

4 February 2019

SUBMISSION ON: *DRAFT TOURISM STRATEGY*

Recommendations

That the Government in its final Tourism Strategy:

1. Explicitly identify energy as a key input into the core underpinning tourism services of travel and accommodation. Its provision is undergoing significant and uncertain change that will have major impact on NZ's tourism futures. In particular:
 - i. Travel is a high emitter of greenhouse gasses (GHG). Finding clean fuels for long-haul travel, which is integral to NZ tourism, is one of the most intractable issues in achieving GHG reductions. Addressing this isn't just related to NZ's environmental goals, it impacts directly on the core of NZ's future tourism offerings. Travel will be further impacted by rapid changes in transport technologies.
 - ii. While less overarching, new opportunities are developing for the provision of remote and off-grid energy services, just as the demand for them is growing and changing in tourism (e.g. EVs). Realising these opportunities will generally improve tourism services but particularly regional and Iwi services.
2. Note that the energy options for tourism in NZ are uncertain and unclear, and have significant public good and infrastructure implications; and accordingly
3. Explicitly include investment into medium-term applied directed research in its priority work areas to help address these issues.

Introduction

In November 2017 the National Energy Research Institute¹ published the *Energy Research Strategy for New Zealand: The Key Issues (the Strategy)*². This identifies major beyond business-as-usual risks and opportunities anticipated in the energy sector arising from social, technical and environmental changes with a view to developing a research programme to help manage these.

¹ The National Energy Research Institute (NERI) is a Charitable Trust incorporated in New Zealand. Its primary purpose is to enhance New Zealand's sustainability and to benefit the New Zealand community by stimulating, promoting, coordinating and supporting high-quality energy research and education within New Zealand. Its research members are Victoria University of Wellington, Auckland University of Technology, Scion, GNS Science, University of Canterbury and the University of Otago, and its industry association members are the Bioenergy Association, BusinessNZ Energy Council, and the Energy Management Association of New Zealand.

² National Energy Research Institute, "Energy Research Strategy for New Zealand: The Key Issues," National Energy Research Institute, 2017.

NERI and its members, in conjunction with relevant industry groups, are beginning the process of developing more detailed programmes to address these priority issues. Energy for transport and access for remote communities and their impact on tourism are among the areas being addressed.

In this submission we briefly comment on the significance of these to the Tourism Strategy by way of justification for energy and research being explicitly included in it.

This submission has been developed by NERI based on the above work, but may not necessarily represent members' individual views. If the Review would like more detail we would be happy to discuss.

Long-haul travel

Given our distance from the world and our long sparsely populated country, long-haul transport is of strategic importance to NZ. Further given our unique exposure and the uncertain risks around long-haul fuels, the Energy Research Strategy identifies long-haul transport as one of a handful of priority energy research issues for NZ. It addresses this both from the supply (i.e. fuels) side and the demand side, and explicitly recognises the importance of tourism in the latter. The concern is to varying degrees across all modes of transport; international and domestic.

Fuels

While for simplicity we have referred to “long-haul transport” the problems arise at the point where battery based transport is no longer viable³. This is more to do with the duty cycle – how often recharging is possible. For instance many passenger buses and short haul smaller ferries can be recharged within the normal duty cycle, and this limitation is being eroded whether by improved batteries; improved charging technologies; and/or the use of hybrid systems. Incidentally, NZ researchers are at the centre of the last two in fast and dynamic charging and hybrid aircraft⁴.

The more intractable areas of significance to tourism then are likely to be:

- Domestic and international aviation.
- Cruise ships and the Cook Strait Ferries.
- Buses running to tight timetables on long or remote route.

Even if the fuel issues are not solved for buses electricity could be used as a last resort by various mechanisms such as changing schedules, swapping batteries etc. So while work needs to be done, for the sake of this submission we will put it aside.

³ Along with others we judge short-haul to be suitably addressed by EV technologies. EVs particularly make sense in NZ because increasing clean electricity generation isn't a significant constraint (see e.g. Transpower, “Te Mauri Hiko – Energy Futures,” Transpower, 2018) – this is part of our competitive advantage.

⁴ NZ researchers are at the centre of the international effort on fast and dynamic charging and hybrid aircrafts, see www.neri.org.nz/superconductivity and <https://unidirectory.auckland.ac.nz/profile/ga-covic>. The dynamic charging and hybrid aircraft are perhaps the only two areas where the government is (indirectly) funding tourism relevant energy research, despite the sector's significance.

Aviation is a major issue. Hybrid aircraft aren't likely even for regional flights until the mid-2030s and will only reduce fuel demand by about 40%⁵, so the only real option will be biofuels⁶ (or possibly clean synthetic fuels). These are significantly more expensive than fossil fuels⁷. The two immediate implications that call for research are:

- The impact of price changes on NZ's international competitive situation in Tourism, against the benefits of switching to clean fuels⁸; and
- If bio avgas is to be implemented, what will the supply chains look like (including the sources of the biomass, if not imported) and the necessary infrastructure⁹.

Cruise ships will make their own decisions about suitable fuels (and will right now be contemplating the impact of the impending Marpol low sulphur regulations). Some are looking to gaseous fossil fuels¹⁰ that have lower GHG emissions than existing marine fuels; others hydrogen¹¹; and marine biofuels are also potentially competitive¹². The important issue will be ensuring that deficiencies in NZ's fuel supply and infrastructure aren't a barrier to tourism. The time scales could be lengthy particularly if growing feedstocks and bringing on processing infrastructure is required.

The Cook Strait ferry services will face similar issues, but by their nature they will be able to justify specialised infrastructure if necessary.

Either way there is considerable uncertainty around the kinds of shipping fuels, supply chains, and infrastructure that will be required, and about their impact on sustainable tourism.

On the other hand there is an opportunity here for NZ to take the initiative on the potential of clean fuels across all modes, and shape them to fit what our target markets wants in sustainable tourism. So developing clean energy supply chains for the NZ tourism sector is an important research theme, and work has already begun on this.

⁵ See <https://www1.grc.nasa.gov/aeronautics/electrified-aircraft-propulsion-eap/>

⁶ Hydrogen (whether by combustion or in fuel cells) emits water vapour that is undesirable at high altitudes and hence the need for biofuels, see for example "Hydrogen in a low-carbon economy," and "Biomass in a low-carbon economy" both UK Committee on Climate Change, 2018.

⁷ This is more sensitive to the barrel price than carbon charges. I. Suckling, F. de Mercader Monge, S. Wakelin, P. Hall and P. Bennett, "New Zealand Biofuels Roadmap: Technical Report," Scion, 2018 includes an analysis.

⁸ Historically some research has been undertaken in this area in NZ.

⁹ The Scion Roadmap has begun to look at these issues.

¹⁰ These may get increasingly difficult to supply from domestic production.

¹¹ Low cost clean hydrogen depends upon natural gas reforming and carbon capture and storage. This again may be difficult for NZ to supply, although biomass gasification or possibly electrolysis could be options. The "Hydrogen in a low-carbon economy" (Footnote 6.) and The Royal Society, "Options for producing low-carbon hydrogen at scale," The Royal Society, 2018 give slightly differing pictures on the relative costs of the two pathways, but neither report is specific to NZ's circumstances.

¹² See the Scion roadmap.

Demand for travel

Following on from the last point it is obvious that the nature of travel and consumer preferences will change (perhaps rapidly) both as a result of perceptions about dirty fuels and in response to technologies that make travel more energy productive. Key examples include:

- As mentioned earlier there will be trade-offs by consumers between fuel costs and emissions. Shifting the product mix to higher value offerings could be one response;
- Increasing penetration of transport technologies such as of transport-as-a-service and autonomous vehicles. Both will increase the efficiency of travel. The other area of significant change, last mile technologies¹³, will perhaps have less impact.
- The opportunities and threats from improving telepresence. This could significantly reduce fossil fuel use, but if Conferences for example “go-virtual” this will have a major impact on a key segment in NZ’s tourism offering. By reason of location, natural endowments and capabilities NZ should be world leading in this area, but the need is to develop it in a way that helps address both risks and opportunities.

Much of the above will be addressed by the industry, but there are again many issues that are in the nature of public goods (particularly where there are many small operators) or will require infrastructure.

Remote energy services

A theme of the Energy Research Strategy is affordability and access to energy. It has become clear that there is a need to address energy services where access to the grid is prohibitively expensive. Addressing this is becoming increasingly viable as technologies such as smaller scale distributed generation are falling in cost.

While the technologies themselves are imported their integration to meet specific needs remains a reasonably complex technical, business, environmental and social issue because of the rate of change. This has particularly been identified as an issue for Maori with remote land and resources seeking to provide for members of their Iwi. It has also been identified as an issue for remote tourism operators.

This again is an issue with elements of public good associated with it, even if it is not as far reaching as the Travel issue.

Basis for Government making Tourism-specific research investments

There are other Government funding mechanisms available for research activities, and in particular the level of close-to-market grants has recently been increased. The argument here is that specific sectors are not particularly well served with strategic directed research that goes beyond the capability of companies to significantly part-fund. This is particularly true of the energy sector as is set out in the Energy Research Strategy, and it appears to be a lack in the tourism sector. The

¹³ E.g. drones.

intersection of the two is almost completely lacking in receiving any funding, despite the importance of some of the issues discussed in this submission.

The use of levy sourced funds to help support sector research activities is well established in the primary sector in NZ as well as in some industries¹⁴. An important function is to provide co-funding to help attract other funding while ensuring the effort is aligned to an agreed sector strategy. As such sector input typically dominates in managing the fund.

While we have focussed on energy-related tourism issues we would expect from our experience in energy that this is a wider issue for the tourism sector. This levy mechanism and the Tourism Strategy would provide a mechanism to achieve appropriate investment into applied directed research in tourism that goes beyond business-as-usual. We would see the research issues we have raised here being part of that portfolio.

A handwritten signature in black ink, appearing to read 'Simon Arnold', with a stylized flourish at the end.

Simon Arnold
Chief Executive

¹⁴ E.g HERA, LASRA