Resource consumption	Little quantitative analysis of tourist consumption of resources and material impacts: water usage, waste generation, infrastructure, emissions, oil dependency	Tourism Satellite Account (TSA); Align national data collection systems to tourist consumption of resources; Reporting on tourist consumption of resources;	Monitoring and analysis of resource commitment and costs of tourism.
The social and environmental impacts of freedom camping	Multi-agency approach; national approach across regions	Minister for Tourism; Responsible Camping Working Group (RCWG) 2018 New Zealand Freedom Camping Act (2011)	Monitoring the effects of the RCWG initiatives
Absence of industry data on the environmental and social costs of tourism		Incentives for businesses to report relevant data	Database of longitudinal indicators (and factors) relating to water use, waste, carbon emissions; congestion etc

Similarly, the national-scale governance of tourism needs additional scrutiny. Given the size and scope of the sector, its centrality to New Zealand's economy, and the potential for environmental and social impacts, policy questions ought to target the sector's strategic direction. In the absence of a dedicated Ministry of Tourism, and the apparent reluctance of successive governments to intervene in the tourism market, the commercial sector has stepped into this strategic void, developing its preferred course of direction for tourism development in New Zealand. While the outcomes of this initiative are not necessarily negative for the environment, a more visible central government presence is appropriate given the community's growing recognition of tourism's externalities, and the desire to identify an acceptable balance between economic benefits, and social and environmental costs.

Along these lines, it is significant to note that the new government has signalled some additional presence in the sector, with the announcement of the draft *New Zealand Government Tourism Strategy* in November 2018, establishment of the Responsible Camping Working Group (RCWG), and investments in tourism infrastructure (Table 16), all of which suggest that the current government is aware of the need to more actively manage the increasing numbers of visitors and their (non-economic) impacts. Furthermore, the MBIE-commissioned RCWG report calls for greater national consistency, improved compliance and clearer certification for freedom camping – themes that counter more 'free market' trends that have characterised approaches to tourism management in recent decades. Further relevant lines of enquiry for policy-makers might focus on mechanisms to encourage greater regional cooperation in tourism, greater regional dispersal of visitor flows and mitigation of seasonal extremes.

The current narrow interpretation of Tourism New Zealand's role as a promoter of inbound international tourism may also need to be re-examined, in order to consider the monitoring of data beyond visitor arrivals and expenditure, to include environmental and social information relevant to the impacts of tourism. While evidence of its utilisation is limited, there does appear to be scope within the TNZ legislative mandate for the agency to develop, implement and promote strategies for tourism (TNZ, 2018). One such area of appropriate involvement might be in addressing the uneven spatial and temporal distribution of tourism benefits (and impacts). Solutions to this 'concentration' phenomenon need to be considered carefully, and based on robust evidence. Although commercial interests (including the New Zealand government) might identify considerable economic value in dispersing tourism away from current visitor 'hot spots', it is less clear that a dispersal approach will benefit the environment. Conservation settings where considerable visitor infrastructure already exists may have better capacity to withstand the effects of increased tourism than areas currently underutilised by visitors.

Many of the issues and questions that relate to balancing tourism's economic benefits, alongside its undesirable consequences, are captured within the concept of tourism 'yield'. To more fully

comprehend the value of tourism to New Zealanders, the obvious economic benefits need to be assessed in relation to the inevitable environmental and social costs. In order to achieve this, research is needed to accurately identify a set of appropriate indicators or measures that could provide a longitudinal assessment of the actual costs and benefits of tourism to New Zealand. Consistently collected data relating to water use, waste, carbon emissions and congestion, for instance, would be invaluable to government, communities and industry, and could help guide future policy and investment in the tourism sector.

5.6) The global scale

Tourism does not operate in isolation from the world that surrounds it. A feature of globalisation has been acceleration of the pace at which change occurs (Mowforth & Munt, 1998). It has become impossible to consider and respond to local or national experiences without reference to global processes. The tourism industry in New Zealand has become increasingly subject to dynamic processes (e.g., political, economic, technology, environmental) influencing and shaping the global tourism system. New drivers of global tourist demand, most notably the rapid development of the Chinese outbound tourism market, and new drivers of tourist consumption, such as the low-cost airline model, have emerged, giving rise to enormous shifts in tourism mobilities. The de-industrialisation of some aspects of tourism (e.g., AirBnB) has driven further acceleration of change in tourism, to the point that 'overtourism' is being actively resisted in some communities at destinations that once welcomed tourism as a benign and sustainable form of economic development (Becker, 2016). The global tourism industry is increasingly vulnerable to global crises, and rapid shifts in tourist demand.

Many of the most pressing challenges facing the tourism industry are anchored within the global scale of analysis. The urgent need to respond to global environmental challenges is clearly articulated in global agreements, most notably the United Nations Sustainable Development Goals (2015-2030), and the United Nations Paris Climate Accord (2015). Drivers of global environmental change have driven the 'astonishing decline in wildlife populations' as documented in the Living Planet Index (WWF International, 2018). The environmental sustainability of New Zealand tourism will be heavily influenced by national government responses to global agreements, and meeting of national commitments to those global agreements. The tourists, tourism businesses and key tourism actors (local, regional and national) must foster and support those national commitments, and demonstrate their own commitments to address the drivers of global environmental change (Table 17).

Table 17: Tourism and environmental sustainability: The global scale of analysis

Key issues	Management challenges/opportunities	Policy instruments Challenges/opportunities	Research and monitoring needs
Evolution of the global tourism system; Overtourism and consequences for NZ	Accelerating growth of the global tourism system; acceleration of global crises; tourism market development; social media influences; de-industrialisation of global tourism.	Increase focus on long-stay markets (eg woofers); Focus on resilient markets (or fractions of markets)	Analysis of key markets in terms of length of stay (e.g., annual leave/public holidays) to inform TNZ marketing strategies (re length of stay)
Commitment to global agreements; The United Nations Sustainable Development Goals	Review SDGs as they specifically relate to tourism in the New Zealand context	Commitment of key tourism actors to global agreements; Integrate local/regional, national tourism planning and development with the UN SDGs; Align data/monitoring systems with priority SDGs	Local government; Regional Tourism Organisations responses to the SDGs; Monitor tourism business responses to the SDGs;
Biodiversity	Threat of global environmental change. Management of species that are nationally and/or globally significant	Department of Conservation site management, visitor education, and concessions management; DOC regulation of access to nature, including track closures (eg Kauri Dieback); Local Government; Wildlife tourism business commitment to 'regenerative tourism'; Conservation Trusts Community conservation collaboration; Tiaki Promise; Local environmental care codes	Impacts of human-wildlife interactions (e.g., marine science); Monitor wildlife tourism impacts (regulated and unregulated).
Ocean commons	Mitigate plastic waste	Legislation to eliminate or reduce the use of single-use plastics; TIA Sustainability framework; Sustainable Business Network;	Monitor resident and visitor perceptions of current and emerging environmental issues as they relate to tourist consumption practices.

		Industry responses to waste mitigation (e.g., Air New Zealand reduced plastics)	
Cryosphere	Threats to glacier tourism; ski industry; Threat of maladaptation that accelerates environmental change. Environmental change and visitor safety (retreat of glaciers, crevasses and spring mountaineering)	Department of Conservation concessions management; Policy and planning mechanisms to identify and mitigate business maladaptive practices	Tourist and operator awareness and response to emerging environmental risks to visitors (e.g., destabilising of retreating glaciers, crevasses, avalanche risk, and spring mountaineering)
Climate change and impacts on nature-based tourism	Reduce high dependence on carbon intense travel and activities Transition to low carbon tourism economy	Paris Climate commitments Net Zero carbon Bill 2018; TIA Sustainability framework; Sustainable Business Network;	Monitor tourism operator climate change awareness and action.
Transportation emissions: aviation	Stablize and reduce aviation emissions	ICAO global mechanisms (CORSIA); National policy instruments (carbon tax on aviation fuels; agreement of environmental standards in bilateral Air Service Agreements (ASAs); Emissions-based passenger taxes; Industry responses	Critical analysis of tourism markets; Carbon footprint, length of stay, contributions to productivity.
Transportation emissions: cruise	Stablize and reduce cruise emissions	Policy interventions; environmental safety standards; emissions standards. Limit growth of high energy intensity cruise sector	Critical analysis of cruise tourism markets; Carbon footprint, length of stay, contributions to productivity, distribution of economic impacts.
Transportation emissions: land/marine surface	Stablize and reduce surface transport emissions	Public transport policy Electrification of vehicle fleets Foster slow tourism experiences (e.g., New Zealand Cycle Trail) Tourism New Zealand marketing strategies to align with market sustainability profiles.	Profiling key markets; propensity to engage in low-energy intensity, slow tourism experiences. To inform refined TNZ market strategies.

The capacity for the tourism sector to contribute to and lead responses to the environmental crisis is enormous. In 1976 Gerardo Budowski noted that three relationships typically prevail between tourism and wildlife conservation interests; symbiosis, co-existence and conflict, and that in most cases a relationship of conflict, or co-existence moving towards conflict exists (Budowski, 1976). However, innovative tourism businesses have demonstrated enormous scope to engage visitors in environmental issues of local and global importance. Such efforts include environmental education programmes, raising awareness of local environmental issues among local and non-local audiences, conservation advocacy (e.g., encouraging donations to conservation causes, petitions), direct financial contributions to ecological restoration programmes, environmental regeneration, predator trapping, initiating/supporting/funding wildlife science programmes, and supporting wildlife recovery/wildlife hospitals. These efforts, which may be most effective when developed in close collaboration with DOC, wildlife trusts and community conservation projects, foreshadow a move from an 'exhaustive' to a 'regenerative' wildlife tourism paradigm.

Nascent evidence of the regenerative wildlife tourism paradigm exists in New Zealand, which should be a world-leader in designing and implementing regenerative tourism-conservation outcomes. Such outcomes will be predicated upon regulated (as opposed to unregulated) access to selected wildlife viewing opportunities, that is informed by and contributes to local wildlife science programmes, and will be led by world-class wildlife tourism businesses – including indigenous businesses, non-profit Trusts and commercial tourism business operating under closely managed Department of Conservation concessions that are permitted based on demonstrated conservation outcomes. Visitor education and accountability requires collaboration between DOC and tourism operators. The Tiaki Promise and local environmental care codes (e.g., Catlins Environmental Care Code⁴⁸) are important business-inspired initiatives that raise awareness of the need for low-impact and regenerative tourism practices.

The tourism-climate relationship can be considered in terms of both cause and effect. Tourism is energy-intensive. Transportation currently accounts for 23% of total global energy-related CO₂ emissions, transport emissions are projected to double by 2050, driven significantly by continued high growth in global passenger demand for air travel. There is strong evidence that aviation's global energy use and associated emissions have consistently grown and will continue to grow. Currently we rely on individual decisions to forego air travel as the means of reducing these high-risk emissions. It is now abundantly clear that encouraging voluntary responses to such risks cannot succeed in a neoliberal, capitalist economy, because of the nature of human reason and the structure of the problem itself. Transition from the current social convention requires coordination among players, via

⁴⁸ <http://www.catlins.org.nz/userfiles/file/pdf-downloads/CatlinsCareCode2018V2.pdf>

global agreements and national policy mechanisms (as well as businesses that are world leaders in sustainability practices and innovation) that meet or exceed global commitments. The ICAO global mechanism agreed at the 39th General Assembly (Montreal, October 2016) is widely considered to fall short of the Paris goal of stabilising global warming within 1.5-2.0°C above pre-industrial levels; New Zealand government representation on the ICAO should call for stronger action. In the continued absence of a strong global agreement, national policy responses are required. The options, which could include carbon tax on aviation fuels; agreement of environmental standards in bilateral Air Service Agreements (ASAs) and/or emissions-based passenger taxes (among others) need to be explored. Industry responses to the challenge of reducing transport emissions will be critical. Despite the continued failures of the ICAO, Air New Zealand has been in the global vanguard of airlines responding to environmental challenges, including the challenge of stabilising and reducing aviation emissions⁴⁹. Government and industry leadership in other major transport sectors, including the cruise industry and land transportation is no less urgent.

⁴⁹ Air New Zealand on track to be 'the world's least unsustainable airline'
https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12143692

6) Conclusion

“Tourism is too powerful and too important to be left to its own devices; either you control tourism or it controls you” (Becker, 2016:48).

Tourism is economically important and resource intensive (Gössling & Hall, 2006). It is associated with the potential for serious negative social and environmental impacts. This report presents a synthesis of sustained high growth tourism development in New Zealand by way of a spatio-temporal analysis. The temporal dimensions of this analysis address the past (1990-2010), present (2011-2018) and future (2019-2025) temporal phases. We first reviewed tourism development and environmental (and social) impact management in New Zealand from 1990-2010, reflecting upon the 1980s pre-development stage and subsequent growth of international visitor arrivals to New Zealand to approximately 2.5 million visitors at the end of this period. This review highlights the differing roles and evolving relationships between key agencies. The Department of Conservation featured prominently in this section. The period under review began with promising signs of a willing collaboration between DOC and NZTB (now Tourism New Zealand) in the early 1990s. With increasing visitor arrivals, we see the development of DOC as the key agency in managing sustainability of growth in tourist demand for nature experiences.

High growth in tourism arrivals through the 1990s and early 2000s was associated with a range of specific environmental effects. These included generally local impacts on the ecology and behaviour of wild animal populations; effluent and litter at high use sites, physical and social effects of crowding at key sites and increased biosecurity risks. These impacts were associated with wider concerns about the growing pressures of wildlife interactions, managing growing tourist demands for national parks; aircraft noise and ‘natural quiet’, and the changing nature of places due to increasing levels of visitation and infrastructure development to cater for tourists (including loss of solitude and compromised wilderness values). The implementation of DOC management frameworks and systems during this time appear to have been generally compromised by limited resources, conflicting conservation management priorities, competing recreation and tourism management outcomes, and periodic restructuring (with the associated loss of social science expertise and recreational management experience).

During this period we see evidence of growing concerns for the impacts of tourism in national parks, management of those impacts, and the growing pressures of tourism management felt by the Department of Conservation. There seems to be a missing link between the research conducted by the PCE (1997) on the impacts of tourism on the environment and the conservation estate and the fact that the DOC strategic plans published in 1998 and 2001 barely mention specific objectives and

targets relating to the increasing pressures from international tourism. We also see limited evidence of the longitudinal application of management tools developed in the 2000s.

Concerns surrounding the lack of DOC resourcing and loss of social science focus in managing tourism in the conservation estate recur during this period, which ends with an increasing focus on concessions and the development of commercial opportunities in terrestrial and marine areas that are designated for conservation. This is an enduring theme in the second temporal analysis (present; 2011-2018) when we see the aggressive pursuit of growth in key international tourism markets as a strategic response to the global financial crisis. While the impact issues that became increasingly evident in the 1990-2010 period continued, as evident in the media analysis presented in section 3.2, a general lack of quantitative analysis and management responses occurred, due in large part to DOC restructuring and loss of social science capacity. Growing concerns for the commercialisation of nature, regionally concentrated tourist flows, rapid growth in largely unregulated demand for visitor experiences of iconic local sites, and pressures on local infrastructures, have emerged as key issues. Section 3.3 (Future 2019-2025) forecasts continuing high growth in tourism arrivals, and outlines some of the initial government and industry responses to the issues that continue to challenge the high growth tourism model. While new tourist infrastructure funding arrangements, pricing mechanisms and industry sustainability commitments have emerged to begin to address the challenges of continuing growth in tourist arrivals, issues of economic value, social licence, and environmental sustainability remain open to question.

The spatial dimensions of this synthesis allow for the impacts of tourism and the sustainability challenges confronting the sector to be addressed at the local, national and global scales of analysis. Section 4.1 (Local) highlights the critical nature of many local, site specific issues arising from sustained and continuing high growth tourism since 2011. The local scale issues highlighted in Section 4.1 include the pressures of growth in volume in gateway regions (e.g., Auckland and Queenstown) and iconic destinations (e.g., Bay of Islands, Rotorua, Queenstown, Milford Sound and Aoraki/Mount Cook), and the pressures of tourist demand on front country key sites (e.g., Hauraki Gulf), as well as popular destinations and tracks/trails (e.g., Tongariro Crossing, Abel Tasman Coastal Track) in the conservation estate. These issues must be addressed in the face of forecasted high growth in volume to 2025. Growing concerns for unregulated tourist access to wildlife populations, and the ecological impacts on individual animals and local populations, remain active issues.

There seems to be a general consensus that the recent developments of a tourism infrastructure and conservation fund, and a tourist levy are overdue, although the effectiveness of such measures will lie in the details of their development and implementation (Coventry, 2018). The infrastructure fund is now being implemented, with most projects being small scale local initiatives that will ease immediate infrastructure pressures. This is different from what Jim Boulton refers to as 'keeping infrastructure

development ahead of the growth curve'. A longer term perspective is required, given high tourism growth forecasts to 2025, and it is critical that infrastructure is planned with a 2050 vision (and beyond), that must comply with a low-carbon future. Issues may also arise in cases where infrastructure is considered to be regionally or nationally important. In a recent article titled 'Wetland 'lost forever' as ski field extends', Edwards (2018) reports on the Otago Regional Council granting consent for an extension of the Remarkables ski field, which covers a protected wetland, without public consultation. The consent decision was justified on the basis that it was to be for a 'nationally or regionally important infrastructure' development.

The initial focus of the Tourism Infrastructure Fund allocations has been directed towards investment in public toilets, car parks and freedom camping facilities. The International Visitor Levy will be divided between investment in infrastructure and conservation. The funding of conservation, a key element of sustainable tourism in New Zealand, remains a critical challenge for the New Zealand tourism industry not only for environmental management but also in terms of international reputation and the support of New Zealanders for continued tourism growth. This section also highlights the need for local councils in New Zealand to be supported with national guidelines (sets of principles, national policy instruments and/or legislation), to inform and support local responses to issues of national importance. The Freedom Camping working group (MBIE, 2018) offers a good example of the development of sets of principles underpinning informed national action to an issue that ultimately must be addressed in coordinated local/regional level responses⁵⁰.

In Section 4.2 (National) the national scale of analysis gives attention to government legislation, tourism strategy and governance, policy and planning and management frameworks as they relate to tourism management and sustainability. This section raises questions about resource consumption, including infrastructure, facilities, water usage and waste generation, but must extend to the conservation status of New Zealand's national parks, protection and management of conservation areas, and further still to the conservation of wild animal populations (including ecosanctuaries)⁵¹, community conservation projects (e.g., Backyard Kiwi)⁵², and volunteer conservation projects. These discussions highlight the need to critically consider questions of tourism yield, to accommodate the non-market costs, including the use of environmental services, that are often unrecognised or uncosted but important parts of the tourism system.

Finally, Section 4.3 address the global scale of analysis. This section accommodates consideration of the global phenomenon of overtourism, the global biodiversity crisis as expressed in New Zealand in

⁵⁰ <http://www.mbie.govt.nz/info-services/sectors-industries/tourism/freedom-camping>

⁵¹ <https://www.visitzealandia.com/>; <https://orokonui.nz>

⁵² <http://www.backyardkiwi.org.nz>

relation to the protection of globally significant species that also serve as ‘tourism resources’, and the implications of accelerating anthropogenic climate change for New Zealand. It is noted with some irony that New Zealand is dependent on distant, high-carbon inbound tourism markets, and that little attention or effort has historically been paid to domestic tourism. Currently the travel of New Zealanders has a significant carbon footprint because of high demand for outbound international air travel, yet aside from during the GFC, little effort has been paid to retaining New Zealand tourist dollars in New Zealand. New Zealand’s largest and most lucrative tourism markets, and least energy intensive in terms of international air travel, are its regional/domestic markets. Section 4.3 highlights the challenges that confront the tourism industry in responding to New Zealand’s commitments to various global agreements, such as the United Nations Sustainable Development Goals (SDGs) (2015-2030), and the Paris Climate Accord (2015). It is evident that coordinated national guidelines, policy instruments and legislation that provide frameworks for local responses will become increasingly important as climate-related issues such as changing snow cover and glacial regimes, sea level rise and coastal inundation impose upon tourism industry operators and local/regional councils. It is important that the Department of Conservation and local/regional governments are supported by strong national policy that are aligned with New Zealand’s global commitments.

There follows in Section 5 an analysis and interpretation of the materials presented in the preceding sections, with consideration given to policy responses and the potential contributions of key actors at local, national and regional levels of industry leadership, local government and central policy and planning. This section highlights the current model of continued growth, noting the growing business sustainability commitment, and that local impacts *can* be managed; but is unlikely to achieve sustainable tourism. Questions arise; at what point will the current high growth trajectory ease, and should it at some point be deliberately slowed; if so, how can and should this be achieved? What would a slow or alternative tourism growth strategy look like, and where do examples of such an approach currently exist? What should replace the high tourism growth model? How, specifically, would growth in productivity be achieved, and what would be the extent of the productivity gain required to offset the current growth trajectory? Is this realistic or feasible through increased length of stay and/or increased yield per tourist; what interventions have been attempted to increase length of stay, moderate visitor flows to disperse tourists to secondary regional destinations, and increase visitor spending; and to what degree have existing strategies been successful?

The current analysis indicates that the existing high growth model cannot be considered sustainable simply because it is based on high volume, high growth and high energy intensity. Here we draw the high growth tourism development paradigm into question. It is described here as an ‘exhaustive tourism’ model in which tourists ‘consume’ public goods that may be allocated to tourists (e.g., national parks policy gives free and unlimited access to the conservation estate to all New Zealanders

and all visitors to New Zealand), but in many cases are not free, and are not necessarily intended for or allocated to tourist consumption. These resources include infrastructure (e.g., road infrastructure), facilities (e.g., public parking, toilets), natural areas (e.g., beaches) and rare or endangered wildlife populations (e.g., Yellow-eyed penguins). These resources will continue to be 'consumed', and may be depleted, exhausted or (in some cases) extinguished as increasing numbers of tourists enter the tourism system.

The sustainable tourism paradigm: A multi-agency, collaborative and inclusive approach.

Our overarching conclusion arises from the structural and material realities of tourism that make the sustainable management of the industry enigmatic. Becker (2016) notes that tourism is a unique industry whose 'product' is a country, and whose resource base is largely comprised of local public resources. This is particularly evident in New Zealand, where common pool resources such as national parks, wilderness areas, beaches, wild animals, and public amenities, as well as unique aspects of indigenous culture, form not only the underpinning of national image but also the global tourism brand, and the fundamental resource base for growing numbers of international visitors who seek to experience first-hand the unique and special qualities of New Zealand environment and society. Tourism is a "seemingly invisible trade that is everywhere and nowhere" (Becker, 2016:44). The tourism industry is an 'open system' that is loosely coordinated, fragmented and hard to define. The complexity of tourism is further explained by Leiper (1990) who observes that tourism is comprised of three elements:

1. The geographic element: The interplay of generating, transit and destination regions and the complexities of destination management;
2. The human element: Human behaviours and the interactions of hosts and guests;
3. The industrial element; The development and delivery of tourism products and services by tourism and hospitality enterprises.

The different elements help to explain why tourism studies is not a discipline of research, but rather a field of study that is informed by the theoretical and empirical contributions of researchers across the range of academic disciplines and sub-disciplines (e.g., human geography, marketing, economics, sociology, social anthropology, psychology, law, marine science, wildlife management, and politics among others). It has been noted that tourism exists as a highly complex system that '...consists of a multitude of actors who interact at crosscutting levels to produce certain outcomes' (Cornelissen, 2005:4). Links between the 'multitude of actors' are often non-existent, ineffective, or unsustainable over time. Cornelissen's (2004) conceptualisation of the tourism system, drawing on the work of Britten (1991), identifies four key elements in the tourism production system (Figure 36):

1. Consumers
2. Producers
3. Tourist product (tangible and intangible)
4. Ordering/regulatory bodies

Leiper (1990) observes that tourism is hard to define because it is not necessarily straightforward to (self) identify tourism providers (the tourism system blurs at the boundaries). Tourism and the 'everyday' have also been blurred by mobile technologies. Work and leisure; home and away have become increasingly confused as space and time have been redefined by accelerating communication, social media influences and transport technologies. These drivers explain why tourism may be described as 'partially industrialised'. The 'industrial element' of tourism accounts for only part of the tourism system. Tourist experiences, now more than ever, may be fully industrialised, partially industrialised, or non-industrialised. So too have most aspects of the tourist product. Many aspects of accommodation, shared or informal transportation, image, and reputation have migrated from the industrialised to the non-industrialised. These dynamic aspects of tourism have enormous implications for the study, strategic planning and sustainable management of tourism. Many players in the tourism system do not necessarily see themselves as part of tourism (Leiper, 1990). Cornelissen highlights the fact that many sub-elements of the 'tourist product' (see Figure 36), are aspects of culture, nature, lifestyle and identity that are not necessarily 'produced' for tourism, but may be subject to the increasing pressures of commercial development and tourist consumption.

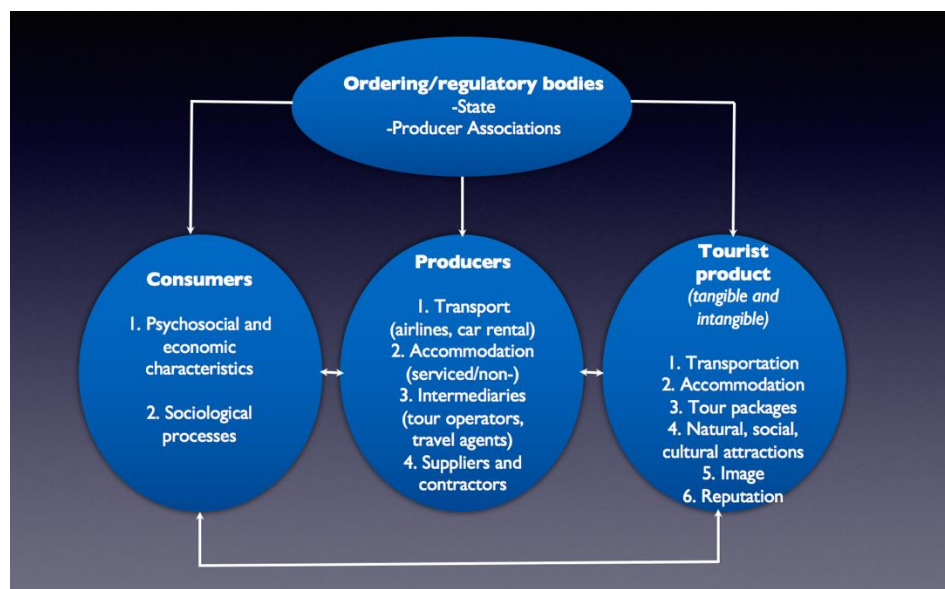


Figure 35: The tourism production system (Source: Cornelissen, 2004)

Within the complex economic, social, environmental, technological and political context, tourism development is open to competing schools of thought that are expressed in terms of ideology, discourse and hegemony (Mowforth & Munt, 2008). New Zealand tourism had long been predicated upon a growth model that considers increasing tourism, whether that be measured in visitor arrivals or economic value to be beneficial to all New Zealanders, and manageable under current policy regimes, and planning and management frameworks. This growth model is deeply entrenched politically and economically. It has been largely unquestioned to date, although various relatively isolated and generally local concerns for the sustainability of tourism development in New Zealand have been raised over time, as outlined in the first part of this report. Current levels of tourist arrivals, and future growth forecasts to 2025 suggest that an alternative 'sustainable tourism' model is now in the public interest.

When giving thought to a sustainable development paradigm for New Zealand tourism, the need to trigger sustainable tourist consumption and pro-environmental tourist behaviours is clear. But much more is required; tourism-related policies that observe New Zealand's global commitments, regulation of some forms of tourism, and pricing as a mechanism to manage demand and ensure income commensurate with sustainable management and reinvestment in the often un-costed resources that form the basis of the industry. The roles of ordering and regulatory bodies (Cornelissen, 2004; see Figure 36) are critical. Becker (2016: 33) notes that "governments are like the head of the octopus, controlling in obvious and subtle ways just about everything that affects travel and tourism". Governments, local, regional and national, determine whether cultural sites are preserved or destroyed, wilderness areas protected or opened to commercial interests, beaches protected or subject to resort development, airports expanded, new airline services introduced, etc. Governments also represent the 'sales force' for tourism (Becker, 2016). It is important that "... the disparate strands of government policy that affect tourism, however indirectly... make a unified policy and work with private industry to organise tourism so that it doesn't distort society, pollute the country or turn livelihoods upside down" (Becker, 2016:57). Questions of tourism volume versus value should therefore always be to the fore.

A nationally coordinated and inclusive 'conversation' is required to discuss and agree the strategic directions and development trajectories for this important but disparate industry sector. A delegation of key industry leaders should engage wider stakeholders that should be drawn from across the national, regional and local scales of the tourism system. Many of these policy communities, management agencies and wider stakeholders are identified in the tables presented in Part 5. They should include the Minister of Tourism, MBIE, Tourism Industry Aotearoa, Tourism New Zealand, and Statistics New Zealand. These are the key actors at the centre of the tourism system at the national scale of analysis. While tourism growth and economic indices are critical measures of success among

these actors, imagining a new tourism development paradigm will require much wider stakeholder engagement. Other key actors at the national scale of analysis include Department of Conservation, Ministry for the Environment, Ministry of Transport, the Productivity Commission, New Zealand Māori Tourism Council, national transport and accommodation operators with high investment commitments such as Air New Zealand and Airport Corporations and NZski, and leading industry innovators such as Ngai Tahu Tourism, Tourism Holdings Ltd., Real Journeys, Airbnb and Jucy Rentals. Other specific national scale actors include the Independent Climate Commission, Parliamentary Commissioner for the Environment, NZ Initiative, Air New Zealand's Sustainability Advisory Board, and academic research communities (e.g., School of Government Victoria University Wellington).

Such an approach would comply with the coalition government's approach to measuring our wellbeing – *te ine i tō tātou toiora* - under which Statistics New Zealand is developing indicators that "... go beyond economic measures, such as gross domestic product, to include wellbeing and sustainable development. The indicators "... will build on international best practice and will be tailored to New Zealand by including cultural and *te ao Māori* perspectives. They will enable the government, councils, businesses, communities, and individuals to make choices around wellbeing and sustainability" (Statistics New Zealand Tatauranga Aotearoa, 2019: np)⁵³. In the tourism context such an approach would by necessity include local perspectives and voices, that represent the interests and commitment of those who live with tourism; Kaupapa Māori perspectives, local community boards, conservation field staff, and conservation volunteers, among others.

We conclude with a call for a national, multi-agency approach and commitment to a 'regenerative' development paradigm for New Zealand tourism. This will require the discussion, development and implementation of a 'sustainable growth' model. Such an approach must address the disparate nature of an important economic sector that collectively represents a wide range of complementary or competing interests in the economic, social, cultural, and environmental outcomes of tourism. The sustained high growth model which continues to underpin tourism industry marketing, planning and investment must be critically considered in terms of all dimensions of sustainability. The 'depletive' model that currently exists, in which infrastructure, resources, qualities of naturalness, biodiversity and social licence have been strained or exhausted with little or no planning and investment, would be succeeded by a 'regenerative' model of sustainable tourism. Such a sustainable tourism model should then inform a review of the various acts of legislation that define the ideology, discourse and hegemony (Mowforth & Munt, 2008) of the sustainable tourism model. The policy, planning and management actions of the 'multitude of actors', widely and inclusively defined, who 'interact at crosscutting levels' (Cornelissen, 2004) would then follow.

⁵³ <https://www.stats.govt.nz/consultations/indicators-aotearoa-new-zealand-nga-tutohu-aotearoa-consultation>

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