Deep interventions for a sustainable transport future

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ABSTRACT

The dominance of automobility is giving rise to unsustainable outcomes, not least of which is its contribution to climate change. At the same time, business-as-usual transport systems are entering a period of turbulence as a result of influences such as new and disruptive technologies, intelligent systems, new business models, changing consumer expectations, population growth, suburban sprawl, and national commitments to reduce greenhouse gas emissions. An optimal trajectory towards sustainable transport is unlikely to be achieved in a laissez-faire policy environment, and nor is it likely that it will be resolved by any single solution. Rather, it is likely to require carefully crafted interventions that have a good fit with unique national circumstances, and which will work in an integrated way to achieve change consistently throughout the transport system. The research reported in this paper draws on the situated knowledge and experience of New Zealand transport experts to develop a suite of potential interventions for a sustainable transport future for New Zealand. Drawing on the findings of a four-stage Delphi study, which solicited experts' views on interventions that could lead to better outcomes than were being achieved by the current policy environment. The paper concludes that a consistent and integrated commitment is required at all levels of governance and across all parts of the transport system to transition away from automobility and towards sustainable mobility.

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1. Introduction

New Zealand's transport system, like many others internationally, is still dominated by high levels of private vehicle ownership, near-complete reliance on fossil fuels, sprawling urban areas, and other characteristics of what Urry (2004) calls the 'system of automobility'. Unsustainable consequences include environmental impacts, (e.g. greenhouse gas (GHG) emissions (Hopkins and Higham, 2016)), social impacts (e.g. social exclusion and isolation (Lucas, 2012)), and economic impacts (e.g. the cost of congestion (Wallis and Lupton, 2013)). Shifting to more sustainable transport systems may be aided by market-based solutions such as shared mobility businesses and the increasing cost-competitiveness of electric vehicles, but the scale and rate of the transition required is unlikely to occur without carefully designed and integrated government interventions (Geerlings et al., 2012). This paper explores potential interventions for a more sustainable transport future for New Zealand.

New Zealand's current policy environment largely favours the continuation of business-as-usual; For instance, despite a commitment under the Paris Agreement to reduce GHG emissions by 30 percent below 2005 levels by 2030 (Ministry for the Environment, 2016), for which low-carbon transport could play a significant role, a major focus of transport policy and funding is still on large highway and motorway projects that prioritise the use of private cars (New Zealand Transport

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Agency (2017). And unlike most other western nations, the New Zealand government has chosen not to introduce fuel efficiency standards for vehicle imports (Barton and Schütte, 2016). In part, the government's reluctance to take a more directive role may be a result of the strong neoliberal underpinning of successive governments since the mid-1980s, so that market-led solutions are favoured over policy interventions (Kelsey, 2015). It is also likely to be influenced by the complexity of attempting to change a transport system that is embedded in path dependencies, involves vested interests in the status quo, and is the outcome of decades of decisions of multiple agencies with differing agendas (Gross et al., 2009; Imran and Pearce, 2015, 2016).

If the New Zealand government was to adopt a stronger leadership role, a key conundrum is where best to intervene to achieve the desired outcome. International experience is that policy interventions are often targeted at specific solutions such as reducing emissions from vehicles or decreasing private vehicle use (Givoni et al., 2013), or are targeted to a specific transport mode (Ogilvie et al., 2007). But it is increasingly clear that technological or infrastructural interventions alone are unlikely to generate change at the scale and speed required. Changing consumer preferences and behaviours are also important (Dietz et al., 2009; Economides et al., 2012; Pietzcker et al., 2014), as is the use of multiple measures and harnessing the synergies between them to improve their effectiveness (Givoni et al., 2013). Nevertheless, interventions adopted elsewhere, if replicated in New Zealand, are unlikely to be effective. The variability in transport systems across the globe, the populations they serve, and the political realities, means that while governments can learn from one another (see for example, policy mobility literature), unique solutions will need to be developed to suit New Zealand's characteristics.

The research reported in this paper has drawn on the situated knowledge and experience of New Zealand transport experts to develop a suite of potential interventions for a sustainable transport future for New Zealand. We draw on the findings of a four-stage Delphi study undertaken in 2014 which solicited experts' views on interventions that could lead to better outcomes than were being achieved by the current policy environment. The results remain pertinent as there has been little change since the surveys to the sustainability aspects of New Zealand's transport policy. We first discuss the nature of interventions in transport systems, outline the New Zealand transport context, and introduce the Delphi research method and how it was applied. The results are discussed in four sections: the experts' views on the characteristics of a sustainable transport system for New Zealand; changes needed in the system; priority areas for intervention; and the proposed interventions. We then discuss the implications of these findings for New Zealand and make some broader reflections on interventions that have a more generic application.

1.1. Interventions for a sustainable transport future

Sustainable transport can be described in a variety of ways, but generally refers to desirable combinations of government policies, technologies, infrastructure, and behaviours which minimise adverse social and environmental impacts while retaining or enhancing economic outcomes (Goldman and Gorham, 2006; Henning et al., 2011; Schwanen et al., 2011; Xenias and Whitmarsh, 2013). Banister's (2008) 'paradigm' of sustainable mobility centres on four fundamental ways to achieve this: travel substitution, modal shift, distance reduction and efficiency increases to reduce the negative externalities of the current transport system. Examples of interventions aimed at reducing demand for unsustainable travel include developing infrastructure for low-emission modes, altering consumer preferences, increasing energy efficiency, promoting technological innovations such as electric vehicles and software applications, and increasing loading factors, for example by increasing vehicle occupancy and freight loads (Pietzcker et al., 2014; Sims et al., 2014).

Considering interventions more generically, Taylor et al. (2012) identify five main categories of policy instruments for environmental outcomes: direct 'command and control' regulations; economic instruments; information-based instruments; co- and self-regulation; and support mechanisms and capacity building. Interventions can be broadly differentiated between 'pull' and 'push', with the former encouraging preferences to change by offering attractive alternatives and the latter using mechanisms that make unsustainable behaviours less attractive, and a combination of both is often advocated (Pietzcker et al., 2014). A study conducted in the United Kingdom found transport experts and the public share a similar vision for the future that involves enhancing public transport, investing in cleaner technologies, improving infrastructure for active travel, and instituting economic measures such as congestion charging (Xenias and Whitmarsh, 2013). However, the public favoured bottom-up, 'pull' strategies that make sustainable transport options more attractive, while experts prioritised top-down, 'push' mechanisms. Xenias and Whitmarsh (2013) suggest that discordant preferences could result in resistance from the public for new transport strategies, reinforcing the need for public engagement. Arnott et al. (2014) similarly argue that interventions should be developed via a participatory approach with relevant actors.

Interventions to achieve a sustainable transport system are often difficult to design due to the multi-scalar nature of transport systems, and interactions between transport and other economic sectors (Geels, 2012; Goldman and Gorham, 2006). To be effective, interventions need to simultaneously influence multiple aspects of the transport system: a single-focus policy can concurrently encourage path dependency, path destabilisation, and path creation (Mäkinen et al., 2015). Poorly designed policies can also have unintended consequences. For instance, improving the fuel economy or reducing traffic congestion can result in a rebound effect, inadvertently encouraging driving and vehicle kilometres travelled (VKT) rather than reduced use of fossil fuels (Goldman and Gorham, 2006; Sorrell and Dimitropoulos, 2008; Druckman et al., 2011). A future focus is also important; Banister and Hickman (2013: 283) stress that a longer-term perspective is vital since "many interventions require long lead times, impacts take time to be effective, and different policies when combined to work in the same direction can be more effective". But this should not be done in lieu of more immediate actions; Köhler et al. (2009)