The Institute for Governance and Policy Studies, School of Government at Victoria University of Wellington

POLICY Quarterly

Volume 16 – Issue 2 – May 2020

FOCUS ON

Listening to Voices of the Future

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Editorial

Intergenerational issues matter. Humanity has acquired an ever-increasing capacity since the industrial revolution to benefit future generations – but, equally, a capacity to inflict immense long-term harm. Unfortunately, there is now substantial evidence that our industrialized civilization is causing serious, widespread and irreversible harm. Globally, this is especially true with respect to biodiversity loss, ecological degradation and climate change.

With this context in mind, the guest editors of this issue of *Policy Quarterly* – Andrew Coleman and Girol Karacaoglu – invited young New Zealanders with an interest in public policy to reflect on intergenerational issues and offer their vision for the future. Six contributions are published here, together with an introductory and explanatory essay by the guest editors. Collectively, these seven articles comprise the first part of the May issue. The contributions are uniformly thoughtful, pertinent and challenging. Unsurprisingly, there is a focus on distributional matters, including the merits or otherwise of current policies in New Zealand regarding taxation, housing and retirement incomes.

I am very grateful to Andrew and Girol for their diligent efforts as guest editors – and, of course, to the contributors themselves. Thank you. It is great to have these younger voices contributing to public debate via *Policy Quarterly*.

Readers may be surprised, however, by the lack of any serious discussion of COVID-19. But the reason is simple. Most of the contributions were completed prior to the grim events that have transformed our world since early 2020. To rectify this gap, I have invited Grant Duncan and Michael Fletcher (who had previously agreed to edit *Policy Quarterly* in August on a different topic) to seek contributions on the policy issues raised by, and longer-term implications of, COVID-19. Many people have responded to their request. Hence, the August issue will explore a broad range of pandemic-related matters: constitutional, governance, fiscal, social and environmental.

Plainly, COVID-19 has had profound impacts locally and globally. It has prompted unprecedented policy responses. And further major geopolitical, economic and social impacts seem likely. But the overall consequences of public health emergencies, even pandemics, are modest compared to the threats humanity faces from the ongoing failure to live within safe planetary boundaries.

Consider briefly how COVID-19 and climate change compare. The former poses an immediate threat; it demands mostly short-term policy responses. Climate change, by comparison, will generate significant and ongoing threats across multiple generations. Reducing these threats requires immediate, but also sustained, policy responses. Yet even if greenhouse gas emissions are cut drastically over coming decades, humanity will have no choice but to adapt to the many damaging impacts of climate change. And adaptation will need to continue for hundreds of years. This is a terrible prospect.

To be sure, COVID-19 can kill many people. But the death toll from climate change will be much greater. More importantly, it undermines the capacity to preserve life – both human and non-human.

COVID-19 can be suppressed, if not eliminated, presuming an effective vaccine can be found. But no vaccine can help humanity mitigate or adapt to climate change; nor is there a ready cure for policy inaction and government failure.

In short, COVID-19 and climate change differ in significant ways. Yet they also have notable similarities. These, in turn, have major implications for public policy.

First, both COVID-19 and climate change are powerful societal disruptors; they generate non-linear changes and non-incremental shocks; and they are risk multipliers. From a policy perspective, they serve as powerful 'focussing events' and 'critical junctures'. While posing huge political risks, they also create remarkable opportunities for policy reform.

Second, they are both fundamentally science-based problems. In each case effective technical solutions and sensible policy responses depend on reliable scientific evidence from multiple disciplines. Hence, both highlight the critical role of public investment in research, monitoring, and reporting – and, equally, the need for governmental transparency, openness and honesty. Similarly, both require technological innovations. But their implementation depends on robust public services and infrastructure – whether educational, digital or physical.

Third, COVID-19 and climate change highlight the importance of governmental preparedness and precautionary interventions. Delays are costly – indeed tragic. Accordingly, effective responses depend on robust long-term thinking and sound anticipatory governance. The latter includes the capacity to identify weak signals early, assess risks, develop risk management strategies, implement proactive measures, and build societal resilience. More specifically, both phenomena illustrate the critical role of governments in protecting biosecurity, biosafety and public health. This, in turn, depends on robust systems and processes, but also wise leadership.

Fourth, both problems are quintessentially global. They underscore humanity's utter interdependence – economically and socially. For effective responses international cooperation and solidarity are pivotal. Yet, equally, both problems highlight the weaknesses and limitations of our current international institutions, and the capacity of the major powers, especially China and the United States, to thwart global solutions. In so doing, they reveal the fragility and vulnerability of our digital civilization, and the poverty of global leadership.

In the quest for effective policy measures to mitigate climate change, the COVID-19 pandemic offers two hopeful lessons. First, with sufficient political will, extraordinary policy interventions are possible. Second, rapid and widespread behavioural change is achievable if there are compelling reasons, coupled with bold leadership and consistent political messaging.

Against this, troubling lessons are also apparent. The pandemic suggests that effective policy responses to climate change will not be implemented until humanity faces sufficiently compelling and urgent threats (e.g. the immediate risk of mass fatalities or large-scale property losses). Recent events also show how easily urgent issues can divert political attention from major long-term issues, narrow the mental bandwidths of decision makers, and shift the focus of the entire global community.

Regrettably, COVID-19 offers little hope of a near-term embrace, whether locally or globally, of the policies urgently needed for an environmentally sustainable future. The intergenerational implications of this sobering conclusion are profound.

Jonathan Boston
Editor

Andrew Coleman and Girol Karacaoglu

Listening to Voices of the Future
contributions from people born after 1985

The six articles that follow are contributions from eight people born after 1985. They represent a response to the invitation we published in the August 2019 issue of *Policy Quarterly* (Coleman and Karacaoglu, 2019). We hope that what follows is a valuable contribution to various intergenerational conversations that are taking place in New Zealand and around the world.

The purpose of this exercise was to let the contributors say what they wanted to say. Our feedback on the draft versions of these contributions was simply aimed at suggesting more effective ways of communicating with people of our age group. They were designed to encourage the contributors to be more direct, and to support their arguments and suggestions with plenty of examples, with a view to enhancing their impact. By way of setting the background and context for this exercise, we reproduce below two sections from our original invitation: 'Exploration' and 'The invitation'.

Exploration

We wish to explore whether a society can design and implement public policies in an alternative way as its preferences evolve. One possibility is to find processes that enhance the voice of young people in the policy development process. Society may still apply a single policy for all people, but this policy will better reflect the preferences of young people. This type of approach is reflected, for example, in efforts to encourage higher voter participation by young people in national elections.

A different possibility that we wish to consider is a system of cohort-specific policies – policies that are designed to be different for one generation than for another. (In this context, a 'cohort' refers to a group of people born in a particular year, while a 'generation' is a related collection of cohorts. A person born in 1985 belongs to the 1985 cohort, the 1980s generation and generation Y.) Cohort-specific policies enable a country to adopt different policies for different cohorts, so that policies better reflect each generation's changing preferences and changing circumstances.

Consider, for example, education. Traditionally, older generations have paid for the education of younger generations, but younger generations have received a

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disproportionately large fraction of the return on these investments. As education became more valuable, and more was demanded, older generations found they were paying more and more relative to the amount spent on their own education.

New Zealand has already adopted a cohort-based policy to help deal with this issue: cohorts born after 1970 have been expected to take out student loans to pay part of the costs of the higher education expenses they incurred, to reduce the taxes paid by cohorts born before 1970. But future cohorts may want a different solution; they might want free education funded by higher cohort-specific taxes, for example, or they might want higher student loans to pay for a better quality of education. A cohort-based policy would enable each cohort to choose the mix it wanted, while reducing the impact on other generations.

Retirement income policy is another example. New Zealand's pay-as-you-go scheme requires working-age people to pay taxes that are transferred to older people. Younger people may wish to change the current system, not just because the benefits they can expect to receive are lower than the costs they expect to pay, but because the form of the system may not be suited to their circumstances. Young people may want a system of personal retirement accounts because it enables them to receive a pension if they spend a lot of their time working abroad, or because it provides them with a larger pension for the contributions they make. New Zealand's current system makes change difficult as young people cannot reduce the amount they pay without reducing the amount older generations receive. But it may be possible to design and adopt a set of retirement policies that are different for different cohorts, enabling change to occur now, and enabling change to occur in the future should future cohorts want something different again. People born after 1980 could have a compulsory retirement saving scheme and low income taxes, for example, while those born before 1980 could retain the current system.

Other examples exist. Younger generations may want to live in cities amply supplied by busways, walkways and cycleways, for example. Older generations have had a preference for living in suburbs and driving cars. The architectural and environmental effects of these preferences will be borne by today's younger generations as the use of land for roads and parking places prevents the expansion of other forms of transport. Some policies try to address these issues at the margin, by altering the incentives to use (say) bicycles and petrol-fuelled cars. However, young and future generations may want more radical solutions – for example, completely redesigned cities that enable people to live and work in close proximity so that there is far less need to travel. Is it possible to adopt cohort-based policies to reshape the cities of the future so they reflect what young people want? You can imagine a policy that prohibits people born after 1980 from owning petrol-fuelled cars, for example, but would it work?

We do not pretend to know what young people want. However, it seems clear that three conditions are necessary for cohort-based policies to be an effective method of enabling change. First, different cohorts must want different things. Second, it must be feasible to have different policies for different cohorts. A solution requiring people born after 1980 to drive on the left and people born before 1980 to drive on the right obviously would not meet this criterion. Third, some additional intergenerational transfers may be necessary to reach a practical political solution if cohort-based policies make some generations better off and others worse off. If these conditions hold, cohort-based policies may be possible to better enable society to change in the face of changing circumstances or changing preferences. Moreover, not only will cohort-based policies enable current cohorts to obtain policies that they want, but a great advantage of such policies is that they more easily accommodate continuous change as future generations make their own policy modifications.

> Cohort-specific policies enable a country to adopt different policies for different cohorts, so that policies better reflect each generation's changing preferences and changing circumstances.

The invitation

We would like to know if there is any demand for cohort-based or generation-based policies among young people. As a first step, we would like to know what young people want. Are there issues where their views are distinctly different than those of older people? Are there policies that they would really like changed to enable them to better live the lives they wish to live? Are there current policies that they think are antithetical to their interests? Are there cohort-based policies that might enable their children to make different choices from their own?

We are seeking essays from people born after 1985, coming from all kinds of background, to be published in *Policy Quarterly*. We are looking for examples of major systemic changes involving public policy that will have significant effects on their lives now and in the future.

To make a meaningful contribution to this intergenerational conversation, these examples need to involve policies where young people want very different options from the ones currently on offer and could be amenable to distinctive policies for current cohorts.

We are looking for thoughtful and structured contributions relating to specific examples that describe the changes

that are desired, and the ways a new set of policies might enable these changes. Some thought should be given to how a feasible transition might be arranged and, if the policy imposes big changes on older cohorts, how the new policy options might be negotiated, funded and managed. Would you be willing to pay higher taxes, now or in the future, to adopt the policy? A possible test you could consider is whether you could imagine holding a referendum, or set of referenda, among people born after 1985 on a policy that applied only to people born after 1985. The policies can be about anything; indeed, our hope is that you come up with some issues that we do not normally think about.

An analogy may be helpful. Suppose your parents took you to a restaurant and said that as they were paying they would order for you. Would you eat differently if you could choose your own meal? How would you order if you could choose your own meal but also had to foot a big chunk of the bill? We are interested in whether there are policies that you would definitely like to be different from those chosen by your parents' generation, and maybe how you might arrange to split the bill.

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Sally Hett

Trust local knowledge: citizens are experts in their own lives

I was excited. When I started working I was excited about the social impact mandate inherent in the public sector – how good! Then, as my work led me into the depths of the public sector's limitations, I was swallowed by despair. As an advisor on the Government Inquiry into Mental Health and Addiction I was a sponge to the pain of the country. I heard the pain in young people, solo mothers, whānau, refugees of not being heard, seen or supported. The reality of slow, siloed, under-resourced and overly risk-averse agencies was undeniable.

Climate, technological and demographic changes are driving inevitable and much-needed systems change. The current siloed, slow and risk-averse public sector is not effectively addressing the complex problems we are facing. It is human nature to value someone's opinions and knowledge when you trust them. I see trust as the missing piece in authentically involving citizens in decision making, at both Cabinet and national and local government levels. The ultimate reflection of trust being reciprocated within agencies and with the public will be when we have devolved some power closer to where communities affected by decisions live, work and play; and when participatory problem solving becomes the norm.

Under the hood

If you look under the hood of agencies, people are working extremely hard and care deeply about serving New Zealanders. However, the political and bureaucratic demands of business as usual leave little time for doing the *do* – not news to many who are reading this! The blend of media scrutiny, putting out fires, competing priorities, accountability requirements, and relationships with staff, other agencies or politicians would put pressure on anyone. All of this is exacerbated by shifting government priorities every three years. I am exhausted thinking about it.

Young policymakers are thinking, 'hold up, is this my work environment?' Young people generally are thinking, 'hold up, are those policies meant to serve me?'

I do not believe the New Zealand public sector is where it could be. Nor do many public servants and leaders working every day to improve it. The upshot of this is compromising what is delivered to citizens, resulting in needs not being met. The effect on policy development has been summed up as follows:

> [Policymakers] design some rational solution, it goes through the political meat grinder, whatever emerges is implemented (often poorly), unintended consequences occur, and then – whether it works or not – it gets locked in for a long time. (Beinhocker, 2016)

A key piece missing in policy design is connecting with those most affected. Currently the problem is identified and

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defined and solution options developed, all from a desk in Wellington. It is only during the consultation phase that people affected by the decisions are engaged. On the Mental Health and Addiction Inquiry we heard that consultation is a cross between a con and an insult. Safe to say, it is not cutting it. Decision making is then back in a meeting room. Implementation is centralised and only evaluated, maybe, after a set amount of time. 'Information and knowledge deficits mean that the intervention that will achieve the desired outcome is not identified', increasing the risk (Eppel and Karacaouglu, 2017, p.381). Without local knowledge, policymakers cannot help but create rational solutions based on international research, ways they have done it before and what is politically palatable.

on and recommendations about' (New Zealand Parliament, n.d.) The select committee system is framed around politicians needing more information, not about systemically involving citizens in decision making, not about civic dialogue. If that is the main avenue by which to engage, it is far from inclusive.

How did we get here?

We always point to the New Public Management reforms and the State Sector Act 1988, and for a good reason. These changes fundamentally shifted the way public servants served. The power shifted to the Beehive. Public servants went from serving the public to serving their ministers. Relationships with the community sectors were not prioritised.

Politicians remind us that it is a citizen's right to engage with the government. But really, submissions and select committees?

The State Services Commission's *Getting to Great* report said their hypothesis is that 'low engagement scores [from public servants] represent lost hope and people feeling like they are not trusted' (Francis and Suckling, 2014, p.40). If public servants do not feel trusted to do their job, how can they reciprocate trust with communities?

Frustration with the policy process does not reflect simply disagreement about policy options between young people and older generations. It is widely acknowledged that systemic changes are needed: the disconnect is between Wellington and Kaitaia, between front-line staff and boardrooms, between experts and citizens; it is between those making the decisions, and those affected by them.

Politicians remind us that it is a citizen's right to engage with the government. But really, submissions and select committees? As described on the New Zealand Parliament website, a select committee is where 'committee members work together to consider topics that Parliament's House of Representatives needs more information

People's best judgement was superseded by a mix of prescriptive rules and neo-liberal governance. Over the same period, the government hid behind the story of austerity to implement a bundle of economic policies that eroded social services, reduced healthcare spending and cut taxes for the wealthy. Governments championed progress, being solely concerned with economic outputs (Heinberg, 2013).

This shift in governance approach was not ethically neutral. It embedded a set of values in our public sector reflective of the neo-liberal shifts in society broadly – to individualism, competition and hyper-consumption. We treat government agencies like businesses and wonder why collaboration is hard. 'The system incentivises separate agencies to be enterprising about their own resources, focused on the production of outputs, but not incentivised to connect with others or focused on achieving better outcomes' (Cameron, 2019. p.5). Competition between agencies is counter to the purpose of the public sector – to work together to improve the intergenerational wellbeing of New Zealanders (Treasury, 2019).

Change, please

Luckily, despite all this, I am still excited. I am excited because I see a way forward. I am excited because there is an appetite across the public sector for much-needed system change. We cannot keep doing the same things and expect different results. I am excited because people get it.

- 'With each generation of citizens come higher and higher expectations of government and the public service. That is a good thing. And we must rise to the challenge' (Hughes, 2019). See, State Services Commissioner Peter Hughes gets it.
- Public servants also get it, using toolkits from the Policy Project and working hard despite the institutional environment wearing them down (Department of the Prime Minister and Cabinet, 2017).
- State Services Minister Chris Hipkins gets it, stating, 'the public service needed to be adaptive and responsive to the changing needs of citizens, who did not live their lives in neat compartments' (Devlin, 2019).
- The current government gets it, leading internationally with a wellbeing approach to budget decision making, showing a willingness to experiment with new ways of working.
- Grant Robertson gets it, stating at his annual IPANZ address in February 2020 that agencies should be exploring new models that will better deliver outcomes.
- The new Public Service Act reflects this need for systemic change, hoping to 'break down the silos of the current system and create an environment based on collective responsibility and co-ordinated action that delivers great outcomes to New Zealand' (State Services Commission, quoted in Donadelli and Lodge, 2019, p.44).

The question is how to embed legislative changes into culture. Public servants are asking how to translate 'a spirit of service to the community' into action (Public Service Legislation Bill, s9). With so much of business as usual governed by

conventions around rules, we need to change conventional culture – 'how we do things round here' – as well as legislation. In the 1980s they were good at 'hyper-innovation', top-down changes that affected every way we lived. We do not want to create this change that way. New ways of operating are needed to displace the past – models that live out our values.

Wanted: trust in local knowledge

We need a more humanised bureaucracy built on trust. I say trust because that is both a prerequisite to and result of genuine community involvement. 'Governments should trust communities to identify their own needs and make their own decisions' (Monbiot, 2019). Communities' trust in the government will grow as a result. McKinsey has found that understanding citizens' needs and working with them to satisfy expectations can deliver up to nine times more trust in government (D'Emidio et al., 2019).

Addressing core problems for citizens is fundamental to delivering the desired outcomes. To do so, 'those most affected by a given policy should have deeper involvement. Citizens are experts in their own lives' (Rashbrooke, 2018, p.55). We need a policy process that embeds the voices of those most affected and values local knowledge earlier in the process. This will build trust and a sense of connection. We need a policy process that:

- co-constructs outcomes with those most affected. There is little point in working towards outcomes that people do not want. It seems logical;
- connects with other agencies that might too be contributing to the outcomes;
- identifies the root-cause problems by connecting with the realities of citizens' experiences;
- co-designs policies grounded in evidence about the problem. I know 'co-design' is overused, but the principle remains necessary – that the community is involved in the process of designing the policy. This could be a 'citizens' jury' approach, whereby individuals representing a cross section of the community (a mini-public) are presented with the evidence to debate and deliberate on, to then reach a collective decision or recommendation on the given policy issue. Citizens' juries embed participation in policy design (Participedia, 2019);
- embeds feedback loops to allow for improvements. The process of iteration allows lessons to be implemented and policies able to evolve with citizens' needs, to ensure creating the desired outcomes.

Involving those most affected means including young people. We are affected by the decisions made today as well as past ones, for longer: your decisions to deregulate; your decisions to chase inflation over wellbeing; your decisions to all but ignore the climate crisis for 50 years; your decisions to keep investing us out of home ownership. I am not talking about our views on policies aimed at young people.

> How can we get a more diverse and significantly larger group of young people to engage, and provide their opinions to the public sector?

People have to understand that young people's experiences help shape better policy for everyone.

Yes minister

Despite all the hard work to genuinely involve communities, it could still lead to nothing. Ministers can override all the participatory work with a simple 'no, I like it my way'. No wonder public servants are nervous, building trust in the community only to back out on what was discussed. This veto power can fuel distrust as community contributions are not valued. More than anything, we need ministers to see the value of participatory policy. The trust must extend to between community and Cabinet.

Localism

'The much bigger change is this: to stop seeking to control people from the centre' (Monbiot, 2019). Devolving decision-making power to the local level will make community involvement more meaningful and effective, provided councils adopt a participatory model. While reinstating the four well-beings in the Local Government Act is a great start, council processes need to change to reflect the shift to outcomes over outputs, and take on the participatory approaches to build trust and leadership. The New Localism approach, done right, will better align with the kaupapa Māori approach (Waatea News, 2019). One paragraph does not do this movement justice. Nevertheless, it is worth emphasising that shifting power closer to communities makes their involvement far easier and more intrinsic.

Participatory problem solving in action

Public sector innovation

Now, I know that what you are thinking: another daily stand-up, financial indicator, a politician making a top-down decision. The term innovation gets used to discuss politically driven changes, such as the New Public Management reforms (Donadelli and Lodge, 2019). These ad hoc command-and-control 'hyper-innovations' are not what we want to promote.

We see innovation as participatory problem solving, continuous improvement, enabled by and contributing to building trust. We see innovation as the use of methods to systematically deliver better outcomes for citizens. In the public sector, the objective is not about the bottom line, but rather about building trust and transparency and enabling citizen-informed decisions.

Across town on Dixon St, among Post-it notes and hot desks, I work at Creative HQ, which is striving to bring this framing of innovation to the public sector. One initiative I am involved in is Lightning Lab GovTech, a three-month accelerator-style programme. It takes projects and staff from government agencies who are tackling complex problems, and applies proven and

effective innovation methodologies to create solutions that work. GovTech is ultimately about better serving citizens by delivering better outcomes. Projects have focused on youth-centric policy engagement and embedding whānau voices in the social sector.

Youth voice

How can we get a more diverse and significantly larger group of young people to engage, and provide their opinions to the public sector? This was the focus of the Youth Voices team from the Ministry of Social Development and Ministry of Youth Development in the 2018 programme. In 2019 the team co-designed a platform – The Hive (the-hive.co.nz) – with young people across the country. They have undertaken a pilot with the Department of Conservation, gaining input from 281 young people on the New Zealand Biodiversity Strategy. The team is now looking at how to move from a prototype to a final cross-government tool.

Whānau voice

In 2019 a team from Te Hau Āwhiowhio ō Otangarei Trust, Te Tihi o Ruahine Whānau Ora Alliance Charitable Trust and the Social Investment Agency (now the Social Wellbeing Agency) came together to amplify whānau voices in the social sector. They heard about the significant inequalities between Māori and non-Māori, in health and social outcomes, but also in trust and in who is listened to. The team created a tool to collect whānau voices and combine these with existing data to shift the way we contract in the social sector. They received significant funding from the Digital Government Partnership Innovation Fund to build and test the product.

Momentum is building. Young people are not sitting on their hands. We are drafting legislation, taking to the streets, representing communities on local bodies, and developing new ways to do policy.

I hope this article is read as part of a call for a fundamental shift in the way our public sector serves, moving from silos to participation enabled by trust. My ask is that you reflect on whether your work is based on internal information or evidence from participatory problem solving. 'If people demand a new kind of government long enough and loudly enough, democratic politicians will have to give it to them' (Rashbrooke, 2018, p.287).

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Hugo Thompson

Culture, young people and wellbeing

Culture is the bedrock of nations. It is the collective manifestation of human intellectual achievement and will continue to determine societal responses to issues big and small. Our attitudes towards abuses of power, multilateralism and market failure are undoubtedly moulded through exposure to our cultural tapestry – literature, comedy, music and more.

In this article I suggest that cultural consumption is a merit good and contend that the longstanding subsidisation of specific 'high arts' components of New Zealand's cultural sector is undesirable. Reorienting funding towards a 'cultural bonus' of $1,000 for 18-year-olds would improve youth access to cultural goods and create a cultural sector more reflective of the desires of those who stand to shape our culture for an adult lifetime.

Culture and wellbeing

Individual studies (Grossi et al. 2012; Christin, 2011) and literature reviews (Ahuvia, 2002; Daykin et al., 2008; Bell, 2006) repeatedly demonstrate that participation in cultural activities has a strong correlation with improved wellbeing outcomes. The New Zealand Treasury's Living Standards Framework Dashboard confirms the significance of this causal link in a New Zealand context. Among younger New Zealanders (aged 15–34) a 'low' level of cultural identity correlates with a greater likelihood of poor/low wellbeing across all the framework's 12 domains of wellbeing, while individuals with 'high' cultural identity are more likely to enjoy 'high' wellbeing in virtually all other domains (Treasury, 2020).

Interestingly, the framework illustrates that individuals aged between 15 and 34 with 'low' cultural identity have the strongest correlation with 'low' social connections of any domain. Further, 'low' cultural wellbeing has a stronger correlation with 'low' health-related wellbeing than all other domains except for subjective wellbeing and civic engagement (ibid.). While the Dashboard is yet to incorporate a number of the recommendations put forward by a discussion paper jointly commissioned by the Treasury and Manatū Taonga, the Ministry for Culture and Heritage (Dalziel, Saunders and Savage, 2019), this data clearly illustrates the importance of cultural participation and identity among young New Zealanders.

Equity and choice

While current subsidisation of cultural consumption is significant, only a small number of organisations receive the bulk of total funding. In 2019 the Ministry for Culture and Heritage contributed an additional $14,646 million to the New Zealand Symphony Orchestra, $5,384 million to the Royal New Zealand Ballet, $15,689 million to Creative New Zealand, and $146,766 million to NZ On Air (Ministry for Culture and Heritage, 2019, p.81). Government funding comprises 73% of the income of the New Zealand Symphony Orchestra and represents a subsidy of over $128.80 per attendance (New Zealand Symphony Orchestra, 2019, p.21), and 42% of total turnover for the Royal New Zealand Ballet, representing a subsidy of over $73 per attendance (Royal New Zealand Ballet, 2019, p.3).

Despite this significant subsidisation, more than 62% of New Zealanders surveyed by Creative New Zealand in 2017 agreed with the statement that, 'while some arts events interest me I still don't go much'. Furthermore, a significant minority (21%) of young people agreed that they would participate more 'if arts activities were cheaper or free, or if more and better activities were happening where they lived' (Creative New Zealand, 2017, pp.5–6). This is worrying. Despite subsidisation, many New Zealanders – and particularly youth – are not consuming cultural goods at a rate that they deem desirable from an individual, short-term utility maximisation perspective, let alone at a rate that is reflective of positive associated externalities.

I suggest that this mismatch between the changing desires of younger people and where funding is targeted is indicative of a first-mover advantage. Existing 'high culture' institutions remain dominant and receive a significant allocation of central government cultural spending, while also benefiting from voluntary price discrimination (donations) from their established base of patrons. In contrast, the emerging cultural interests of young people are not catered for to the same extent.

Market failure

Clearly, cultural consumption is a merit good: participation/consumption by individuals benefits those who participate and results in positive externalities benefiting society at large. Self-interested, possibly myopic, consumers are personal (and often short-term) utility maximisers who do not consume these cultural goods at the desired level.

Like the old parable of a lighthouse, where those not willing or able to pay for its upkeep enjoy its navigational benefits without compromising its use by others, a strong national culture is a non-rivalrous and non-excludable product. While this then appears to meet the definition of a public good, and justify public funding

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through government, we must highlight the excludable products that develop and sustain this good. Performances, sports club memberships and access to copyrighted works are tangible examples of club goods (non-rivalrous but excludable goods) that sustain and further our cultural health.

The [New Zealand] government's RealMe platform provides an intermediary digital identification service similar to the SPID offering from Italy's Agenzia per l'Italia digitale.

Naturally, where club goods have a low rivalry of consumption, the costs associated with providing the good to each additional consumer represent a small portion of total costs. Hansmann (1981) suggests that the predominance of non-profit organisations in the performing arts is likely a result of market failure stemming from these high average, and low marginal, costs. He also makes the claim that because charging above average costs would result in poor patronage from consumers with a high elasticity of demand, charging below average cost and encouraging donations with a non-profit status both maximises consumer surplus and allows for voluntary price discrimination. In effect, this phenomenon allows non-profits to remain financially viable where businesses reliant on charging above average costs could not compete.

I suggest that young people are particularly disadvantaged by this market outcome. While large numbers of youth may desire access to a specific club good, a relative lack of discretionary income reduces the ability of youth to voluntarily price discriminate. This reduces the viability of charging below average costs for the whole cohort, ultimately resulting in low consumption, high average costs and reduced consumer surplus.

The Italian model

Italy has been a pioneer in boosting the cultural spending power of youth and has enjoyed a partial cultural renaissance as a result. Within a fortnight of the November 2015 Paris terror attacks, the Italian government of Matteo Renzi announced a package of more than €1 billion for defence, as well as an entirely unexpected programme – Bonus Cultura – whereby every Italian citizen and resident would be gifted €500 in the year of their 18th birthday to spend on culturally enriching goods and services like books, theatre tickets and music. Renzi justified this €290 million spend by claiming that the programme would gift Italian youth with the 'symbolic awareness of what it means to be an adult in Italy – a main protagonist and heir of the greatest cultural heritage in the world' (Squires, 2016).

To qualify for this lump sum, Italian 18-year-olds register with Sistema Pubblico di Identità Digitale (SPID), a digital public identification system offered by the Italian government. Using this identity verification, users create an account at www.18app.italia.it. Vouchers can then be created and either printed for use at physical retailers, sent to portable devices, or used directly for online purchases. Users have six months to apply and one year to spend their credit (Observatory of Public Sector Innovation, 2018).

In the programme's first year of operation, 600,000 Italian 18-year-olds spent a total of €163 million on cultural goods/services (Il Post, 2018). Surprisingly, despite Italy's tied status with the People's Republic of China as having the globe's most UNESCO World Heritage sites (UNECSO, n.d.), only 0.3% of this sum was spent on museums, and 0.3% on cultural events (Il Post, 2018). Spending was concentrated on books, with this category making up 80.6% of all spending and totalling about 5% of the annual revenue for the entire Italian publishing industry (ibid.). Clearly, empowering Italian youth through additional spending power has created an effective financial incentive to stimulate the growth of Italian literature.

The French have adopted a similar system to 'Bonus Cultura', and have rebranded the policy instrument as a 'Culture Pass', with nationwide coverage planned for 2020. Similarly, 18-year-olds can access the same €500, but they are restricted to a limit of €200 on material purchases such as books, videos and music (Aide-sociale, n.d).

A Kiwi cultural bonus

The New Zealand government has both the infrastructure and mandate to enact a similar policy programme for New Zealand's youth. The government's RealMe platform provides an intermediary digital identification service similar to the SPID offering from Italy's Agenzia per l'Italia digitale. Further, with an estimated resident population of 18-year-olds in New Zealand of 62,840 (Statistics New Zealand, 2020), and assuming a maximum spend of $1,000 for each individual, the administration-exclusive cost would not exceed NZ$65 million on an annual basis.

If this proposal were to be seriously considered, engaging a representative sample of New Zealanders through a survey, with a focus on young adults, to test their support for the proposal would be a critical next step. Using this survey data to determine the likely areas of the cultural sector that would benefit most from this potential spending would allow policy analysts to determine the likelihood of this intervention addressing the existing market failures affecting the cultural sector, through a forecast reduction in average costs via increased participation.

While some may claim that a policy of financial transfers in the context of cultural consumption risks monetising how individuals perceive and engage with culture, both the market and current government subsidisation for culture have failed to adapt to change. Evidence continues to mount that illustrates the role of a healthy cultural sector in improving individual (and by extension societal) wellbeing.

While institutions such as the Royal New Zealand Ballet have proven themselves valuable pieces of New Zealand's cultural landscape, we must question if the sums currently used to keep these otherwise unsustainable operations afloat would be better placed in the hands of those who otherwise lack access and who stand to shape our cultural landscape for an adult lifetime.

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Atanas Tomovski, Josh Finegan and Simran Rughani

Interconnected communities: urban development policy for a changing society

Younger cohorts want changes in the environments they live in. They want to live in interconnected environments that provide fluidity between work, home and recreational spaces. Interconnected environments are conducive to young people building connections and social networks, creating interconnected communities. These interconnected communities provide flexibility in work–life balance, improve accessibility to amenities, build latent support networks and social capital, and provide environmental benefits that are congruent with compact living.

The need for integrated communities

Current mechanisms in society that foster interconnectedness in communities are not adequate for young people. Societies are not structured in a way that is conducive to making social connections for young people (Bauman, 2013). Places that were previously hubs of connection, such as local shopping and community centres, are not fulfilling the same function. The central role of schools in fostering connections through sibling and family

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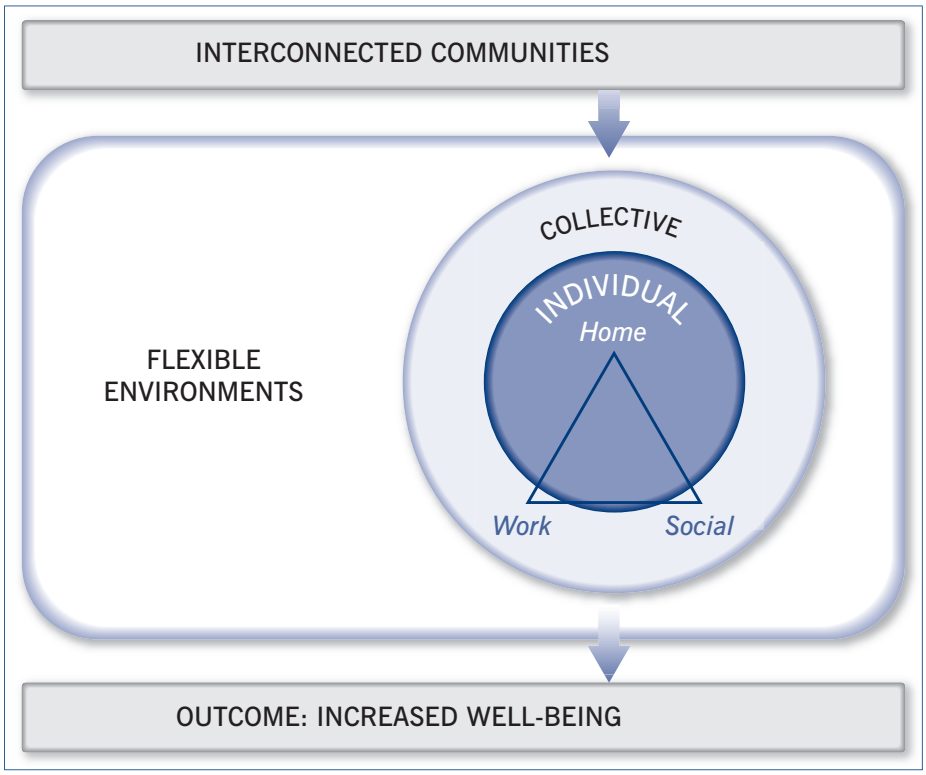
Figure 1: Framework for Interconnected communities



networks has diminished as family size reduces. Gossip exchange has shifted from pubs and churches to online, reducing the need to go out into the community. Thus, young people are not meeting up in person and developing connections through the same mechanisms previously used for creating community connectivity.

Integrated communities address this growing social isolation by creating networks for individuals, through the redesign of the collective environment, to include mechanisms to assist with young people's community and civic engagement. Integrated communities are inherently intergenerational, which is key to minimising burdens on older generations by ensuring that all needs are met.

Ultimately, wellbeing, the quality of living and overall societal health are improved.

Framework

The framework shown in Figure 1 characterises the individual's civic (work, social, home) life as being embedded within the 'collective'. The collective consists of wider environments and communities that the individual lives within. The individual and the collective have a mutualistic relationship: the individual provides value to the collective and the individual receives value in return.

A local community hall characterises this. The collective is the group of users (practising judo, dancing, etc.); individuals are the members of the groups. Individuals can associate with multiple groups. Groups can constantly change, and the hall can adapt for the different needs of the groups. Multiple groups can use the hall at the same time.

Individual

The future of work

Integrated communities are necessary to accommodate the changing nature of work and the new approach to work–life balance young people have. Growing automation of industries alongside New Zealand's already predominantly service-based economy means that the number of manufacturing and primary industry jobs is diminishing. Service jobs inherently allow for more flexible working arrangements in terms of both location and time worked. This is compounded with changing societal expectations of what 'work' looks like and when we engage in it.

Young people will have numerous career changes in their working lives. Young people want flexibility and variability in the type of work they do and when and where it is done. There will be an inevitable blurring of home and work life and the spaces they have in our communities. Therefore, communities we build need to cater for the different ways that young people will be integrating their work and home lives.

Our communities will need to be built with multi-purpose spaces that can be utilised for different types of work environments. What we envisage is spaces where the nature of work individuals perform is different, the composition of people can change daily, and the same individuals can be doing different types of work on the same days. They must be versatile.

They also need to cater for the fact that many of the jobs young people will be doing in the future do not currently exist. Further, we envisage these versatile workspaces to be in close proximity to residential and commercial zones, so mobility is not reliant on transport. This would ideally reimagine the traditional 'town centre' into a more integrated space that can act as a hub for smaller 'CBD'-like areas, removing strain from one central location in an urban centre.

In ensuring equitable intergenerational wellbeing, the adverse effects of the change of work need to be accounted for. This includes the involuntary changes imposed on the nature of work for low-wage workers, which remove certainty of employment and income. While solutions to these issues lie in targeted employment and income policy, the way we design integrated communities must consider the uncertainty faced by high-risk groups to allow them to participate in society (see Andersen and Svarer, 2006 for more information on the Danish flexicurity model).

Shaping environments to increase social connectivity

Physical spaces that champion social interaction can improve health outcomes. Individuals who experience social isolation, in addition to reporting lower levels of life satisfaction are susceptible to a range of health complications, ranging from depression to increased mortality (Statistics New Zealand, 2010). Social isolation is an objective measure which characterises a lack of social contact. There is the physical dimension of loneliness, exacerbated by perceived or experienced

loneliness (Bauman, 2013). Interconnected communities can help to ensure that physical environments foster individuals' access to social contact, while enabling individuals to maintain autonomy over the extent and form of this contact.

This could, in part, be achieved by shaping physical environments in a way that fosters 'micro-interactions'. Even brief contact with individuals (a chat in the stairwell, sitting next to someone while waiting for the bus) can enhance one's perception and feeling of social contact and connection with their community (Kawachi and Berkman, 2001).

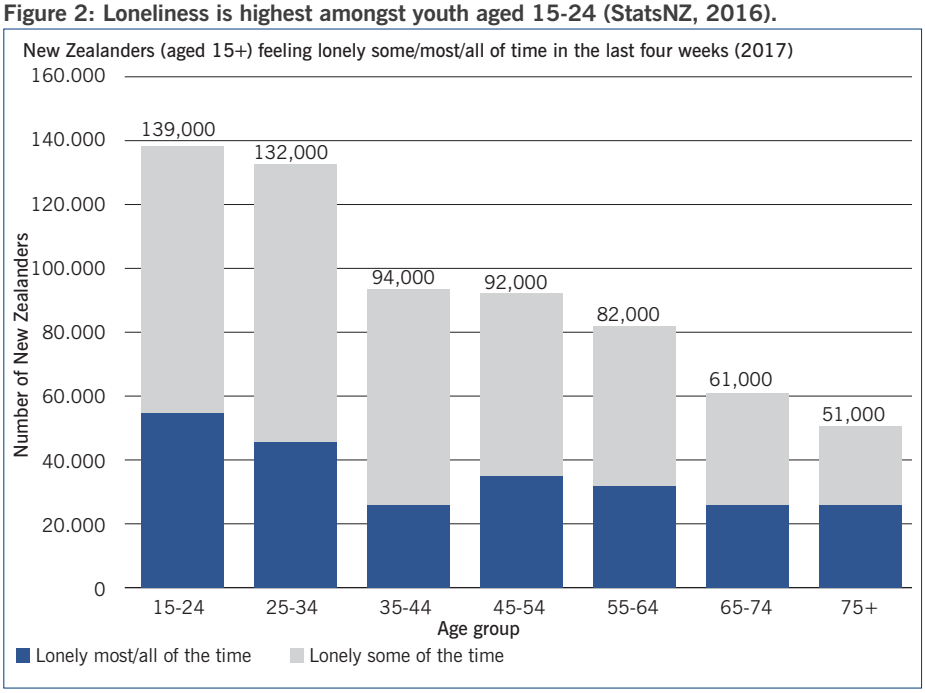
Intergenerational connection

Loneliness is of specific concern for younger cohorts. Statistics New Zealand reported in 2010 that 18% of 15–29-year-olds feel lonely all, most or some of the time. This contrasts with just 11% for retirees (see Figure 2 for more updated statistics). To be truly valuable, our communities must provide social bridges between generations (in addition to social and economic strata). Intergenerational connectedness may reduce levels of perceived loneliness and facilitate the transmission of intergenerational knowledge.

In 2018, *He Ara Oranga*, the Government Inquiry into Mental Health and Addiction report, identified that isolation, loneliness and a loss of community are eroding New Zealanders' wellbeing, especially young people's (see Government Inquiry into Mental Health and Addiction, 2018). The inquiry's findings indicated that many people feel isolated from their neighbourhoods and communities. It also emphasised that, in order to mitigate this, urban development policies that favour 'community and connections' are needed.

Loneliness can be reduced through building latent support networks – feeling able to reach out if needed. These include micro-interactions within the community that build trust. For older generations, this worked. They got to know their small neighbourhoods and communities. But now, in a rapidly changing society where lives are becoming increasingly busy, traditional mechanisms are not as effective. Hence, physical environments need to be conducive to making social connections through mechanisms young people engage with.

Figure 2: Loneliness is highest amongst youth aged 15-24 (StatsNZ, 2016).



Source: Statistics New Zealand, 2016

Collective

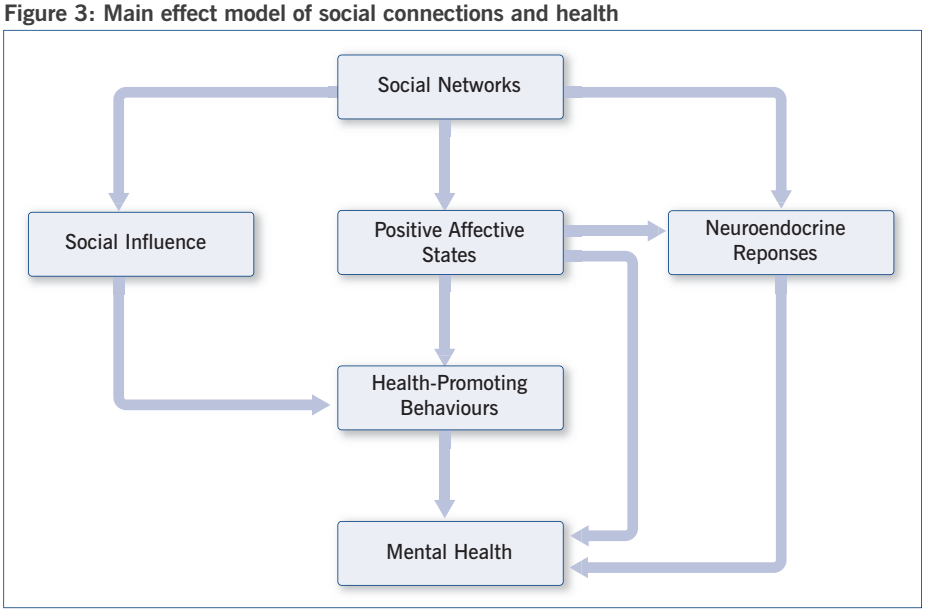
Social capital

The main effects model of Cohen and Wills (1985) (see Figure 3) shows that social networks and social integration can have beneficial effects for individuals regardless of the stress they may be under. Connectedness can create a sense of purpose and belonging as well as recognition of self-worth, producing positive psychological states (Kawachi and Berkman, 2001).

Participation in community enhances the likelihood of mobilising social support and accessing latent support networks which can protect against negative health outcomes. The collective represents a connectedness within the wider community and resonates with the concept of social capital. As per social capital theory, an individual's ability to create meaningful connections is contingent on structural characteristics (ibid.). Thus, how we design our communities has significant consequences.

Creating interconnected intergenerational communities facilitates the structural aspects of social relationships at critical points during life stages, such as early childhood and for the elderly. As socio-economic status affects social networks too, inclusive communities are crucial.

Figure 3: Main effect model of social connections and health



Source: Kawachi and Berkman, 2001, adapted from Cohen and Wills, 1985

Designing collective spaces

The design of the environment is critical for facilitating and creating social connections. Co-designing with different groups enables the creation of spaces that ensure inequalities are addressed. Inherently, these new spaces would be built for people who previously had been excluded and disadvantaged (O'Dell et al., 2019). Partnering with and focusing on the people who are most disenfranchised will ensure the communities are genuinely inclusive.

The design of communities must be diverse to overcome the homophily that neighbourhoods often experience. Spatial concentration of social networks has significant effects for the geography of attitudes and behaviours as well (Johnston and Pattie, 2011). Diverse communities can increase diversity of thought and encourage debate, while also teaching inclusion, creating harmonious societies.

Design of neighbourhoods is crucial to foster the inclusion of elderly and other social groups, as well as key to the development of children (Bronfrenbrenner, 1979). Intergenerational design accounts for an individual's changing needs over time, and the anticipation of this will ensure people have amenities when they need them. There must be accessible recreational spaces that fulfil the needs of multiple generations because they interact with the same physical spaces. Encouraging mixing of age cohorts expands social networks, enables knowledge sharing and creates support systems. This is vital as networks of social connections often shrink with age (Cacioppo, Fowler and Christakis, 2009).

Our framework characterises individuals as being embedded within the collectives of which they are members. More specifically, collectives defined by physical proximity are important to an individual's wellbeing. As social interaction among youth inevitably moves towards more digital spaces (OECD, 2018), leveraging the value of physically defined collectives, such as one's neighbourhood or local cafe, becomes increasingly important.

Mechanisms for change

Roles of the private sector and government

To enable the creation of integrated communities, central government would signal the necessary changes by amending legislation, such as the Resource Management Act 1991, and issuing national policy statements. Additionally, it will provide data infrastructure enabling private entities to develop innovative solutions which leverage community-specific information. Bolstered by government incentives, the private sector will invest capital and implement these signalled changes. It will also develop innovative, community-centred solutions that leverage government-provided data infrastructure.

> Despite being underrepresented in democratic decision-making processes ... young people want their voices heard.

Legislative change

In managing a broader reform programme, one of the government's critical roles is to signal a change in New Zealand's approach to urban development. Changing the communities that we live in requires reforming how we approach resource management and planning. Government at central and local levels has the task of creating the framework that can accommodate the initiatives needed to create an integrated community. Coordination between central government and local government will be required to signal the overarching goals of these communities and the frameworks that will support them.

Consistency is important to ensure that inequalities do not emerge and that all people have the opportunity to live in integrated communities that are designed to reflect optimum outcomes. This means that the performance standards that new, integrated communities must meet are set at a central level. For example, a central directive would state that all new planning regulations must allow for residential, commercial and recreational spaces within a specific range of distance or within a specific size of geographical area.

Conversely, we also recognise the importance of allowing for flexibility in the framework so that different communities' needs are accommodated at a local level. It is therefore critical for local communities to engage with the design standards for their amenities. The nature and configuration of different local areas can then better reflect the needs of the specific demographics residing in different communities.

Big data

Young people want engagement without active participation. Despite being underrepresented in democratic decision-making processes (Statistics New Zealand, 2014), young people want their voices heard. A myriad of social and economic factors influence an individual's capacity for active civic participation; thus, whole sections of society may be excluded from these processes. Creating integrated communities requires developing mechanisms which enable preferences of these groups to be represented, regardless of their capacity to participate. Policy interventions leveraging big data can facilitate this.

Passive participation

'Big data' offers governments the opportunity to enable 'invisible' citizens to engage with democratic processes without actively participating. Analytical techniques such as regression analysis, when combined with access to large sets of intimate and novel data offer governments the ability to understand what its citizens want. This understanding occurs through the observation of their revealed preferences, rather than stated preferences. This creates an 'indirect democracy' and engages individuals in the decision-making processes that determine how their communities are built (O'Dell et al., 2019).

Solving disengagement to ensure communities are represented

This data-driven approach solves two issues. Primarily, it resolves the lack of

engagement in the democratic process. Data can be used to reveal individual preferences, anonymise preferences in groups, and be manipulated to demonstrate the preferences of a certain segment of society (ibid.). This allows community building to take account of what people want, without their active engagement. It enables decision making to be better informed and reflect the preferences of society at large, rather than of the most vocal members and those who have the capacity to engage. This approach allows individuals' preferences to be represented even when they do not have the capacity to express them through active engagement with traditional democratic processes.

Second, collecting (and using) data from community-specific groups ensures that a larger set of preferences are accommodated. This enables community building to focus on those who have traditionally been marginalised and whose preferences have been ignored, thus allowing the creation of truly integrated communities where all views are incorporated in decision making, enhancing insights and findings from traditional face-to-face engagement.

Big data has an aspect of self-monitoring and self-evaluation. Since data is aggregated and analysed in real time, it reflects current preferences, and decision making can be adapted to reflect these. Depending on the nature of the policies and decisions, a real-time feedback loop can be created (ibid.).

Observing these current preferences, however, does not tell us what changes a community wants. Analysing patterns can indicate possible trends or needs, but these assumptions must be tested against what communities tell decision makers. Passive participation is additional to, not a replacement for, direct engagement. In some instances, initiatives inspired by data-provided predictions could be tested in community focus groups where feedback can be collected before they are rolled out.

Consider the example of an entranceway to an apartment building. Sensors installed in the entranceway collect data about what time people generally enter the building. Analysis has revealed that a significant number of people use it early in the evening. As winter is approaching, it will be getting darker earlier. Analysis can anticipate whether people might continue to come home at the same time, indicating a need to install additional lighting or safety measures. This could be tested by asking people who generally enter at certain times whether they will continue to do so. A decision can then be made based on both revealed and stated preferences.

Management of data

The collection and use of data – by both private and public institutions – must be regulated within an adequate framework for the 21st century. Both sectors have a role in designing and creating integrated communities. Public bodies have large quantities of data that, when provided to the market, can be used in innovative and novel ways.

Currently, data is governed through a consent framework that is not practical. The quantity and nature of data that is currently collected is so large that individual control and consent is an inadequate mechanism. Individuals do not have the time or information to know what they are consenting to and how their data is being used (Solove, 2013). A regulatory framework that fits the public goals of data collection and use, while at the same time protecting the individual from harm, is desired. This would lead to the best use of data in designing solutions for integrated communities.

Implementation *Engaging younger cohorts*

Younger cohorts need to have a vested interest (such as home ownership) in their community to adequately engage with it. As house prices rise (REINZ, 2020), one barrier to achieving this is a lack of adequate capital. One solution is a mechanism similar to the KiwiSaver scheme. Individuals could borrow against their future contributions in a 'rent-to-buy' fashion. Instead of paying rent, individuals can build equity in the scheme. They would have the ability to leave a given community, with their funds going back into the scheme while maintaining their equity share.

In effect, this pool of properties would act as a club good which enables flexible living arrangements, while still providing a level of stability and a sense of community. Providing this fluidity allows individuals the ability to divest from one housing unit and move to another with ease. This gives them the flexibility and community they desire while maintaining the engagement that stems from their equity in these communities.

The scheme in practice

Private entities would be able to borrow equity in this scheme, using it to invest in the development of further communities. The performance standard directive dictated by the government enables entities to invest this capital in ways they believe will best fulfil the vision of the scheme.

The value of the performance standard approach is that there are many perspectives developers might take to realise the principles of the national policy statements. One example is the Urban Habitat Collective, which is a co-housing development in Wellington. Its vision is to develop co-housing apartments around communal spaces that support 'community and good living' (Urban Habitat Collective, 2020). While this collective is funded through traditional financing mechanisms, it does indicate what the communities might ultimately look like in practice.

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Richard Mclaughlan

Downsizing property among the older generation: a means to free up New Zealand's housing stock

New Zealand experiences widespread intergenerational housing inequalities. Millennials are far less likely than previous cohorts to access affordable housing and to own property. Large dwellings which are often more suited to young and expanding families are arguably underutilised by the older generation. Retirees are living longer and often stay in homes that they have lived in for most of their lives. This is exacerbated by distortions in our tax system which leave owner-occupied housing free from a capital gains tax. One way to phase out this generational discrepancy is motivating older generations to move to smaller homes towards the end of their life cycle. This would free up larger properties for first home buyers and ensure that retirees live in more suitable dwellings.

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Emergence of unaffordability

There was a time in New Zealand's history when owning a home was not the unaffordable dream it has become today. Unfortunately, any expectation of owning a home towards the beginning of one's life has been greatly lowered in the wake of the 'housing crisis'. The housing market itself has become somewhat of a mockery, with more and more people living in unfavourable conditions, whether that be in cars or alleyways. This is attributable to house prices rising faster than incomes, which has left New Zealand with one of the highest homelessness rates in the OECD (Barrett and Greenfield, 2018).

The underlying factor in these affordability issues is that demand is currently outstripping supply. While the

country may be witnessing record numbers of approved building consents and development, these are not adequate to meet the higher demand for housing emanating from population growth (including the increase in net migration) that has occurred over the past five years. New construction is not matching this increased demand, particularly in areas that lack urban infrastructure to support new developments, such as within Auckland (Johnson, Howden-Chapman and Eaqub, 2018).

The demographic that is affected most significantly by these market conditions is first home buyers, largely in the millennial age bracket. House price inflation has equalled 30% over the past five years, making it progressively more and more difficult to have a foot on the property ladder. This is worsened by the fact that larger deposits are required to purchase a property (ibid.). Figure 1 demonstrates that those between the ages of 30 and 49 years have faced the most significant decreases in home ownership, at roughly 12% over a 12-year period (Statistics New Zealand, 2014). This decrease has fostered a new norm of increased periods of renting and financial insecurity among this cohort.

On the other hand, baby boomers have largely benefited from secure home ownership. Home ownership has remained the highest in their demographic and is far less volatile in terms of the present demand shortage (ibid.). This generation had access to property at a point at which high inflation rates quickly eroded away mortgage debt. While interest rates were high, the level of real interest rates suggests that it was much easier to enter the property market in the 1970s and 1980s (Clement, 2016). Subsequently, this generation has realised disproportionate financial gain from property, given that it is a lightly taxed asset free from any imputed rent or capital gains taxes (Coleman, 2019).

Figure 1

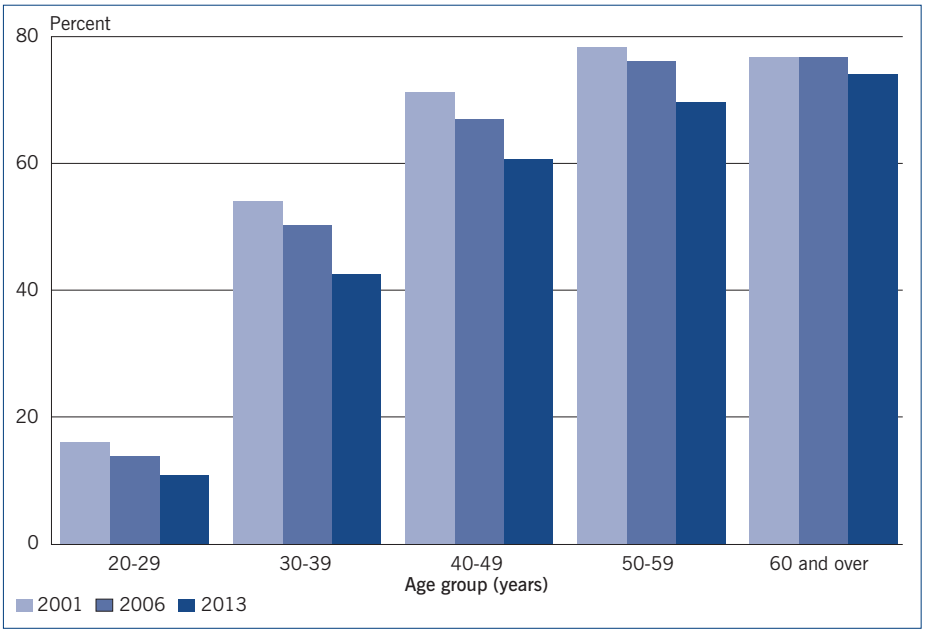
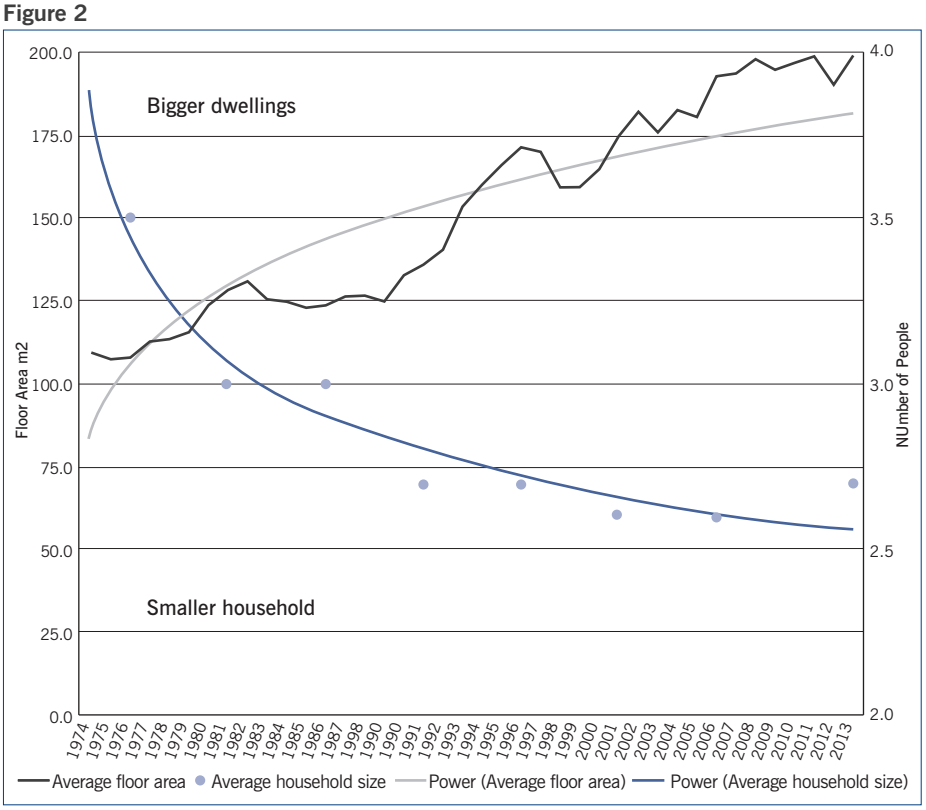


Figure 2



Overconsumption of housing stock

New Zealand's present demand shortage is aggravated by an overconsumption of large dwellings by retirees. Those in the older generation who have largely cemented their position in the property market hold on to possession of family-sized dwellings once their children have left home. Rather than downsizing to a more suited property, couples or single individuals retain possession of this stock late into retirement, which adversely affects first home buyers (Saville Smith et al., 2016).

This overconsumption of housing services is caused by distortions in our broad-based tax system. In the absence of a capital gains tax, interest is currently being taxed to a greater extent than owner-occupied housing. This leaves elderly with an incentive to remain in excessively large houses in well-located areas, in return for significant increases in equity. They have also been encouraged to over-invest in housing following a move away from tax-deductible retirement savings in 1989 (Coleman, 2017). In the absence of any reason to move to smaller houses or decrease investment in property, this cohort continues to enjoy large dwellings that they have held for most of their lives.

Another reason why asset-rich retirees live in large properties is simply that there are no easily accessible alternatives. The aforementioned distortions have contributed to an increase in the average size of new houses (Coleman, 2017). Figure 2 demonstrates the trend in New Zealand's property market since the 1980s, which has been to build larger dwellings that are occupied by smaller households (Saville Smith et al., 2016). In terms of retirees, there are usually only 1.9 people living in homes owned or rented by those over the age of 65 (Pledger et al., 2019). This shows an inefficient use of housing stock that will only get worse as retirement periods increase.

A lack of suitable alternatives will continue to present issues due to New Zealand's ageing population. As in most of the developed world, the proportion of the population over the age of 65 is predicted to double between now and 2046 (Johnson, 2015). Therefore, 23% of New Zealand's population have the potential to under-occupy large housing stock in the absence of more appropriate options. Policy is required that mitigates this apparent underoccupancy, while at the same time facilitating affordable late-life purchases (Mayhew, 2019).

Downsizing as a viable option

Downsizing the dwellings of retirees presents a possible solution to combat their overconsumption of large dwellings. The major inhibitor to this approach is the absence of appropriate housing options, or more specifically one–two bedroom houses. Regions with the largest ageing populations simultaneously have the lowest supply of smaller dwellings. In areas like Marlborough, where 33.3% of the population is over the age of 65, only 7% of the housing stock constructed since 2001 is one–two bedrooms (Saville Smith et al., 2016).

The retirement village sector has had increasing success in New Zealand, but it is largely inadequate with regard to our ageing population. While a recent report by JLL identified 81 new retirement villages in the development pipeline, it also highlighted that only 13% of those over the age of 75 currently use these services (Winstanley, 2019). That is inadequate in terms of demand, and development will likely need to occur in the open market as well. This would need to be targeted towards undersupplied regions like Marlborough.

> There is intergenerational inequality … in [accessing] affordable housing, … [t]he baby [boomers] had access to the property market prior to the housing crisis, … the … millennials, … have experienced substantial decreases in home ownership rates and are … subject to much longer periods of renting.

There is no shortage of demand among retirees for appropriate housing options. The Finding the Best Fit research survey identified a significant number of individuals who are unsatisfied with available dwellings: 33% of retirees felt forced into retirement villages as their desired dwelling was not available on the open market. One couple were quoted as saying, 'We have not done it yet [downsized] because we have not found any other suitable place' (James, 2016). Retirement villages often do not meet certain elements of demand, such as freedom and location.

A benefit that arises from downsizing is that it enables older generations to relieve financial and physical burdens associated with larger homes. Evidence suggests that larger dwellings entail higher energy costs. For instance, one-person households living in houses that are 151–200m^2 can have twice the median monthly energy costs of those whose houses are 100m^2 (Easton and Saville Smith, 2016). Older generations can save by reducing their dwelling size, while at the same time increasing the ease of access to amenities that are in the neighbourhood of their property.

New Zealand's current housing policy does not capitalise on this preference for small dwellings. If more appropriate housing options were made available for retirees, a significant proportion of large dwellings would be made accessible to young and expanding families. While increasing the supply of housing should remain the focal concern for the government, resources should be devoted to freeing up existing stock to mitigate the housing crisis. If KiwiBuild has taught New Zealand anything, it is that delivering a substantial increase in affordable homes is a challenging task, and further policy avenues are required (Barker, 2019).

Policy suggestions

Retirees may wish to remain in large dwellings, especially if they have lived in them their whole lives and their homes have sentimental value. It is not the place of public policy to dictate the actions of this cohort. Rather, policy must be utilised in order to remove distortions which incentivise retirees to remain in artificially large houses. This should be coupled with assistance in the downsizing process which removes financial and logistical barriers associated with this decision.

The demographic being targeted, therefore, is retirees living in large houses who currently lack motivation to downsize. The increasing number who use their spare bedrooms to house their children are excluded from these policies. This is an increasingly populated housing pathway, which sees adults as late as in their thirties living with their parents and delaying access to owner-occupied housing (Clapham et al., 2014). This acts as an alternative to downsizing in that it also provides an avenue against over-consumption of housing stock.

Removal of distortions

The fundamental issue is distortions in New Zealand's tax system which provide incentives for retirees to remain in artificially large houses. A capital gains tax is required to mitigate the benefits enjoyed by the first generation of property owners, and to discourage the over-investment in property (Coleman, 2019). This in turn would encourage elderly to live in smaller houses in areas that are not so heavily in demand. There would be less of a financial incentive to remain in under-occupied houses, since the disproportionate returns on equity that is currently enjoyed would be removed.

Introduction of a reconfigured demand system

KiwiBuild's move towards smaller and lower-cost houses should be complemented with a reconfiguration of the demand system. As this stock becomes available, retirees who are occupying oversized houses should be given a high level of priority. This has been a successful practice on the part of the Exeter City Council in the UK, which used a band status within its downsizing initiative (ECC, 2011). This system, when supported by financing incentives, was successful and efficient in releasing 330 properties to families who needed the larger houses (Kumah, 2012).

Disabled and more vulnerable elderly should also be afforded a level of priority within this demand system. Adaptions to large properties can be more expensive than fittings in downsized properties. Downsizing itself also has the capacity to provide a better quality of life to vulnerable elderly who struggle with day-to-day tasks (ECC, 2011). The onus could be placed on both Ministry of Health and ACC assessors to ensure that tenants whose needs can be better met in a smaller household are placed on this register. This frees up stock for younger generations while at the same time providing more suitable accommodation to retirees.

Financial incentives

Despite the number of retirees living in underutilised properties, it is surprising that there exists no tax or financial incentive at the local government level to downsize. Just under 80% of the older generation aged 60 and above own their own homes (Statistics New Zealand, 2014). These individuals are unlikely to want to release their asset-rich properties in exchange for future building and moving costs. For that reason, a financial incentive is required that combats any scepticism surrounding moves to more suitable accommodation (Mayhew, 2019).

This could be achieved through reducing council rates for the elderly in areas with high density one–two bedroom households. Councils have a certain level of discretion in determining residential rates. Auckland, which has among the highest density of one–two bedroom households, also has the highest average residential rates of $3,387 a year (Taxpayers' Union, 2019). In localities that have the capacity to house the elderly with smaller dwelling needs, it makes sense to reduce this liability for that demographic (Mayhew, 2019).

Council subsidies can also be used to ensure that those who need support and assistance to downsize are provided with it. Once retirees are confirmed as seeking more appropriate housing options, cash incentives can be provided to facilitate the move. Under the Exeter City Council downsizing initiative, incentives were allocated according to factors such as the size of the property being released, the condition of the property and the circumstances of the new property owner (ECC, 2011). The cash incentive should primarily be targeted to removal expenses, but will in turn ensure that a smooth transition is offered to elderly in the process of freeing up housing stock.

Conclusion

There is intergenerational inequality regarding access to affordable housing in New Zealand. The baby boomer generation had access to the property market prior to the housing crisis, when demand did not outstrip supply. The situation is different for millennials, who have experienced substantial decreases in home ownership rates and are subsequently subject to much longer periods of renting. One result of this is that large dwellings that are more suited to young and expanding families are largely controlled by the older generation.

As identified, a means to phasing out this generational discrepancy is offered through downsizing. The absence of a capital gains tax has left retirees with an incentive to retain unnecessarily large houses late into retirement. This distortion should therefore be removed and replaced with incentives to move to more appropriate smaller dwellings. To free up this larger housing stock, a demand system needs to be incorporated into the KiwiBuild process. This could be supported with financial incentives that counter any reluctance to release asset-rich properties post retirement.

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Nick Wilson

Fixing the housing crisis: the role of intergenerational policy design in addressing the issues

This article looks at the intergenerational issues associated with housing in New Zealand. Election year is again upon us (Covid-19 permitting) and, with the problems surrounding KiwiBuild, housing affordability is under the spotlight. It is no secret that New Zealand has a housing affordability problem and many causes are feeding this.

Two of these causes – capital taxation inconsistencies and infrastructure issues – will be the focus of this article. Inconsistencies in the taxation of capital income are a major source of the problem, causing intergenerational transfers from younger to older generations. A land tax is a possible solution. Complementary policies targeted at addressing infrastructure bottlenecks also have an important role to play.

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Some causes of high property prices

Capital taxation inconsistencies are an important cause of high property prices. Andrew Coleman (2018) discusses – with specific emphasis on the 1989 changes – how the current composition of New Zealand's tax system contributes to the predicament we are faced with.

The 1989 tax reforms created conditions in which property income became taxed at lower rates than income on other assets, giving property income a relative tax advantage. Owner-occupied housing became taxed relatively lightly, and residential landlords who borrowed to invest also received a significant effective subsidy under the new conditions. Meanwhile, even the inflation on interest-earning securities became taxed, which caused real investment income tax on these to be very high. This

disjunction caused people to overinvest in property, driving up property prices to an artificially high level – New Zealand's inflation-adjusted post-1990 property prices increased faster than those in other countries for which similar data exist – and these changes are believed to have contributed to that.

Most theorists agree that, in situations where the price elasticity of the demand for property is not extremely high, as is the case in New Zealand, circumstances in which property taxes differ from taxes on income from other assets will cause the property prices to capture the differences, and this appears to have eventuated. While homeowners at the time of the changes benefited, this created a negative intergenerational transfer to non-homeowners and to all younger generations in the form of artificially high property prices (Coleman, 2018).

A separate cause of high property prices relates to the fundamental economic concepts of supply and demand – the supply/demand ratio is too low. Therefore, an obvious fix would be to build more houses, as KiwiBuild has attempted to do. This begs the question, even if we ignore KiwiBuild and its failures, why are more houses not being built? The main problem appears to be the presence of unnecessary barriers to development. Evidence from the United States suggests that the ability to more easily build upwards and outwards correlates with more affordable housing and vice versa (Darning, 2017). Many factors in New Zealand make such expansions far from easy, and much of this relates to restrictions and perverse incentives facing local and regional councils. One such perverse incentive relates to infrastructure.

Infrastructure issues inhibit councils from approving developments. The relative power and influence of central government on public policy is very high in New Zealand. Apart from rates, councils do not have any significant sources of income. To adequately maintain and create the infrastructure needed for development, councils would need to increase rates or cut spending on other local projects, or both. None of those options would be politically popular. Even just maintaining existing infrastructure is already proving difficult (Krupp, 2015).

Most theorists agree that, in situations where the price elasticity of the demand for property is not extremely high ... circumstances in which property taxes differ from taxes on income from other assets will cause the property prices to capture the differences, and this appears to have eventuated.

Based on these factors alone, councils are hardly going to be proactive in supporting development. There are, of course, other influences at play as well. One of these is the Resource Management Act, widely considered to be a central issue restricting housing development; another is 'not in my back yard' (NIMBY) opposition to residential development.

A land tax solution

Even just highlighting two of the many causes of high property prices indicates that change is necessary. Just as there are many causes, there are also many different options that can be used to address the issue. One option that may be more viable than others (if implemented correctly) is a centrally levied land tax; this can help counter both of the aforementioned causes.

First, a land tax can be used to tax residential property, which, it has been argued, is relatively lightly taxed. In New Zealand's housing market, where the price elasticity of the supply of housing is low, this would reduce the relative tax advantage of residential property over other capital assets (Coleman, 2018). Therefore, the extent to which property is over-invested in, driving prices up to artificially high levels, would also be reduced.

In addition, if it is implemented correctly, increased tax revenue that stems from the land tax can help reduce property prices. Putting the extra tax revenue into infrastructure investment could offset the extent to which infrastructure is currently underinvested in. Because housing developments need this critical infrastructure, councils – despite still facing other incentive issues – will be more inclined to approve developments that they may not otherwise have approved, making it easier to build (Crampton and Acharya, 2015). As a consequence, the supply of housing would increase, resulting in enhanced housing affordability.

The benefits

While other policy options for addressing this issue are available, a land tax has many benefits. A capital gains tax is one option that has often been proposed, but this has been rejected by the current, Labour-led government, partly due to its political unpopularity (Bowker, 2019). Meanwhile, flat-rate property taxes can behave similarly to capital gains taxes in this context (Coleman, 2018). Rosen (1982) highlights more generally, in an overseas context, how these property taxes can be effective. With land tax working in effectively the same way, it is a potentially more palatable substitute for a capital gains tax.

Younger cohorts would likely support a land tax for the same reasons that many take out student loans: while they would pay more in the future, it would be better to benefit from reduced property prices now, to put them in a more stable position where they are more able to pay in the future. A land tax is also a win in both equity and efficiency terms. Land is a form

of wealth and the burden of the tax tends to fall mostly on landowners, making it equitable (Coleman, 2018). While many equity gains come at the expense of efficiency, land is fixed and exists whether it is taxed or not, making the price elasticity of supply inelastic. This minimises the deadweight cost, making it efficient, too. These factors are likely to make a land tax relatively popular.

The issues

Despite the potential relative popularity of this option, there will be issues and objections. Property owners stand to lose from land taxes (ibid.). That land taxes are more appealing than alternatives will not stop people opposing change altogether in order to retain high property prices.

People who became property owners post-1989 could get the double negative of buying at an artificially high price and then having to pay land taxes and would want to avoid this. Pre-1989 owners who still own that property would also want to retain the intergenerational transfer that has benefited them – a classic example of different cohorts' interests clashing and providing a friction that slows or stops policy change even if it may produce a net benefit.

Self-interest will lead to inevitable opposition, which is quite likely to carry political influence, especially when supporting emotive arguments are available. The prospect of grandma losing her family home because of being unable to pay these taxes is something that opponents of such taxes would be stupid to ignore.

In addition, the current tax terms of reference rule out land tax on owner-occupied housing. Retaining this prohibition would create distortions and undermine the effectiveness of the policy (ibid.).

Overcoming the issues: intergenerational design considerations

The extent to which these issues would affect a land tax being introduced would determine what design and implementation measures would need to be taken to give effect to it. The simplest case is that it would be sufficiently supported on its own merits, in which case the best course of action would be to merely remove the part of the terms of reference that prevents owner-occupied housing being included. Regardless of other measures, this removal would be necessary to ensure the effectiveness of the land tax. However, given that political considerations are a major issue with land taxes, matters may be more complicated (ibid.).

> Capital taxation inconsistencies, caused by the 1989 tax changes that created an intergenerational transfer from younger to older generations, along with infrastructure issues have contributed significantly to the house price problem and land taxes are a potential option to address this issue.

While specific issues, such as elderly people not being able to afford to keep their family home, could be solved by products such as reverse mortgages, this is unlikely to satisfy opponents. If opposition from homeowners would otherwise preclude land taxes from occurring, consideration of how to win them over is necessary for the sake of younger generations, and intergenerational policy can be utilised for this purpose. While easier said than done, the blackboard ideal would be to strike the right balance by which you give just enough to potential opposition to reduce their fightback such that political sustainability can be achieved.

In terms of designing intergenerational policy, there are many options that could be developed that would have different pros and cons. One option is a cohort-based policy that would simply exempt from the tax (until the owners' deaths or for a stated number of years) pre-possessed property owned by people born prior to a certain year (at the time of the change announcement). As older people tend to have higher home-ownership rates, this would likely reduce the opposition to such changes from these exempted people, which might be enough to get the required political support.

Restricting the exemption to pre-possessed property also restricts loopholes such as people getting their parents to purchase property on their behalf. A downside of such a policy is that this further favours people who have likely already had intergenerational benefits in the form of gaining from the 1989 tax changes at younger cohorts' expense. It would also slow the effect of the change to a more gradual pace. Yet, if compromise needs to be made to enable change, such options are worth exploring.

This is just one of many potential interventions that could be explored. The purpose of such explorations is not to definitively convince people that any specific idea is a good one. Any idea would need to be assessed in terms of what specific figures, ages or time frames (or any other desired measures) would be appropriate to maximise the effectiveness of the land tax policy, and ideas would need to be compared based on the resulting information.

The purpose of this example, rather, is to highlight that there are options for engaging in constructive intergenerational conversations about public policy. Such conversations could help reduce intergenerational tensions that could otherwise prevent the development of enduring beneficial policies. It is also to give an indication of some of the necessary considerations.

Some may still point out the tendency for arbitrariness in deciding age, cohort or

generational cut-offs in designing intergenerational policy; people in similar circumstances may well face different obligations or exemptions. Yet, as evidenced by the highlighted downsides in the above example, this may be a necessary cost of introducing and sustaining a policy that is expected to produce a net societal benefit. It is a rare policy that leaves everybody winning and nobody losing.

Conclusion

It is clear that New Zealand faces a large housing issue, one that is intergenerational in cause and can also be intergenerational in solution. Capital taxation inconsistencies, caused by the 1989 tax changes that created an intergenerational transfer from younger to older generations, along with infrastructure issues have contributed significantly to the house price problem and land taxes are a potential option to address this issue. Yet land taxes do not come without their perceived deficiencies. Nevertheless, the contribution of such interventions to intergenerational equity, despite not being ideal, may help overcome some of these objections, towards restoring house prices to more affordable levels.

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Liana Allan

Reforming capital income taxation to improve housing affordability

New Zealand's distortionary tax environment for housing imposes large costs on young people. Since 1989, New Zealand has taxed owner-occupied housing more lightly than other forms of capital income. In contrast, retirement savings have been taxed heavily. This combination has created a bias towards owner-occupied housing, encouraging homeowners to live in higher quality properties than they would under a neutral tax system, and bid up the price of land located near desirable amenities.

While existing, often older homeowners have enjoyed high land and house values, our generation has faced artificially inflated house prices. Distortionary capital income taxation has contributed to New Zealand's housing affordability crisis.

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Forms of capital income taxation

Capital income can be taxed on three bases: exempt-exempt-tax (EET), tax-exempt-exempt (TEE) (both expenditure taxes), and tax-tax-exempt (TTE) (an income tax). Most OECD countries adopt an EET scheme for retirement savings. Under this scheme, income is not taxed when it is earned or accumulating in a retirement savings fund, but instead taxed when the balance is withdrawn at retirement.

Owner-occupied housing in New Zealand is taxed on a TEE basis. This means income used to purchase a house is taxed when it is earned, but imputed rent and capital gains are not taxed. New Zealand taxes retirement savings in KiwiSaver, rental properties, shares and other assets on a TTE basis. This means income is taxed

when it is earned and as it accumulates, but not when it is withdrawn and spent. To tax capital income neutrally, a country needs to tax retirement income accounts on a TTE basis, tax all capital gains on an accrual basis, and tax the imputed rent from owner-occupied housing (Coleman, 2017).

Taxation of KiwiSaver

The income tax treatment of KiwiSaver significantly reduces the returns individuals receive from saving. Income taxes impose a greater tax on future consumption relative to current consumption, creating a bias towards current consumption and discouraging saving. This effect is exacerbated when the compound returns from an individual's KiwiSaver account occur over a long period, as is the case with young people (Neilson, 2018).

The inflation component of interest income is also taxed. As a result, real interest earnings are taxed at above nominal rates. Taken together, an individual with an effective 28% prescribed investor rate (PIR) who saves for 50 years in KiwiSaver would pay an effective tax rate of 58% (Financial Services Council, 2013). Indeed, taxes saved over a lifetime as a percentage of retirement saving contributions in New Zealand are the second lowest in the OECD (OECD, 2018). This makes KiwiSaver relatively unattractive compared to investment in owner-occupied housing.

Consequences of New Zealand's tax treatment for owner-occupied housing

The expenditure taxation of owner-occupied housing since 1989 has incentivised owners to bid up the price of land located near desirable amenities. It has also encouraged households to live in houses that are approximately 25% higher quality than under a neutral tax system.

The size of newly constructed housing was stable from 1980 to 1988, then increased sharply after the 1989 tax changes, and much faster than in Australia or the United States (Coleman, 2017). This evidence aligns with the theoretical literature. Feldstein (1977) showed that tax incentives favouring housing are capitalised into higher house values, reducing the welfare of future generations.

An example helps to explain how the tax system incentivises owners to bid up the price of housing. I am willing to pay $20,000 extra to live in Thorndon instead of Lower Hutt. Thorndon is close to my job and other activities I enjoy doing, with the added benefit of less money and time spent on transport. How much more I am willing to pay to live in Thorndon is inversely related to interest rates. If interest rates were 4%, I would pay $500,000 to get a $20,000 benefit. $500,000 would be the capitalised land value under a neutral income tax system. However, under New Zealand's non-neutral tax system, this value is capitalised into an amount approximately twice as high for conveniently located land (Coleman, 2017). This is particularly evident in Wellington, where a low supply of conveniently located land has led to students and young professionals struggling to find a suitable place to live.

> A cap on maximum contributions and eligibility based on birth date would help to reduce the fiscal costs of transitioning to this scheme.

Older New Zealanders have enjoyed higher house prices, which are likely to be at least partly attributable to New Zealand's distortionary tax system. The literature and empirical evidence demonstrate that young people have continued to face artificially high house prices. New Zealand is the only country with an EET scheme for owner-occupied housing and a TTE scheme for retirement savings. Virtually all other OECD countries have an EET scheme for retirement savings (OECD, 2018).

There is no evidence that New Zealand's capital income taxation is not harming young people. On the contrary, it is increasingly difficult for young people to buy their first home. Even if we address supply issues and other problems which contribute to high house prices, the tax system will continue to impose significant costs on young people. Tax system reform would address the intergenerational inequity of the 1989 tax changes.

How can we address this issue?

Returning to expenditure treatment of KiwiSaver would best address the root cause of the tax distortion, and in turn reduce house prices. EET treatment of KiwiSaver would provide individuals with another tax-advantaged investment, reducing the bias towards owner-occupied housing. This could incentivise people to hold more income in KiwiSaver instead of saving in other ways, such as through a business.

In a scheme where all capital income is taxed at the same rate, this would represent a new distortion. However, as the government currently taxes capital income at different rates, an EET scheme could reduce the proportion of capital income taxed at very high rates by improving average pre-tax returns (Coleman, 2019). An expenditure tax regime for KiwiSaver could reduce the demand for housing and house prices, without sacrificing economic efficiency.

In a scenario where house prices fall by 15% due to an EET scheme for KiwiSaver, renters and owner-occupiers with limited equity would save on rent and mortgage interest costs. Assume a house costs $600,000, and its value appreciates at 1% each year. Under a TTE scheme, a renter pays $23,428 in rent (Coleman, 2017). An owner-occupier with 50% equity pays $15,000 in mortgage interest. If an EET scheme reduced the price of this house to $510,000, the renter would pay $19,914, while the owner-occupier would pay $10,838. This is a 15% decrease in housing costs for the renter, and a 28% decrease for the owner-occupier.

This fall in housing costs would make it feasible for young people to find suitable housing. An EET scheme may be seen as regressive (Savings Working Group, 2010). Higher income people would disproportionately benefit from the reduction in tax rates, as they are normally

able to save more of their income. However, low- to middle-income earners are less likely to be able to invest in lightly taxed assets such as housing, and more likely to invest in highly taxed KiwiSaver accounts (Coleman, 2019). As an EET scheme would reduce tax on KiwiSaver, it may be less regressive than initially thought.

The transition to an EET scheme needs to be effectively managed. The government would experience an initial fall in tax revenue, as it would not receive any revenue when income is first placed into KiwiSaver, nor from compounding returns. However, these costs would be offset by the tax revenue received when individuals withdraw their balances (Coleman, 2019). This transitional cost could be managed by borrowing more or removing the member tax credit (Inland Revenue, 2020). Additionally, a limit on maximum contributions should be set to manage the fiscal cost of the scheme (Tax Working Group, 2018). This will prevent high-income individuals investing all their funds in KiwiSaver to enjoy its tax-advantaged status.

To reduce transitional costs, only those born after a certain date could be eligible to receive expenditure taxation of KiwiSaver (Coleman, 2019). For example, only those born after 1986 could be eligible for expenditure taxation to reflect the average first home purchase age of 31–34 (Wilkes, 2019). Anyone born before 1986 would continue to fall under the old TTE scheme. This would prevent older homeowners benefiting from higher house prices as well as more generous retirement income tax treatment.

Young people have borne the brunt of the artificially high house prices the tax system has contributed to. Homeowners have built larger, higher-quality houses, and bid up the price of conveniently located land. The tax-advantaged status of owner-occupied housing relative to KiwiSaver has incentivised this.

No other country has followed in New Zealand's footsteps after the 1989 tax changes, recognising the significant costs this system imposes on young people. Returning to expenditure treatment of KiwiSaver would be the most direct way to address this issue, as it would provide another tax-advantaged savings vehicle. A cap on maximum contributions and eligibility based on birth date would help to reduce the fiscal costs of transitioning to this scheme. Reforming capital income taxation is crucial to reducing house prices so more young people can purchase their first home.

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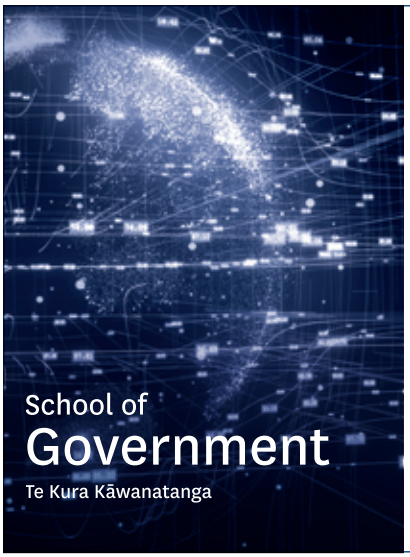

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Paul Blaschke

Integrated land use options for the Aotearoa

New Zealand low-emissions 'careful revolution'

Abstract

The Climate Change Response (Zero Carbon) Amendment Act 2019 is a welcome start on the path towards a low-emissions future for Aotearoa New Zealand, but it is not much more than a set of targets and some tools. There are also so many potential alternative tools and processes now on offer that we face the additional significant risk of an unsystematic effort, without enough focus to secure an optimal pathway. Most of the needed tools and processes involve decisions about land use. This article outlines various options for well-integrated land use policies for Aotearoa New Zealand that in sum attempt to address the land use-related low-emissions challenge in a coherent way. The analysis is built around seven key integrative themes: an Aotearoa New Zealand world view and identity; sustainable low-emissions dietary and nutrition policy; integrated lower-emissions farming, forestry and freight transport; natural capital's contribution to wellbeing; integrated catchment approaches; resilient cities; and meta-integration. Without significant effort on the integration of these and many other components of the required 'careful revolution', the revolution will be neither careful nor successful.

Keywords land use, New Zealand, environmental integration, catchment scale, just transition, carbon emissions reduction

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With the passage of the Climate Change Response (Zero Carbon) Amendment Act 2019 (the Zero Carbon Act), Aotearoa New Zealand is now hopefully on a pathway towards a low-emissions future. But the act does not provide a map for the journey; it is not much more than a set of targets and some tools. The recent book *A Careful Revolution: towards a low-emissions future* (Hall, 2019) offers much useful guidance on aspects of the changes required, coming from a refreshingly wide range of contributors and perspectives. Principles of intersectoral and intergenerational justice permeate the contents, especially the concept of a 'just transition',[1] as does an appreciation of the many types of risk and disruption that must be addressed. Partly because of this welcome diversity of approach, however, its messages are not comprehensive and not always clearly coherent.

A plethora of government and private initiatives, including several national policy statements under the Resource Management Act (RMA), reform of the RMA itself, the One Billion Trees programme, the Emissions Trading Scheme (ETS), the 'Action for healthy waterways' plan, post-Treaty of Waitangi settlement programmes, a new national Biodiversity Strategy and more, offer a superabundance of potential policy and implementation vehicles to assist the journey. The current government's wellbeing agenda and the Treasury's Living Standards Framework represent further approaches to a more sustainable and resilient future. In fact, there are so many potential vehicles and guidance systems now on offer (many of them untested and seemingly not integrated) that we face an additional significant risk on this critical journey: a scattering of effort, without enough focused intellectual, political or financial resource available to ensure an optimal pathway.

Most of the initiatives mentioned involve decisions about land use. I offer here a personal commentary on some options for land use policies for Aotearoa New Zealand that in sum attempt to address our critical low-emissions challenge in a consciously integrated way. Without significant effort on the integration of the components of the required 'careful revolution', the revolution cannot be considered careful, nor will it be successful. An additional reason for a land use focus is that this sector (especially agriculture, forestry and nature conservation) is among the most politicised in Aotearoa New Zealand and most vulnerable to interest group lobbying. There is a real need, therefore, to take a carefully integrated approach which anticipates the likely kinds of social pushback to transition policies.

The background to this commentary is the legacy of colonial and post-colonial changes in land use that have led to the current land use pattern.

A need for integration in land use policy has been long recognised, but is not handled well in the RMA despite it being specifically required under several sections (Bührs, 2009; Resource Management Review Panel, 2019). Given that the RMA is our main statute for planning land use, this is a serious obstacle to better integration.

The theme of environmental integration related to land use has been discussed by Bührs (2009) and Perley (2018). Bührs calls this type of integration 'green planning', which he regards as an overarching, mainly national-scale policy framework to guide the development of all kinds of policies that may have a significant impact on the environment. Bührs' focus helps to promote a systems approach to environmental policy applied to wicked problems such as the climate crisis. It also reflects the realisation that humans and human institutions are a part of nature and operate within planetary boundaries. Perley uses a landscape systems framework to illustrate his assertion that 'if we want to understand and act wisely, we need to synthesise as much as we analyse'.

The background to this commentary is the legacy of colonial and post-colonial changes in land use that have led to the current land use pattern. Although our per capita fossil fuel emissions are somewhat lower than those of comparable OECD countries,[2] our total per capita emissions are much higher than the global average because of unusually high biogenic emissions (Ministry for the Environment, 2019), as discussed below. The recent pattern is of agricultural intensification but continued dependence on commodity production, leading to a desperately concerning failure to reduce greenhouse gas emissions. We are also experiencing persistent biodiversity losses in all types of environments, and high levels of freshwater pollution, soil loss and sedimentation.[3]

As this article was being finalised, the Covid-19 pandemic was still rapidly expanding worldwide, and Aotearoa New Zealand was in the early stage of its Level 4 lockdown. Comment was beginning to emerge on the recovery phase,[4] including the need for the economic recovery to be planned and supported in a way that builds in less carbon-intensive growth, and at the same time is equitable and offers support to people in declining sectors. The needs of 'just transition' mentioned above will be equally critical for the required Covid-19 recovery. In the conclusion I offer a brief postscript highlighting some aspects of a low-carbon Covid-19 recovery phase in the land use sector.

What could constitute a 'careful land use revolution' in Aotearoa New Zealand? Seven strands of integration

Aotearoa New Zealand world view and identity

Any appropriate integrated response to the low-emissions challenge requires an integrated and evidence-informed world view, outward-looking but shaped to the history and environment of Aotearoa New Zealand in the 21st century. An excellent basis for this is provided by the seminal Waitangi Tribunal Wai262 report concerning ownership of and rights to

mātauranga Māori (Māori knowledge systems) (Harmsworth and Awatere, 2013), in respect of indigenous flora and fauna (Waitangi Tribunal, 2011). Over a protracted hearing period, the Tribunal's inquiry widened from the traditional resource management and conservation sectors into many intersecting sectors such as health, education, intellectual property and commerce. It thereby became the Tribunal's first whole-of-government report, recommending wide-ranging reforms to laws and policies affecting Māori culture and identity and calling for the Crown–Māori relationship to move beyond grievance to a new era based on partnership.

Essential concepts traversed included the interpretation of land and sea 'resources' as taonga, and the viewing of humans as integrally bound to and part of the environment, as vividly expressed by the whakatauki 'Ko au te awa, ko te awa ko au' ('I am the river, the river is me').[5] This report and its recommendations provide a vivid, integrated and sustainable view of how our land and water taonga could best be used.

Notably, there has been no government response to the report in the years since it was issued.[6] The report has been hugely influential nevertheless, its ideas and recommendations permeating landmark partnership settlements such as for Te Urewera and Te Awa Tupua (Whanganui), both incorporating the concept and legal right of personhood conferred on elements of the environment.

Aotearoa New Zealand-appropriate technology and knowledge

Appropriate knowledge is required in order to develop the means of expressing the world view referred to above and shaping it towards the low-emissions challenge. Mātauranga is an integral part of such knowledge and can be used productively in conjunction with Western, Aotearoa-adapted scientific knowledge. For example, mātauranga incorporates ecosystems and ecosystem service concepts (Harmsworth and Awatere, 2013), as well as intimate knowledge of taonga species not expressed within Linnean nomenclature. These productive relationships are increasingly underpinning recent environmental research programmes such as the New Zealand Biological Heritage National Science Challenge, Ngā Koiora Tukuiho.

A large and increasing body of research indicates important human health co-benefits from a diet that is richer in foods produced with a lower fossil fuel input … compared with foods produced with a higher fossil fuel input …

An example of where integrated Aotearoa-specific knowledge is particularly relevant is within the new forestry agency Te Uru Rākau. Te Uru Rākau is positioned within the Ministry for Primary Industries, so that forest policy is developed within a broader land use framework. Aotearoa-specific technical knowledge is required, for example, for feasible wood processing options, end uses of tree products and responses to invasive species, including soil pathogens. Technical knowledge must be integrated with social and economic research to ensure effective outcomes. Such integrated knowledge is necessary for developing forestry-related emissions offsets with a high degree of permanence, including possible end uses of timber. All this requires innovation in both knowledge acquisition and implementation into land use systems. The whole journey from knowledge to technology to implementation is an iterative social process of engagement and knowledge transfer.

Sustainable low-emissions diet and nutrition policy

A very large reduction in Aotearoa New Zealand agriculture-related emissions is needed. This must be achieved while people's dietary and health needs are equitably met and there is food security (IPCC, 2019). It is a critical component of a just transition towards a low-emissions future (Huggard, 2019).

A large and increasing body of research indicates important human health co-benefits from a diet that is richer in foods produced with a lower fossil fuel input (such as most fruits, vegetables and pulses), compared with foods produced with a higher fossil fuel input (such as meat and dairy products). From both an environmental and a health perspective, these principles imply that New Zealanders should eat much less meat than we do currently on average, but not necessarily no meat. Meat products are not the only high climate-impact foods, and not all meats have a high climate impact (e.g. poultry) (Drew et al., 2020). Food production systems that require high levels of water input (mainly through irrigation) can also have a large climate impact and in turn become highly vulnerable to climate change impacts.

How closely should food exports mirror domestic food production and consumption? Thinking about Aotearoa New Zealand's international trading position as a significant food exporter, as well as global food security and equitable global nutrition considerations, there is a continuing requirement for animal-based and dairy-based protein; and in some cases it is environmentally, as well as culturally and/or nutritionally, appropriate for this to be meat protein.

From a climate response perspective, if there is a role for food exports these must be high-value and relatively low climate-impact (Saunders and Barber, 2008). The higher emissions of our long-distance transport costs must be offset by lower climate-impact production systems. Exports to countries closer rather than further away should be favoured: for example, Asian Pacific Rim countries. It is hard to see a large future role for air-transported food exports.

Technology and knowledge have a critical role in achieving low-emissions diets and food production. Aotearoa New Zealand has been a significant exporter of innovation for many agricultural sectors, and its role in researching greenhouse gas reductions in pastoral agriculture has also been significant,[7] with potential for further large reductions. Integrated reduction of food waste at points of production and consumption, for both domestic and export agricultural produce, is also an important component of reducing agriculture-related greenhouse gas emissions (Drew et al., 2020), closely tied to reductions in the transport sector (see below).

> … an adequate price on emissions is fundamental not only to enable a low-emissions transition, but also to maintain natural capital in the low-emissions future.

Farming, forestry and freight transport in the low-emissions economy

Agriculture, forestry and associated freight transport should be considered together because transport emissions associated with agricultural and forest production and processing are large but not incorporated into those sectors in Aotearoa New Zealand's emissions inventory system (Ministry for the Environment, 2019).

Some form of meaningful price for all primary production greenhouse gas emissions is fundamental to lowering those emissions, as now recognised in the Zero Carbon Act and the ETS.[8] The bottom line in these sectors is that, overall, many more trees are needed, both native and introduced, because of their potential for greenhouse gas storage and erosion reduction, and the need to halt native biodiversity decline. To achieve these higher-level aims, the One Billion Trees programme and Te Uru Rākau slogan 'the right tree in the right place for the right purpose' are complementary.

Commercial forests, including those using native species, have a role in the ETS. Exotic tree plantations[9] can have a valuable role for employment, trade, building and erosion control, subject to adequate and well-enforced environmental controls, especially in the harvesting phase. An integrated production landscape will include various types of longer-term continuous and discontinuous canopy, including conservation areas, farm woodlots, shelter belts and agroforestry systems, covering steep as well as rolling and even flat land (Meurk and Swaffield, 2006).

Contributory measures would include the provision of efficient renewable energy for all possible agriculture and transport uses, both road and rail (through greater use of electric vehicles, including for freight,[10] and rail electrification); and reduced overall sector transport demand, initially and urgently to no net growth. The objective should be that fossil fuels are reserved for heavy freight transport and essential infrastructure needs during the transition period.

Farming and forestry: carbon targets

A feature of the Zero Carbon Act is the split in the emissions target between biogenic methane and other greenhouse gas (mainly fossil fuel-derived) emissions targets.[11] Although the split target appeared to be largely a political response in order to gain greater consensus for the act, there are also valid environmental reasons to support a split target, as discussed by the parliamentary commissioner for the environment (2019). The commissioner's discussion takes account of necessary scale considerations for an integrated landscape approach. For example, the 'ideal' balance between farming and forestry for equitably reducing emissions would range in scale from the local to the national depending on many factors, including: the nature of the land resource (see next section); projected economic returns on different land use options; proportions of animal numbers; distance from markets or ports; labour and infrastructure requirements for each potential land use; and social and cultural factors. Landowners in specific localities remain the best placed to take all these considerations into account, but need to face an environmentally realistic price on emissions.

The parliamentary commissioner for the environment also considered the potential roles of carbon offsets, recommending that access to forest sinks as offsets be allowed 'only for biological emissions'. In his view they should be used as a temporary last resort measure to offset fossil emissions, and only those sinks with a high degree of permanence, including timber end uses, should be counted. Essentially, however, all offsets in the sector are trade-offs and not in themselves problematic as a means to an end if they result in an overall reduction in net emissions in a well-integrated manner – for example, to take account of regional social needs and avoid inappropriate whole-farm conversions. Overall, by considering the purposes of split targets, the appropriate uses of offsets and the importance of scale considerations, the commissioner's report achieves a rare degree of integrated systems thinking for this sector.[12] His conclusions reinforce the 'right tree, right place, right purpose' principle again. The principle makes a direct contribution to sustainability and resilience in its immediate land use context, as well as contributing to carbon sequestration. Landscape-integrated woody vegetation serves many purposes.

Natural capital's contribution to wellbeing

Protecting natural capital as the basis for economic and societal resilience is a fundamental tenet of an integrated sustainability framework, and this must be maintained during and beyond the transition to a low-emissions future. The focus here is not just on the land component of natural capital, but on all the components of the environment: land, water, soil, plants, animals and microbes, mineral and energy resources.

Economists have long grappled with how to express and make real the values of ecosystem services.[13] Markets do not adequately provide for these values, so there is a case for statutory approaches,

such as land or water management standards, or a zoning approach that enables recognising and protecting diverse ecosystem services.

As noted earlier, an adequate price on emissions is fundamental not only to enable a low-emissions transition, but also to maintain natural capital in the low-emissions future. This economic tool could lead to a revival of 'old' land uses that generate lower emissions while providing high-value or niche products, such as wool, manuka and honey bee crops, and plantation trees for timber construction as opposed to log exports.

Incentives for development, such as the Provincial Growth Fund, must be shaped to value natural capital and enable appropriate capital investment. Disincentives for unproductive capital investment, such as a capital gains tax, may be necessary even if unpopular. The insurance and investment sectors have a vital role to play to channel investment, providing low-cost capital to enable landowners to invest in new assets and management systems, and informed market signals of emissions-related risk (Whineray, 2019).[14]

We must also consider how tourism will be positioned in the transition, as it is a land use driver in its own right as well as a key economic sector. To continue this role in a low-emissions future, tourism must be at appropriate scale, and may contract under the Zero Carbon Act. International tourism, in particular, may move to become a niche high-value product for those who can afford the carbon charges of international travel when aviation fuels eventually attract a charge or levy (Parliamentary Commissioner for the Environment, 2020). This is true also for the outward tourism of New Zealanders, so the counterpart of less international tourism is likely to be more domestic tourism, with lower net emissions.

Overall, a wellbeing approach is highly integrative and implies a quadruple bottom line: recognition of natural, cultural and social capital and performance alongside economic capital and performance. To expand on a conventional triple bottom line approach, value is derived for all the components of people, planet, prosperity and purpose (including spiritual and cultural components).

> The concept of 'just transition' ... is in itself integrative by involving many sectors, including the land use sectors

Integrated catchment approaches: ki uta ki tai (mountains to sea)

A catchment-based approach to land use planning and management is a logical basis for integrated management because it recognises the principle that all landscape processes occur in natural catchment systems (Perley, 2018), and that human management that recognises this physical setting is more likely to achieve integration.

In Aotearoa New Zealand our often steep catchments are visible and intuitive units of land management. This realisation makes easier the objective of matching land use and land management to land capability while adapting land use to a lower-emissions framework. Farming according to land capability is a further expression of the 'right tree in the right place' approach, which should be extended to the notion of 'right crop and animal in the right place'. Aspects of integrated catchment-based management still exist in local government organisations; these can be built on and extended to current or future developments to enable low-emissions land management to be widely adopted. For example, in the Wellington region, Whaitua implementation programmes[15] are being developed by catchment-based community groups in order to implement water management objectives in regional plans.

A catchment-based approach and the matching of land use and land capability is the key to adapting to climate variability, now and into the future. In many regions, climate adaptation will include more attention to and preparedness for increased fire hazards. The catchment scale is also appropriate for recognising the inclusion of nature conservation as a land use: managing threatened ecosystems and species and integrating many local or regional biodiversity programmes and projects with land management in a catchment, all planned with a view to a low-emissions future. All these aspects can powerfully come together in an integrated catchment management plan methodology (Marshall, Blackstock and Dunglinson, 2010).[16]

Catchment-based soil conservation, which has a relatively long history in Aotearoa New Zealand, is a key implementation methodology for matching land use to land use capability (Roche, 1994). Maintenance of intact soils and soil quality is essential to maintaining farming use and food-producing potential in the face of variable and changing climate. Soil conservation during forest establishment and harvesting is also a key requirement of any wood production system. Generally, production management on our very widespread mountain and hill lands is sustainable under only very light and conservative land uses everywhere.

Avoidance of soil erosion and sedimentation is also the key to mitigating many water quality problems currently experienced in Aotearoa New Zealand, as sediment is among the worst and most pervasive pollutants in waterways. Freshwater quality and availability are intimately linked to land management. In spite of some initiatives under the National Policy Statement for Freshwater Management, systematic problems for freshwater remain, including a lack of clear goals and the need to integrate potentially conflicting goals.

A suite of methods under the rubric of 'regenerative agriculture' offer conservative, low-input methods for maintenance of soil quantity and quality, as well as retaining the ability of intact soils to sequester carbon. A regenerative agriculture approach is also essentially integrative in character in requiring soils, vegetation and animals to be managed within a land systems framework. Relatively low-input farming was the norm in Aotearoa New Zealand farming systems until recent

decades, and elements of regenerative farming are still common,[17] but an increase in intensity and accompanying fossil fuel dependence has been evident for some time (Parliamentary Commissioner for the Environment, 2004). As the parliamentary commissioner for the environment pointed out in 2004, low-input farming is not necessarily inefficient or unprofitable. Nevertheless, in an era of high land values and capital servicing costs, more explicit valuation of natural capital and the environmental cost of high-emissions farming may be required in order for its efficiency to be profitable.

Resilient cities

Why should urban areas, with less than 1% of Aotearoa New Zealand's total area, be a focus of integration? Urban areas and their more extensive peri-urban surrounds provide the habitat and most of the food, ecosystem and wellbeing benefits for nearly 90% of the national population; most of our gross national domestic product is produced in cities; and they are growing rapidly in extent. Denser urban populations offer generally easier low-adaptation opportunities and more resources available to implement these opportunities. Urban land uses must therefore be included among the integrated land use mosaic for a low-emissions future.

Extensive rural areas occur around and even within the boundaries of many Aotearoa New Zealand city council administrative areas and provide rural uses and services. Peri-urban areas offer critical transitions between urban and rural environments; they are also an important focus area for horticulture, currently around 1.5% of total land area. This land, if not lost to urban expansion, offers potential to maintain or expand horticulture, including products with high value and relatively low volume, and thus potential export priorities in a low-emissions future. But development of this potential must be linked to the retention of the high-value soils on which growth of these crops depends.

Some of these rural and peri-urban areas also contain significant natural 'areas, e.g. regional parks'. Hence, they offer spatially close opportunities for integration of production and natural values, with the added benefit of proximity and fewer travel-related emissions for the urban-based recreation and nature seekers who visit. The use of these green and blue spaces for recreation offers important health and wellbeing benefits to large numbers of urban dwellers (Roberts et al., 2015).

> Novel or enriched ecosystems within extensive areas of production, 'fallow' or stewardship land can be habitats for native biodiversity recovery … as well as for climate responses.

Cities function best if there are limits to spatial growth (i.e. sprawl), which are also necessary for low-emissions outcomes. Total urban emissions footprints of urban areas are much higher than their land area share,[18] so emissions transitions need to take place in cities even more so than in rural areas. Urban transport emissions (including from transport between outer suburbs, city centres and employment hubs) need to reduce urgently; there is emerging evidence that intensification of cities can play a useful part over time in reducing these transport emissions (Chapman et al., 2017). Alongside this, some policy measures to achieve urban emissions reductions are relatively straightforward technically, but require political will to implement (Hasan et al., 2019). Integration of urban and rural land uses also require efficient low-emissions city/hinterland connections, both public and private.

In short, there is much potential for the careful revolution to occur in and around our cities as well as rural areas, through decarbonised transport systems, energy efficiency and conservation, building and manufacturing technology, waste management, etc. Many of these sectors use significant areas of land within or adjacent to our cities. For this potential to be realised, the functional relationships between urban, peri-urban and rural areas are critical, and some significant land use changes would need to be accepted by urban residents.

Conclusion: meta-integration at the core of a low-emissions wellbeing economy

The last strand briefly addresses land use components of meaningful whole-of-government and whole-of-society integration towards a low-emissions future (Waitangi Tribunal, 2011; IPCC, 2019). This will obviously involve many sectors; all those referred to above and more. 'Whole-of-government' refers to an integrated and holistic systems-oriented, cross-agency approach (Boston, 2017), but also includes an integral partnership approach as embodied in *Ko Aotearoa Tēnei* (Waitangi Tribunal, 2011). The governmental approach currently being developed towards an integrated response to that report could turn out to be highly relevant to whole-of-government approaches to the climate crisis, not just to bicultural governance issues.

Land use is a vital part of our economy and society. A fully integrated land use response will need to embrace all aspects of carbon farming and low-emissions initiatives discussed above, including native and exotic trees, animals and urban land use. As well as government policy and regulatory initiatives, it will build on diverse current examples of best practice ranging from farm environmental award winners to innovative multi-sector production sector NGOs and stakeholder organisations. It must also include large corporate farming organisations (Carden and McKenzie, 2018). It must see biodiversity conservation in its widest sense as an integral part of our land use responses, making full use of nature-based solutions (Cohen-Sacham et al., 2016; Roberts et al., 2015). A well-integrated, nature-based solution recognises that as well as our precious native biodiversity, introduced species within plantations, agro-ecosystems, and all kinds of novel ecosystems and mixtures of native and introduced species can provide elements of nature-based solutions to climate change and biodiversity decline. Novel or

enriched ecosystems within extensive areas of production, 'fallow' or stewardship land can be habitats for native biodiversity recovery (Parliamentary Commissioner for the Environment, 2002; Forbes et al., 2020), as well as for climate responses.

Some of the social and economic parameters for land use transitions are in themselves whole-of-society integrative responses. The concept of 'just transition' (Huggard 2019)[19] is in itself integrative by involving many sectors, including the land use sectors. So is the notion that carrots as well as sticks will be needed to change behaviours, with at best fiscal neutrality being achieved from the financial mechanisms used. For example, the Provincial Growth Fund is being used for many social and economic development projects as well as the One Billion Trees programme and other environmental sustainability and resilience projects. Emissions charge revenues can be used in the same redistributive way.

Climate change adaptation is of course a critical part of the low-emissions transition (Lawrence, 2019) and provides opportunities for integration. The Zero Carbon Act provides for systematic risk assessment across sectors to be a key input to an integrated multi-sector national adaptation plan spanning central and local government. Many adaptation responses will be short-term, but need to be framed in the context of longer-term mitigation goals.

Examining potential integrative planning and policy vehicles for the low-emissions wellbeing economy is beyond the scope of this article.[20] The Climate Change Commission has some key roles that can clearly be integrative. Some of these, such as the provisions for national adaptation planning, have already been set down in the Zero Carbon Act. There are many potential but underused vehicles within the Resource Management Act which could receive consideration under the current reform of that act.

Taken together, it is hoped that these land use themes as discussed here will provide some useful options and suggestions for the integrated low-emissions transition so vital in the years and decades to come. Most of the principles mentioned are not new, and there are many past and current examples of sustainable and integrated land use management for Aotearoa New Zealand. Better and more equitable human wellbeing outcomes are needed, as well as averting the worst impacts of the climate crisis. For both sets of outcomes to be achieved, more focused thinking on the role of land use in the integration of the two linked sets will be essential.

Climate change adaptation is of course a critical part of the low-emissions transition ... and provides opportunities for integration.

Postscript: aspects of a low-carbon Covid-19 recovery phase in the land use sector

As mentioned in the introduction, a brief recap of aspects of the previous commentary relevant to economic and social recovery after the Covid-19 pandemic is relevant.

- Tourism may be very restricted for some time, and in a low-emissions future cannot recover its former high-growth characteristics. As discussed earlier, domestic and limited short-haul international tourism would be more appropriate than long-distance tourism.
- Continuation of agriculture and production forestry for domestic and export markets will be critical for economic recovery, but more local food production (especially plant-based and in peri-urban areas) would provide lower-carbon food alternatives. Continued tree planting and the early achievement or exceedance of the One Billion Tree targets would provide short-term employment and longer-term low-emission opportunities.
- More local renewable energy sources for rural and peri-urban areas would help low-emissions resilience and can also help in managing demand peaks if well designed and integrated (Transpower New Zealand, 2020). Development of such sources would require the development of smart grids and local energy distribution networks.
- Policy and implementation tools are needed for the continued development of low-emissions, resilient urban and peri-urban forms during the recovery phase, as well as continued housing growth. This will be critical for halting urban transport emissions growth and protecting high-quality soils while maintaining good access for rural and urban populations.
- Sustainable land use projects for recovery workforce opportunities could include (among many others): urban and rural infrastructure projects, especially water quality improvements; renewable energy development (as above); rail and electric vehicle infrastructure to service more primary producers (e.g. recharging facilities to enable more light commercial e-vehicle deliveries); pest-free and other biodiversity initiatives in and off the conservation estate, including in freshwater habitats.

1 Defined by the International Trade Union Confederation as an 'economy-wide process that produces the plans, policies and investments that lead to a future where all jobs are green and decent, emissions are at net zero, poverty is eradicated, and communities are thriving and resilient'. Its two key components are planned economic diversification away from fossil fuel industries, and integrated planning of workforce change. It also requires anticipating and compensating for injustices that are a consequence of taking action.

2 Largely because of our generous endowment of renewable energy sources, rather than from planned emissions management.

3 See various chapters in Ministry for the Environment and Statistics New Zealand, 2019. In 2017, emissions from the agriculture sector decreased slightly (by 0.1%) from 2016. This decrease was due to a small fall in the sheep and dairy cattle populations (0.4% and 1.5% respectively). It was mostly offset by a 2.1% increase in the population of non-dairy cattle. See https://www.mfe.govt.nz/sites/ default/files/media/Climate%20Change/snapshot-nzs-greenhouse-gas-inventory-1990-2017.pdf.

4 For example, see commentary from Williams, 2020, and report from Greenpeace New Zealand, 2020.

5 This concept is not uniquely Māori. It was articulated for example by the Canadian-Japanese environmentalist David Suzuki as: 'There is no environment "out there" separate from us. The environment is embedded in us. We are as much a part of our surroundings as the trees and birds and fish, the sky, water and rocks' (Suzuki, 2014).

6 A response is now being slowly developed, led by the Minister for Māori Development, with promising signs of an integrated whole-of-government approach being adopted. See https://www.tpk.govt.nz/en/a-matou-kaupapa/wai-262-te-pae-tawhiti#head2.

7 Largely through the Agricultural Greenhouse Gas Research Centre allied with the Global Research Alliance on Agricultural Greenhouse Gases.

8 A charge on methane and nitrous oxide is still not recognised within the ETS and will not be until 2025.

9 Including *Pinus radiata* stands which currently account for a very high proportion of forest production. Diversification away from this dependency on one species is necessary but cannot be expected to be achieved any faster than on a decadal scale.

10 The capacity for higher power delivery and greater capacity of vehicle batteries is improving rapidly and could be expected to enable a much greater use of renewable energy within the next decade.

11 Aotearoa New Zealand's national emissions profile is unusual among OECD countries because of its very high proportion of biogenic emissions, principally methane from our large national herd of ruminant animals (especially cows and sheep). The national cow herd's total greenhouse emissions (approx. 600 Mt CO_2-e) currently total nearly three times that of the national sheep herd (approx. 218 Mt CO_2-e), and is trending upward while greenhouse gas emissions from sheep are trending downward.

12 For example, one of the commissioner's recommendations is to 'Develop the tools needed to manage biological sources and sinks in the context of a landscape-based approach that embraces water, soil and biodiversity objectives'.

13 A comprehensive analysis of ecosystem services in Aotearoa New Zealand, including their valuation, is provided in Dymond, 2013.

14 The Aotearoa Circle (see https://www.theaotearoacircle.nz/) is a recent partnership of public and private sector leaders which aims to pursue sustainable prosperity and reverse the decline of New Zealand's natural resources. One of its first projects was an interim report from its Sustainable Finance Forum setting out principles and characteristics of a sustainable economy and financial system for Aotearoa New Zealand.

15 See https://www.gw.govt.nz/whaitua-committees/.

16 The integrated catchment management plan approach in Aotearoa New Zealand is best exemplified by work in the 2,170km^2 Motueka catchment west of Nelson. This was a multi-disciplinary, multi-stakeholder research programme which provided valuable information and knowledge to improve the management of land, freshwater and near-coastal environments in catchments with multiple, interacting and potentially conflicting land uses. The understanding and knowledge gained from the programme is impressive, especially its integrative approach linking community resilience and ecosystem resilience. However, nine years after the programme ended, specific implementation outcomes are elusive, perhaps showing the length of time required to acquire and implement the understandings gained (Phillips et al., 2010; Fenemor et al., 2011).

17 Including outdoor grass-based pastoral production systems and low-tillage practices.These are relatively low-input compared to very mechanised industrial farming systems practiced in much of the Northern Hemisphere.

18 Even though per capita urban footprints are generally lower than rural ones (Newman, 2006; Ombler et al., 2017).

19 Huggard's chapter is among a number of relevant chapters in *A Careful Revolution* (Hall, 2019) along with those already cited; especially those of Bargh concerning a 'tika' revolution (that which is right or just) that addresses Treaty obligations and Māori world views, Nissen concerning intergenerational equity, and Frame concerning the political and democratic requirements for accepted change.

20 Some options for integrated planning within the RMA regime have been presented recently by the Resource Management Review Panel (2019), with a strong focus on spatial planning options.

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Michael Fletcher, IGPS Commentary, April 2020

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Janet Stephenson, Jule Barth, Sophie Bond, Gradon Diprose, Caroline Orchiston, Katy Simon and Amanda Thomas

Engaging with Communities for Climate Change Adaptation

introducing community development for adaptation

Abstract

Many of New Zealand's urban settlements are likely to be affected by climate-induced hazards such as sea level rise, coastal erosion, flooding and rising groundwater levels, and some are already being affected. These communities face many physical, social, financial and emotional challenges, and there is significant potential for inequitable outcomes. To ensure successful adaptation, local authorities will need to adopt new approaches to engaging with communities that are exposed to these hazards.

Keywords adaptation, climate change, community engagement, community development, local authorities, councils

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In coming decades, many New Zealand families and businesses will be exposed to climate change impacts such as flooding and coastal erosion. Some will be resilient, but others may be adversely affected physically, socially, financially and/or emotionally (Royal Society of New Zealand, 2016; Stephenson et al., 2018). To ensure successful adaptation in the face of climate change, local authorities need to adopt new ways of engaging with affected communities because of the potential scale, impact and longevity of the adaptation process. As a nation, New Zealand is only starting to come to grips with the challenges of adaptation, and it is clear that our laws and institutional arrangements are not yet fit for purpose (Lawrence et al., 2015; Boston and Lawrence, 2018). Roles may in future be reallocated across central and local government, but councils will undoubtedly continue to have a role in adaptation response given

their accountability to communities and their broad role in promoting their social, economic, environmental and cultural wellbeing (Local Government Act 2002).

The Climate-Adaptive Communities research programme of the Deep South National Science Challenge undertook research on how council staff and communities are responding to the challenges of planning for a climate-impacted future. The research paid particular attention to the trepidation many council staff have expressed about starting to engage, how affected communities are starting to respond, and how staff see their changing roles and responsibilities for community engagement. Here we present some of our main findings on the factors that may be limiting councils' capacity for engagement, and suggest a possible way forward that recognises the very real differences between adaptation-related engagement and other forms of consultation and engagement with which council staff are more typically involved. Our research aligns with Serrao-Neumann et al. (2015) in finding that, in contrast to the episodic relationships that are typically developed then dropped as local authorities approach civil society on matters such as annual plans and resource consents, adaptation will require ongoing and active engagement with the public to build enduring relationships for adaptation over years and even decades.

As well as the physical impacts on property, many people are likely to be affected financially and emotionally and may suffer a decline in health and wellbeing unless care is taken.

Methods

The research programme included a telephone survey of regional and district/city councils that are exposed to climate-related flooding and sea level rise, as well as case studies in Dunedin and Lower Hutt, both of which have significant urban areas under threat (Parliamentary Commissioner for the Environment, 2015). In South Dunedin, for example, some 2,700 homes are within 50cm of current sea level and the area has been hit by several significant floods since 2015, while Lower Hutt includes most of the 2,000-odd homes in Wellington that are within 1 metre of current sea level (Parliamentary Commissioner for the Environment, 2015). The selection of councils for the survey was based on a high-level analysis of the relative exposure of New Zealand local authorities to sea level rise and flooding, where exposure refers to '[t]he presence of people, livelihoods, species or ecosystems, environmental functions, services, resources, infrastructure, or economic, social or cultural assets in places and settings that could be adversely affected' (IPCC, 2014, p.5).

Fourteen telephone interviews were carried out with relevant staff members at 13 local authorities that had been identified in Barth, Bond and Vincent (2019) as being highly exposed to future climate-induced sea level rise and flooding. ('Highly exposed' in this report included all New Zealand's regional councils, with staff of half of these interviewed, and a quarter of New Zealand's territorial local authorities, staff from seven of which were interviewed). The semi-structured interviews asked about the perceived roles and responsibilities of councils with regard to adaptation, any current policy and activities relating to communities engagement, any awareness of community-based action, and any actual engagement occurring with exposed communities (Barth et al., 2019). The case studies involved in-depth interviews with community members and council staff, observation at community events, and meetings and discussions with a reference panel involving council, iwi and community members in each of Lower Hutt and Dunedin.

We first discuss our findings on why councils should engage and how this kind of engagement will differ from typical council consultative processes. We then outline why councils are currently nervous or tentative about engagement on adaptation. We finish with outlining what we are calling 'community development for adaptation' (CD4A), which we conclude is necessary given the ongoing and incrementally worsening impacts of sea level rise and flooding on community wellbeing and livelihoods.

Why should councils engage?

Many communities in New Zealand are already exposed to the impacts of increasing flooding and sea level rise (Parliamentary Commissioner for the Environment, 2015; Bell et al., 2017). These have implications for communities in the short term (e.g. more frequent and more severe storms) as well as the long term (e.g. sea level rise leading to homes becoming uninsurable and/or unliveable, and loss of infrastructure and services). As well as the physical impacts on property, many people are likely to be affected financially and emotionally and may suffer a decline in health and wellbeing unless care is taken. Their whole conception of the future will be challenged, as certainties about place and community and the future are under threat.

Grappling with these new circumstances can be complicated, emotional, costly and exhausting for both community members and council staff. Fear and uncertainty, and lack of trust between parties, can lead to anger, clashes and stalemates. Importantly, there is a potential for impacts to be unequally experienced by community members. While the physical characteristics of the weather event or rising sea level may be the same for many people within the affected area, the impacts on individuals and their ability to adapt to or cope with those changes are uneven and may reflect existing inequalities. For example, owners whose holiday homes are exposed to climate effects will still have their first

home, whereas those whose home and equity are completely tied up in their home in a climate-impacted location are likely to be more severely affected. In the likely eventuality of increasing insurance premiums and eventual withdrawal of insurance cover, homeowners with mortgaged properties who face foreclosure will be more severely affected than those who own their properties outright. People for whom their only equity and asset is their house may be forced out of home ownership if the value of their asset declines and becomes unliveable. Owners and renters who are already in more deprived circumstances will find it much harder to rebound from impacts such as flood damage, or pay for adaptation measures, and may find themselves in a downward spiral of coping. There is also the potential of inequitable outcomes from choices to invest in infrastructure, if those with more effective lobbying power and more financial backing are in a position to argue for protection (e.g. sea walls) while those who are less powerful have less influence and end up with less protection. As Lisa Ellis pithily sums up, it is ethically unjust if 'the rich get sea walls and the poor get moved' (Ellis, 2018, p.7).

Responding to climate change impacts will involve many decisions by councils over long time frames. While the serious effects of sea level rise and flooding may not be experienced for some years or even decades, in many cases councils will already be starting to make decisions about planning provisions or infrastructure investments as the long-term implications may be significant (e.g. major infrastructure costs, eventual retreat from exposed locations). National guidance for local authorities from the Ministry for the Environment and the Climate Change Adaptation Technical Working Group has been for councils to adopt a 'dynamic adaptive pathways planning' (DAPP) approach (Bell et al., 2017; Climate Change Adaptation Technical Working Group, 2017). This involves identifying and being transparent about multiple potential adaptation investments and pathways, and identifying decision points where a shift from one pathway to another may be required depending on the severity of impacts. The DAPP approach is clear that community involvement in the decision-making process is necessary and important, but focuses this predominantly on the moments in the process when decisions will need to be made about critical investments or changes in direction.

Most standard council consultation processes have a particular end in sight – e.g. to inform a decision on an annual or long-term plan, or a resource consent – and use a few standard forms of engagement, such as public meetings, written submissions and hearings. Engaging for climate change impacts will be very different because it is a very long-term issue which will become incrementally worse. Decisions will need to be made at many points in time, probably over decades, and these decisions must often be made without a full understanding of what the future holds (i.e. lacking a strong evidence base with high levels of uncertainty). The community members most severely affected may well be those who are least empowered and least accustomed to 'having a say' in council decisions. If care is not taken, decisions could result in inequitable outcomes, both as a result of unequal influence on decisions, and because the cumulative effects of many disparate decisions could result in maladaptive outcomes such as exclusion, encroachment or entrenchment (Barnett and O'Neill, 2010; Sovacool, Linne and Goodsite, 2015).

The DAPP approach presupposes that there will be a community willingness, readiness and ability to be involved in such important discussions about the future. In reality, from the research that we have undertaken, it is clear that affected communities do not necessarily have a collective 'voice', so there is the potential for the most confident voices and opinions to dominate. It takes time to build community resilience, trust between councils and communities, and capacity to be involved in decision making. It is clear from our research that there is a range of levels of understanding and awareness of likely climate change impacts, and where impacts are already being experienced community members are likely to be nervous, fearful or angry. Stepping into an unready and potentially volatile community to engage on a specific DAPP decision point is likely to lead to unsatisfactory outcomes for all. We instead suggest that councils should start to engage with at-risk communities early, before they begin to experience severe impacts, and to continue engagement as a long-term and ongoing activity. Where lack of resourcing means choices have to be made as to which communities to engage with, we suggest that yardsticks include both the scale of potential impacts on assets, infrastructure, health and wellbeing (Stephenson et al., 2018), and the ethical and equity implications of the impacts and potential solutions, especially considering those whose voices are typically under-represented (Ellis, 2018).

> Our survey of regional and city/district council staff members showed that many were hesitant about engaging with communities, largely because this is new territory for everyone.

The focus of such engagement should be on enabling communities to be 'ready' to engage on climate change adaptation by building trust with local governments, building understanding of how local government works and how decisions might be made, and building relationships that will provide the foundations for engagement on more specific issues associated with climate change adaptation over time. Such engagement is needed to help communities understand and respond to the upcoming challenges, help build

community resilience to deal with current and future stresses, and help strengthen people's ability to have a voice in decisions that will affect them, particularly those who are less powerful or more susceptible to harm. It needs to purposefully reach out to include people and groups that are less well represented at standard consultation events (such as public meetings). Ultimately, councils will need to be confident that when they engage on critical adaptation issues they are connecting broadly across the at-risk community, and that the community has sufficient trust, confidence and capacity to respond. Broader engagement across the wider rate-paying community is of course also important, but is not the topic of this article.

In a couple of New Zealand situations, councils have faced rejection by communities to planning provisions that have aimed to mitigate risk from climate impacts.

Why are councils tentative about engagement on climate change impacts?

Our survey of regional and city/district council staff members showed that many were hesitant about engaging with communities, largely because this is new territory for everyone. We identified a number of perceived barriers to engagement that were repeatedly raised by these interviewees, and we propose ways past those barriers.

One frequently raised issue was staff uncertainty about councils' role in relation to adaptation. This is understandable, as New Zealand's legislative and institutional arrangements have not well anticipated the reality of climate change impacts, particularly in relation to urban areas. Shortcomings in these arrangements have been well identified (Lawrence et al., 2015; Boston and Lawrence, 2018). However, this uncertainty should not be a barrier to councils starting to engage. Legislative and governance changes are under way which will create more clarity around how roles will be shared across central and local government (e.g. the Climate Change Response (Zero Carbon) Amendment Act 2019), but councils will undoubtedly continue to have an important role in adaptation. Early engagement with communities can help scope issues that need to be addressed at a local level, as well as identify ones that are outside councils' ability to act on and may need to be addressed at a national level. It also builds crucial relationships that will facilitate the harder conversations later on, and enable councils to better know the communities they will be working with. Additionally, territorial local authorities and regional councils can build from their existing civil defence emergency management and hazard management roles to include aspects of climate change preparedness.

Council staff also expressed nervousness about engaging when they are uncertain about the scale and timing of climate change impacts, and also uncertain about what options they should be talking to communities about. But engaging under uncertainty is an essential new skill for a climate-impacted future. There is, and will continue to be, a high level of uncertainty about the nature of impacts and therefore the kinds of responses that might be appropriate, and the DAPP approach is intended to deal with precisely this issue. It is critical that councils are honest about uncertainty and the difficulties that this will bring to forward planning. It is also important that communities understand the scope of the ambiguity for their situation. Being open about uncertainty is likely to engender more trust than assuming certainty that is not then borne out, or not engaging until there is certainty, which could be much closer to a crisis point.

Allied to this is that councils are unsure what kinds of solutions will work, so are hesitant to go out and engage with communities. But coming to the table with a predetermined solution may be unhelpful in engaging communities. Community members hold knowledge and experience which can help in developing solutions, and involving them in co-developing ideas can lead to more creative solutions that address a range of needs and are more widely accepted (Brownill and Carpenter, 2007; Bond and Thompson-Fawcett, 2007; Imrie, 2013; Brisbois and de Loë, 2016).

In a couple of New Zealand situations, councils have faced rejection by communities to planning provisions that have aimed to mitigate risk from climate impacts. These examples appear to resonate strongly among the surveyed council staff generally, and engender a fear of pushback from the public if they attempt to introduce hazard mitigation measures. This is not a reason to fail to act, but rather indicates the need for early and ongoing engagement to build trust, understanding and a sharing of ideas. If communities have been involved in developing solutions they are less likely to push back on their implementation.

Another issue was uncertainty about where leadership on adaptation should best sit within council structures. Currently, different council departments are responsible for different aspects of the problem (e.g. three waters, transport, planning, strategy, hazard assessment, communication), so there can be uncertainty about roles and leadership, and the potential for mixed messages when engaging with the community. A solution, already implemented in at least one council, is to set up a cross-cutting network that brings together staff from all relevant departments to develop a collective understanding of the implications across council as a whole, and to take an integrated approach to engaging with the community.

A concern about the resourcing implications of engagement was also shared by many councils. The costs of climate responses are inescapable, and these costs will not be lessened by delaying engagement. The social costs of not engaging are considerable – communities

will become more and more anxious about their future. Supportive action from an early stage can assist communities to self-organise and become more resilient; while co-development of solutions can assist in a shared understanding of the costs to all parties of different courses of action.

Finally, council staff were unsure of how to engage with communities on long-term adaptation. Our review of literature and discussions with councils and communities in our case studies suggests that the best way forward is to take a adaptation approach that is rooted in community development. This involves ongoing engagement to develop community resilience and to enhance community members' ability to contribute to decision making over the long term.

Community development for adaptation (CD4A)

Engagement on adaptation is complex, demanding and emotional because it challenges people's security and expectations of the future. In exposed areas, especially where people are already being affected (e.g. by rising groundwater, coastal erosion or floods), they may already be dealing with additional stresses on top of their daily lives, and engaging on long-term thinking may be yet another unwanted stressor. Community members may be angry, upset and divided. Many locations will have community members who are already at risk emotionally, economically or in terms of their health and wellbeing. All of these factors suggest that standard short-term consultation processes that focus on a single issue will simply exacerbate stress and be unlikely to result in good solutions. We therefore propose a community development for adaptation (CD4A) approach which seeks to build community resilience ahead of likely future impacts, and thereby builds a collective strength and a strong community voice with which council can engage.

CD4A draws both from classic community development literature (Robinson and Green, 2011) and from the community-based adaptation (CBA) approach which has largely emerged from climate adaptation work in developing nations (Kirkby, Williams and Huq, 2018). Community development is 'a social process involving residents in activities designed to improve their quality of life' in relation to their associations with a place (Robinson and Green, 2011, p.2). The objective of CBA is 'to enable communities to drive their own self-sufficient and sustained adaptation by allowing them to determine the methods and goals of adaptation for themselves' (Kirkby, Williams and Huq, 2018, p.579). The intention of CBA practice is to empower communities and mobilise their energy, effort, enthusiasm, knowledge and experience so that they are in a position to make informed choices and to contribute to designing and deciding upon solutions.

Drawing from these traditions, CD4A means thinking about all of the needs and issues faced by the community as a whole, not just needs and issues relating to adaptation. It involves engaging with as wide a range of affected people as possible, including those who are hard to reach and more susceptible to harm. Some people may already be struggling to cope with everyday challenges, and adaptation is just another extra burden, so special efforts will need to be made to reach out to those who do not usually feature among those who attend public meetings, such as young people, elderly, disabled, solo parents, ethnic minorities, recent immigrants, and incarcerated and formerly incarcerated people. It will require engaging with people and groups in a wide variety of ways and places to suit their preferences (e.g. meeting with a knitting club in the local community centre, or the rugby players in the clubrooms) and committing to ongoing engagement on a regular basis over many years.

CD4A may involve the council providing support to help community members come together to share their concerns, visions and aspirations. This can help council staff understand how adaptation relates to the wider context of community needs and aspirations. Councils have an important role in providing information about climate impacts and adaptation in ways that are easily understood and do not create alarm (planned retreat may sound like abandonment), while at the same time enabling the community to share their knowledge and experiences with each other and with the council. This can help build a collective understanding and readiness to be involved in adaptation discussions.

> For some years to come there will continue to be uncertainty about how to proceed, how to make decisions, and how to collectively determine our future directions.

There are many ways to engage the community in thinking about and planning for its future, including using creative ways of visualising and sharing ideas. The danger of inequitable solutions can be reduced if all voices are included, which may require some innovative approaches to engagement – e.g. citizens' assemblies, participatory design, people's panels, participatory budgeting, payment for representation for those with fewer personal resources/capacities, developing resources for people with low written literacy (Hou and Rios, 2003; Cooper, Bryer and Meek, 2006; Cohen, 2012; Chu, Anguelovski and Carmin, 2016). Community members should be involved in identifying possible options for the future, and in key decision points in any adaptation pathway. Some solutions proposed by communities may seem to have little overtly to do with adaptation, but are needed to build community resilience for the long term so should not be overlooked.

Conclusion

Adapting to climate change is a new space for everyone – for councils, communities and government. For some years to come there will continue to be uncertainty about how to proceed, how to make decisions, and

how to collectively determine our future directions. At a time of uncertainty, it is critical to return to key principles such as equity, fairness and inclusion to underpin processes and decisions, and for councils to earn and maintain the trust of exposed communities. This means going beyond consultation with exposed communities to involvement, collaboration and empowerment. Community development for adaptation can assist both councils and communities in this journey.

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Malcolm Menzies and Lesley Middleton

Using Scenarios in Public Policy

Abstract

Futures thinking is a field rich in a wide range of tools and techniques. Of these, scenario development has perhaps the most potential to assist future-focused policy development. This article seeks to stimulate discussion and inform practice in New Zealand, first, by exploring the history of scenarios, and second, by investigating a past scenario development process which sought to guide national health policy.

Keywords scenarios, futures thinking, health policy

2020 is a significant year for futures thinking (aka foresighting) in the New Zealand public sector. Inevitable references to '2020 vision' aside, new state sector legislation includes a requirement for long-term sector statements. The Department of the Prime Minister and Cabinet has compiled a set of futures thinking resources and tools, and explained the benefits of their use (Department of the Prime Minister and Cabinet, 2019). A substantial report, prepared in collaboration with the Office of the Clerk of the House of Representatives, aims to help make government more accountable for the quality of its long-term decision making (Boston, Bagnall and Barry, 2019). There is also a forum, coordinated by Inland Revenue, for the public sector to build capability and apply the discipline of futures thinking. A substantial report from the non-governmental sector has recommended a Future Generations Act to sit above a new (environmentally focused) Futures Commission, a National Futures Strategy and a Futures Group of officials to provide integrated advice to ministers and Cabinet (Severinsen, 2019). The field of futures thinking appears to be making a comeback, after a history in which its fortunes have ebbed and flowed (Menzies, 2018).

This is a field rich in a wide range of tools and techniques. Among others, the Department of the Prime Minister and Cabinet website lists horizon scanning, the futures wheel, scenarios, backcasting, the Delphi technique, cross impact matrix, causal layered analysis and visioning.

Of these, by far the most widely used in the US government have been horizon

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scanning/trend analysis and scenarios (Greenblott et al., 2019). Practically, it is difficult to separate these two, as the former is an essential input to the latter. In New Zealand, future scenarios have been developed in health (Krieble and Middleton, 1997), tourism (Yeoman, 2008), retirement income policy (Boven and Grace, 2013) and the transport sector (Ministry of Transport, 2014a, 2014b, 2014c, 2016, 2017, 2019, n.d.), and for the future of work (Productivity Commission, 2019).[1] The OECD has also provided guidance on the use of scenarios (OECD, n.d.).

Acceptance of scenarios is influenced by source credibility (i.e. who developed them), content credibility (what they say) and channel credibility (by whom and how they are presented).

The scenario technique has the potential to contribute much to future-focused policy development, but there is considerable variability in its application and impact (Volkery and Ribeiro, 2009). This article aims to stimulate discussion and help inform practice in New Zealand by, first, exploring the history of scenarios, and second, by reviewing and learning from a past scenario development process which sought to guide national health policy. We conclude by recommending that scenarios be considered for use across different areas of public policy, particularly where there are seemingly intractable problems or different positions are highly polarised.

A short history of scenarios

The lineage of scenarios has been consistently traced back to its beginnings after the Second World War (e.g. Amer, Daim and Jetter, 2013; Millett, 2003; Varum and Melo, 2010). Herman Kahn is generally regarded as the 'father' of the scenario, particularly in the United States. Kahn defined a scenario as 'a set of hypothetical events set in the future constructed to clarify a possible chain of causal events as well as their decision points' (Amer, Daim and Jetter, 2013). He developed geopolitical scenarios to help understand the strategic implications and possible outcomes for a world which for the first time contained several nuclear-armed powers.

Pierre Wack built on Kahn's ideas to introduce scenarios to the corporate sphere (Wack, 1985a, 1985b), particularly the Shell Oil Company, which famously used scenarios to anticipate the various oil crises of the early 1970s and to come through those in better shape than did competitors. Members of the team at Shell went on to become proponents of the scenario technique (Schwartz, 1991, 1996; Van der Heijden, 1996), as did other thinkers and writers such as Schoemaker (1995).

In his often-cited papers, Wack (1985a, 1985b) outlined issues that still resonate today. Unlike forecasts, which managers rely upon to be accurate guides to decision making, scenarios reflect an inherently uncertain future. Wack thought that organisations that could not quickly adapt would die. What was required was not so much new ways of planning as new ways of managerial thinking (Wack coined the phrase 'the gentle art of reperceiving'). Scenarios were means for changing thinking, and for communication.

> Strategies are the product of a worldview. When the world changes, managers need to share some common view of the new world. Otherwise, decentralized strategic decisions will result in management anarchy. Scenarios express and communicate this common view, a shared understanding of the new realities to all parts of the organization. (Wack, 1985a)

From the perspective of today, it might be assumed that the best way to ensure connection with and between scenarios and managers, and to achieve 'gentle reperceiving', would be to use highly participatory processes. However, later analysis of Wack's writings (Chermack and Coons, 2015) shows that he thought scenario planning as a group process was a 'dangerous trap' which led to 'regression to the mean' or conventional, mediocre thinking.[2] He favoured instead an approach based on workshops as a form of group interviewing, providing input to expert developers who would follow up with stunning presentations to win decision makers' support. Wack did see side benefits from group processes, such as team building, group dialogue and the sharing of mental models. But to him the primary purpose of scenarios was to change the way decision makers saw the world, so that they would act with a wider, more informed point of view. The world is a 'noisy' place and Wack (1985b) quotes Roberta Wohlstetter (1962):

> to discriminate significant sounds against this background of noise, one has to be listening for something or for one of several things ... one needs not only an ear but a variety of hypotheses that guide observation.

Scenarios provide these hypotheses or mental maps[3] that enable heightened sensitivity to the signals that are important (Schoemaker, 1993). Schoemaker describes the theory, practice and methodology that underpin scenarios. To him, scenarios are Hegelian in their underlying philosophical premise (the method courts contradiction and paradox), in contrast to the Liebnizian approaches of traditional decision analysis and forecasting which seeks a single truth and representation of reality.

> The gist of the scenario method seems that it is many things: art and science, deduction and induction, structured and fluid, rational (in the unitary actor sense) and political. These multiple facets have caused it to remain elusive and fuzzy by academic standards. Nonetheless, the use of scenarios in strategic management is real, important and growing (ibid.)

There is also value in thinking about change in whole systems rather than as a series of policy projects. Scenarios prompt thinking about systems as a counter to the reduction of complex dynamic systems to linear logic models 'inculcated with closed system concepts, categories and catechisms that are the bedrock of the project design mentality' (Patton, 2019).

Futures thinking developed in parallel in other parts of the world. By the late 1950s, Gaston Berger had established the French school of prospective thinking, which emphasised preparation for multiple futures to unfold – leading in turn to an insight that good planning spurs action that changes the present in preparation for the future (Durance, 2010; Spaniol and Rowland, 2018). Berger's work in the French school of futures thinking was carried on by Michel Godet (1982), among others. The work of Bernard de Jouvenel (1967) was also of seminal importance, while on the other side of the English Channel the concept of 'foresight' in this context was derived as a counterpoint to the 'hindsight' gained from retrospective studies of how technological innovations had come about (Martin, 2010).

Definitions, criteria and benefits

Schoemaker defined scenarios as 'focused descriptions of fundamentally different futures presented in coherent script-like or narrative fashion' (Schoemaker, 1993). If scenarios are presented as possibilities, rather than firm predictions, they become psychologically less threatening to those holding different world views. Acceptance of scenarios is influenced by source credibility (i.e. who developed them), content credibility (what they say) and channel credibility (by whom and how they are presented). Schoemaker differs from Wack in arguing that the scenario-building process should not be entirely entrusted to an intellectual elite.

Other useful criteria for measuring the quality of scenarios are included in another paper, which also provides a practical guide to their development (Schoemaker, 1995): scenarios should be relevant, internally consistent and archetypal (i.e. describe generically different futures rather than variations on one theme). Ideally, each scenario should also describe an equilibrium or a state in which the system might exist for some length of time, as opposed to being highly transient. Unusually among early writers, Schoemaker addressed the question of 'do scenarios work?', albeit narrowly, by attempting to measure impact on sales.

Although more criteria have been offered by which the quality or effectiveness of scenarios might be measured (Amer, Daim and Jetter, 2013; Cairn et al., 2006; Coates, 2000), very few attempts have been made to evaluate quality, outcome or impact of scenarios (Varum and Melo, 2010; Wright, Bradfield and Cairns, 2013). One exception in the corporate sector found that future-prepared firms outperformed the average on growth and profitability (Rohrbeck and Kum, 2018).

A significant barrier to evaluation may be that foresight is considered more of a consulting field than an academic one, so that not much work is public and even less makes it into journals for review or citation. Foresight 'is closer to management and financial consulting where practices are judged by the market as accepted without formal evaluation, though this is changing as training assessment metrics become the norm' (Gardner and Bishop, 2019).

> Futures work challenges assumptions and helps us to be more cognisant of risks and opportunities. The problem with evaluating futures work is that once an insight has been accepted it seems obvious – at the end of the process it all looks obvious even though it did not at the start. (Jackson, 2019)[4]

This quotation from Jackson is a nice description of 'hindsight bias'.

Nonetheless, the use of scenarios has continued to increase (Amer, Daim and Jetter, 2013), which begs the questions 'why is that?' and 'how are scenarios being developed and used?' It may be that the evolution of corporate forms and increasing complexity of decision making creates the need for more, nuanced sources of information and insight (Scharmer, 2007), and scenarios fit the bill. Quantification is still important, but for some people scenario-based narratives, metaphors and visual approaches such as causal maps are often easier to relate to, absorb and communicate than are lists of facts and trends contained in conventional reports.

> The term scenario *planning* has become less favoured … because it suggests a mechanistic or deterministic view more associated with forecasting.

Process

Mostly, emphasis seems to be placed on participatory processes, team building and organisational learning (Cairns et al., 2006; Coates, 2000; Millett, 2003; Varum and Melo, 2010). However, Durance and Godet distinguish between

> scenario (processes) which are highly confidential and used exclusively by executive managers and those which are used as a tool for group process in order to mobilize the collective intelligence of an organization faced with a rapidly evolving external environment. These latter studies are highly focused on the communication of strategy as a central objective; whereas with the former, foresight is specifically used for developing enterprise strategy. (Durance and Godet, 2010)

This duality of purpose and 'access' to the fruits of scenarios is reprised to some extent by Varum and Melo (2010) and echoes Wack's apparent 'elitist' view of process (Chermack and Coons, 2015).

From scenarios' early beginnings there have been debates about the technique which continue in the present day. The term scenario *planning* has become less favoured (notwithstanding the view of

human agency implied by prospective thinking) because it suggests a mechanistic or deterministic view more associated with forecasting. Integrating scenarios with strategic planning has also remained problematic.

There continue to be different views as to whether scenarios should be descriptive of possible futures or normative, i.e. paint pictures of one or more desirable futures (more akin to visions of the future). An associated question relates to the purpose of scenario development. Is it to derive 'correct' or 'accurate' scenarios, in which case an exhaustive set of steps and much testing may be required, or is it the process itself that is most important? Proponents of the latter view hold that in the long term accuracy is impossible and the process is more important because it builds understanding of futures issues, contributes to shared learning, challenges conventional wisdom and opens up minds to alternative (likely better) strategies that would otherwise be overlooked; in which case, diversity of input becomes more important since it allows a broader range of inputs and the opening up of more minds.

In 1997 the New Zealand health system was coming to the end of a decade of radical change and still faced a challenging future.

Learning from history

The recognition that our world is developing more quickly and less predictably is not new. As noted in the introduction, there have been several recent attempts to respond to uncertainty through the use of scenarios. However, a rare earlier example of a health scenario exercise, undertaken in 1997, offers an opportunity to learn about the usefulness of the technique from the standpoint of the future that was being considered more than 20 years ago.

The health sector is affected by both relatively predictable trends, such as the ageing of the population and the increase in lifestyle-associated health risks and diseases, and the more uncertain effects of technological change and differences in access to health resources. In 1997 the New Zealand health system was coming to the end of a decade of radical change and still faced a challenging future. To help galvanise some futures thinking, the then Institute of Policy Studies at Victoria University of Wellington conducted a series of workshops about potential long-term futures for New Zealand's health sector. From those workshops was compiled a summary report entitled *Health Futures: 2020 visions* (Krieble and Middleton, 1997), which contained five scenarios for 2020 and proposed itself as a starting point for the development of a vision 'of what a diverse society may want (from its health system) and how the future may be influenced'. The five scenarios were:

1. Muddling Through: ad hoc adjustments to current challenges. In this scenario, steady economic growth has fuelled advances in information and intervention technologies; however, the gap between available resources and consumer expectations has grown. New approaches to delivering services co-exist with traditional structures.
2. A Technocrat's Dream: a technically highly tuned and less politicised version of the present system. Here, funding levels have kept pace with demographic and economic growth and significant capital injections have been made to get key technological advances off the ground.
3. Two Tiers: a two-tier system brought about by policy gridlock (described in the report as a scenario unlikely to appeal to those within the health sector but which others outside might choose). The two tiers are represented by a publicly funded health service which mainly provides an accident and emergency service and basic public health, while insurance firms provide care for those who can afford it.
4. Power to the People: a reframed health concept, resulting in partnerships across professions and the public, and across local and central government sectors. With parallels to the Gaia archetypal image of the future where becoming more and more inclusive is what is important (Inayatullah, 2008), this scenario envisions the merger of economic and social policy into a single public policy, leading to solutions to problems that looked insolvable two decades earlier.
5. Positively Private and Global: a system driven by the introduction of private healthcare plans. Domestic health plans trade on being locally responsive, while overseas plans offer economies of scale and competitive prices. The state has redefined its role in health to insurance regulation and wider national health matters.

Given that we are now in a future whose possibilities were being imagined over two decades ago, a high-level evaluation, drawing heavily on hindsight, has investigated how useful these scenarios were to decision makers. The results are reported in full in Menzies and Middleton (2019). What follows is a summary of what was done and the conclusions that were drawn.

Evaluating the 1997 scenarios from the perspective of 2020

To develop the 1997 scenarios a series of workshops was held, involving 28 people (including the current authors)[5] from government, business, academia and parts of the health service. Participants were provided with a background document which described a range of drivers of change, based on health policy literature, New Zealand health policy documents and health futures exercises in Australia, the United Kingdom and United States. Information on demographic and social trends (for example, changing family structures and dependency ratios as a result of an ageing population) were included in the background paper, as were epidemiological trends, including,

for example, the potential for an increase in infectious disease as a result of antibiotic resistance and low socio-economic status. With the assistance of decision support software, participants ranked and sorted the likely magnitude and impact of these and other drivers. The final scenarios were then drafted, focusing on those drivers and values where participants collectively thought there was the most uncertainty in how a response might play out. What this meant is that (rightly or wrongly) demographic, social and epidemiological trends were not viewed as highly uncertain but were considered a likely backdrop to all the scenarios. Instead, the scenarios were differentiated by those drivers and values participants thought could have widely different trajectories. Health gain, fair access, and quality came through as the most important values in a future health system. The drivers that could be increasing in importance, decreasing in importance or staying much the same included: rationing pressures; information technology; research and development; efficiency; consumer sovereignty; and personal responsibility.

The underlying logic of the 1997 exercise was that credibly developed scenarios would open the minds of decision makers to possibilities they would not have otherwise considered, leading to better decisions, more relevant, resilient strategies and better health outcomes for New Zealanders. We did not know how much this logic was shared by participants, but in order to test whether the 1997 scenarios did improve longer-term thinking, in 2018 we used criteria proposed by Schoemaker (1993, 1995) as the basis for a high-level evaluation.

These criteria were addressed through a series of semi-structured interviews with five original workshop participants, three of whom are still involved in health policy at senior levels, and one additional 'modern day equivalent' (i.e. someone who would have been involved had the 1997 process been run today) about their views of developments in the health sector over the last 20 years. The inclusion of people with continuous involvement proved useful, because they were well equipped to recall the state of play in 1997 and developments since. The criteria covered:

- relevance (in relation to wider needs and impact on decision makers and strategy);
- credibility (of source, content and channel);
- coherence (internal consistency);
- 'archetypality' (truly distinct from each other);
- genuinely long term and future-focused.

The interviews also probed:

- What elements of the scenarios have come to pass?
- To what degree were the 'signals' from the future recognised?
- What signals were missed altogether?

In order to orientate our work to the same shared history of change, we supplemented our interviewees' assessment of the underpinning drivers and values that shaped each scenario with the relevant literature on health policy change since 1997.

Findings

The 1997 scenarios were drafted at a time when New Zealand was moving away from a conviction that widespread structural reforms were going to translate seamlessly into improvements. The health futures exercise offered an opportunity to 'safely' explore, outside of entrenched ideological positions, what health sector change could look like. Interviewees in 2019 were struck by the ongoing relevance of the underpinning drivers and values that had shaped each scenario in 1997. Combinations of these drivers and values had been explored in each scenario to present distinctive chains of plausible events. Rather than comment solely on the plausibility of each scenario, interviewees reflected on which of the drivers and values continue to dominate discussions on health sector change. Below is a summary of what was covered.

Rationing pressures less dominant

A prominent driver across all scenarios was rationing pressures. In 1997 considerable policy effort was expected to go towards managing public expectations, rising costs and constrained healthcare budgets. Today, rationing pressures continue, but interviewees reflected that discourses about rationing are not as prominent. A cynical view is that there has been a reframing and devolution of rationing 'out of sight' and the country is in denial about this still looming issue (Treasury, 2016). In the last 20 years the locus of decision making moved away from centrally accountable health sector agencies to 20 locally based district health boards. Interviewees pointed out that hard prioritisation calls are still being made by these boards, but the debate is now shifting towards how much New Zealand wants to have national consistency in these decisions and how much is it prepared to live with local variation based on local assessment of needs. In part these changes are linked to the prevailing political climate, and it is worth noting that New Zealand has had two different governments of nine years' duration – one centre-left and one centre-right – since the 1997 exercise.

Interviewees in 2019 were struck by the ongoing relevance of the underpinning drivers and values that had shaped each scenario in 1997.

Primary healthcare noted but underplayed

The pressures of an ageing population were clearly foreseeable in 1997, prompting concerns about the health sector's ability to cope with chronic conditions such as diabetes and ageing-related neurodegenerative diseases. These fears have been realised. Current policy attention is being paid to improving long-term condition management, with a strong emphasis on greater responsiveness from the primary care sector in managing these conditions (Ministry of Health, 2016). Looking back on the scenarios, little

attention was paid to the distinct role of the primary sector in the health system in managing chronic conditions. The collectivisation of primary care through new mid-level organisations representing general practice interests was not foreseen, though the potential for better integration of primary and secondary care services due to the spread of larger primary care provider organisations was recognised.

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Research and development and information technology's continued importance as drivers

The scenarios also foresaw the potential impact of research and development and information technology drivers. Under the title Research and Development were included discoveries expected to assist in improving diagnoses, treatment and system performance, as well as the potential for ethical issues to result. The Technocrat's Dream scenario highlighted the potential for better information collection and sharing across the sector, including hospital booking systems and unique personal identifiers. What was underplayed was the potential for a digital divide, the social processes needed to support technological change, and the move towards myriad personal information technology systems. Calls in the recent New Zealand health strategy for 'smart systems' (Minister of Health, 2016) reflect the long-run interest in the gains expected from new digital ways of working, but interviewees pointed out that much of the potential is still unrealised. In particular, concerns were raised that current ways of delivering health services are not keeping pace with consumer expectations, nor efficiently leveraging mobile and digital technologies.

Signals concerning patient-centred care

Early signals of the importance of patient-centred care were evident in the Power to the People scenario. Other important ideas concerning the broader concept of well-being rather than illness, the socio-economic determinants of health and the importance of consumer empowerment were all anticipated. These centred on one scenario only but were a weak early signal of a set of ideas that have received significant health policy attention since 1997. The introduction of Whānau Ora in New Zealand as a philosophy of holistic health and development operationalised by Māori providers is one obvious example (Boulton and Gifford, 2014).

Shifting private sector roles

One scenario – Two Tiers – presented a health sector in 2020 where New Zealanders had given away any desire to have a universally accessible public health system. This scenario was designed to direct attention towards a future to prevent rather than aspire to – i.e. a future where the state provides an inadequate safety net for the uninsured, public confidence in the public health system fades and policy gridlock prevents progress. The arc of health policy change since 1997 has avoided this scenario, with policies focused on managing a largely state-funded system with an emphasis on quality, efficiency and responsiveness alongside social democratic values (Cheyne, O'Brien and Belgrave, 2008). Interviewees suggested that the debate about privatisation of the health sector and withdrawal of the state encompassed in the Two Tiers scenario missed the more nuanced ways in which the private sector has made inroads into the New Zealand system. Examples included the quiet influx of corporate players into primary care as a way of managing increased demand through shared services, and the rise of private sector responses such as retirement villages in response to home care demands. Moreover, the ongoing tension between the marketing of some products and health promotion activities – for example, high levels of sugar in processed food and drink conflicting with efforts to reduce sugar intake – are further examples of the type of private–public issue not anticipated in any scenario.

Health workforce underplayed

Standing back, a key area that was missed in nearly all the scenarios was consideration of the health sector workforce, alongside a sense of how the structural power of the professions may hinder or enhance change. New occupational groups originating from nursing were anticipated to 'fulfil the need for hybrid skill sets resulting from consumer demand' (Muddling Through scenario). However, while the global nature of the workforce was acknowledged in the Positively Private and Global scenario, missed in all five scenarios were the challenges of an ageing general practice workforce, uneven distribution of the workforce between rural and urban areas of New Zealand, and the need to increase the number of Māori students entering health science, medicine and other professional programmes. Surprisingly, and for reasons that are now lost in the mists of time, representatives from the professional colleges and other health workforce unions were not included in the list of workshop participants, which may explain why workforce issues were underplayed. Interestingly, the most extensive futures work that has been undertaken since the scenario exercise has been the work of Health Workforce New Zealand, which sought to build a picture of the health workforce in 2020. This work involved assembling small groups of clinicians to assess the current situation in 15 specialised areas and provide recommendations for improvements.[6] An attempt was made to partner conventional workforce planning approaches with foresight data to consider how the powers of different actors could potentially shape different professional futures (Rees et al., 2018).

How were the scenarios used?

Using criteria identified by Schoemaker (1993, 1995), the 1997 scenarios themselves were relevant, credible and coherent, but not particularly archetypal (this was intentional – they were designed to overlap each other). The process used was valuable in opening up decision makers' minds to possibilities without them needing to feel threatened or defensive, but, given the New Zealand context, it could have been more inclusive. That said, the conundrum of a highly consultative process versus a 'think tank' approach cannot be resolved by a single evaluation. It may also be that the 1997 scenarios did not have a long enough time frame, since there have been repeated nine-year swings of the political pendulum in New Zealand, with consequent changes of direction in the health system. A longer time frame would allow for 'political swings and roundabouts' to be treated as a factor to be considered in the development of robust strategy.

In terms of impact on decision making, all interviewees remembered the 1997 scenarios being talked about, albeit for a relatively short time before being overtaken by other developments. The initiative 'slipped away' from decision makers' fields of vision for a number of reasons: its discretionary nature, with no explicit follow-up required; it was time-bound rather than continuous – once finished it was out of sight and easily forgotten; and it was championed by a small group rather than the whole of senior management – a serious mistake (Wilkinson and Kupers, 2014). It would be fair to say that if minds were opened up to the future, it was only for a short time. One respondent suggested that 'scenario thinking is not a natural way of thinking' and would take years to embed properly. Another pointed out that the scenarios were referred to in academic circles more so than in policy ones.

Conclusion

It is not the job of a futures project to predict the future, but to challenge the assumption that the future can be forecast from known trends and will look a lot like the present. This article considers the history of scenario development as a technique that enables a 'whole system' perspective and supports the design of effective policies and strategies in the face of uncertainty.

We have also investigated what was learned from a process that set out two decades ago to help achieve better health outcomes for today's New Zealanders. Many of the changes that emerged over those decades were inevitable and foreseeable, but others were surprising. Elements of all the 1997 scenarios have emerged, and the health system has responded as best it could. Perhaps it could have benefited from being more foresightful.

That said, we have been unable to determine whether the 1997 scenarios helped, or whether 'better' scenarios would have made a positive difference in the health sector. Hindsight leads us to conclude that any future scenario development project should be designed with evaluation in mind. It is especially important to establish baselines and continuously monitor impacts.

Scenario development might be applied in other areas of public policy, particularly where there are seemingly intractable problems to be solved, or polarised views about future directions. Scenarios allow for the systematic development and description of alternative futures that are not 'hard and fast' and enable discussion to occur with the temperature turned down. Since elements of all scenarios are likely to emerge, there is no contest between them to be the winner, and the focus can shift to designing policies and strategies that will be relevant and robust, no matter what occurs. Scenarios complement traditional approaches rather than replace them, and allow for the desired whole-system perspective.

There remains some contention about the best process for scenario development, and our future research will consider the experiences of other jurisdictions – for example, Singapore and Finland. However, New Zealand's unique economic, social and cultural context clearly requires inclusivity rather than exclusivity – breadth as well as depth (Menzies and Middleton, 2019). This approach requires a judicious mix of independent research and expertise, representative advice, broad consultation, and communication of outcomes through multiple channels.

We also suggest that rather than being delegated and/or carried out during a discrete time period, scenario development should be embedded at the level of senior management as a continuous and constantly updated process. It is encouraging to see scenarios being used and refined in parts of the New Zealand public sector, but more work needs to be done to ensure that they mesh effectively with decision making. Hopefully, growth in use will continue, so that collectively we continue to bank experience and grow good practice.

1 These are scenarios that have been published or are still in the public domain. Anecdotally, the authors are aware of others having been developed by the Department of Conservation, Ministry for Primary Industries and Treasury. There are bound to be still others, along with scenario work that is more in the nature of option development or sensitivity analysis – all valuable but outside the scope of this article.

2 A charge also sometimes levelled at the Delphi technique.

3 Similar to the 'mental models' described by Johnson-Laird (1983).

4 Scenarios prepared for the transport sector challenged the assumption that demand could only increase and focused the debate on access instead, with considerable flow-on effects for urban design and land use. In health in the 1990s, it was assumed there would be continuous, successful growth in immunisation programmes (Longley and Warner, 1995). Health professionals now know not to take this for granted, due in no small part to unanticipated developments such as some rogue research, resistance from an 'anti-vaxxer' movement, and complacency due to the virtual disappearance of some diseases.

5 Malcolm Menzies as a representative of the now-disestablished New Zealand Futures Trust (see www.futuretimes.co.nz); Lesley Middleton from the Ministry of Health.

6 See https://www.health.govt.nz/our-work/health-workforce/workforce-service-forecasts.

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Heather Gifford, Amohia Boulton, Lynley Cvitanovic, Pat Neuwelt and Tim Tenbensel

Making Health Data Work for Māori
attitudes and current challenges

Abstract

This article explores the experience of health services decision makers using Māori health data to inform decision making. It draws on selected findings from the second phase of a three-year Health Research Council-funded study and discusses how Māori health data identification, data analysis and data interpretation processes are being used by decision makers to help to identify the most promising strategies to improve Māori health. Data is critical to monitoring inequity and has the potential to drive health service change. However, improvement is needed at all steps in the decision-making process to better facilitate utilising data to leverage change in Māori health outcomes.

Keywords Māori health data, health services decision making

Background

Using district health board (DHB)-level, routinely collected Māori-specific health data to improve Māori health outcomes requires decision makers to prioritise Māori data, meaningfully engage with the multiple stories the data is telling them, support Māori leaders to help define data priorities, and, using available data, generate solutions to the issues identified.

Disparities in health outcomes between Māori and non-Māori are widely recognised as a major focus for health system improvement (Gauld et al., 2011; Pega et al., 2014). While gains have been made, issues concerning collation, access and use of data are contributing to slow progress in successfully reducing disparities (Coster, 2004; Suckling et al., 2015). A key current government policy objective is the delivery of equitable health outcomes supported by insightful data interpretation (Ministry of Health, 2018a).

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Conflict of interest statement: The lead author is an iwi representative on a statutory board of one of the DHBs included in the study.

Under the New Zealand Public Health and Disability Act 2000, DHBs are tasked with 'reducing health disparities by improving health outcomes for Māori and other New Zealanders' (s5(3)(c)). With regard to Treaty of Waitangi principles, the act also requires DHBs to ensure the participation of Māori in decision making (s23(1)(d)), and to provide information to support this participation (s23(1)(f)).

While DHBs gather a wide range of data, for a variety of policy and administrative purposes, there is an increased demand for data to inform strategic decision making for Māori health gain. Data on inequities in health outcomes, service access and service utilisation is relevant to DHB decision-making processes in two main ways. First, data is used to support the 'funding arm' of DHBs, in which resources are allocated across the range of publicly funded health and disability services. Contracts with non-governmental providers, including Māori health providers, fall under this ambit. Second, data can be used to inform decisions within specific service areas directly provided by DHBs (i.e. the 'provider arm'). A key challenge for both Māori leaders and organisational decision makers is to use data in ways that lead directly to improvements in health services. Improving Māori service access, service utilisation and patient care will contribute to a reduction in disparity in health outcomes between Māori and non-Māori.

This article reports findings from the second phase of a qualitative study, D3: Data, Decision-making and Development: using data to improve health outcomes. This four-phase study is examining the processes of data identification, analysis and interpretation employed by decision makers in order to identify the most effective and promising strategies for improving health outcomes for Māori.

The study

Kaupapa Māori theory (Walker, Eketone and Gibbs, 2006; Mahuika, 2008; Smith, 2012) and methodological principles drive all aspects of the research design, from establishment of the study through to data collection methods, analysis and translation. Participatory action research methods (Bradbury and Reason, 2001; Baum, MacDougall and Smith, 2006) within a case study design (Stake, 1995, 2005) are being utilised. The case study sites are three DHBs selected to reflect a degree of diversity by overall population size and by the proportion of their Māori population: site one (small, 24% Māori); site two (large, 9% Māori) and site three (medium, 17% Māori). We considered a small DHB would have a population below 65,000, a medium DHB would have a population over 65,000 but less than 180,000 and a large DHB would have a population greater than 235,000 (Te Pou o te Whakaaro Nui, 2018). We employed convenience sampling to select DHB sites. Considerations influencing selection included our pre-existing research relationships with the DHBs and key staff within each DHB, together with geographical proximity to members of the research team.

We were particularly interested in Māori decision makers' perspectives regarding potential case options, the use of data, and its role in planning services as well as in Māori health gain.

In the first phase of the study we established the research, including research planning with the case study site partners, gaining ethics approval, and exploring potential cases for further investigation in each case study site. Case selection criteria included that the case identified a specific Māori health issue from routinely collected data (i.e. indicator and health service utilisation data) and was considered a high priority by the site's Māori decision makers. Confirmation of case study partners in each site also occurred in phase one. The role of case study partners in the research is to act as sponsors assisting with research design, interpretation, and translation of findings into action. In collaboration with each case study partner, we identified a core group of key decision makers to participate in phase two.

In phase two, potential cases were the subject of an investigation which aimed to understand the broader context of data and its link to health service improvement. Cases which warranted more detailed investigation for the planned phase three were also identified. The research is primarily concerned with how data is being used rather than with examining data accuracy. In phase four we will identify facilitators of, and barriers to, the effective use of Māori health data, as well as how findings can be translated into improvements in practice, or service provision, within the sites and across the wider health sector.

Key informants

In phase two we interviewed 18 key informants across the three sites. Decision makers who had access to Māori data, and were involved in decision making concerning health service responses to access and outcomes inequities, were targeted. We were particularly interested in Māori decision makers' perspectives regarding potential case options, the use of data, and its role in planning services as well as in Māori health gain.

Informants included 14 Māori and four non-Māori decision makers: ten based at DHBs and eight with Māori health service providers (MHSPs). At one site, eight interviews were conducted, with five each being conducted at the others. Quote codes used in this article include informant number, ethnicity and organisational affiliation by DHB or MHSP. Decision makers largely fell into two groups: those in management roles and those in governance roles. Māori governance members included those appointed by the Crown or publicly elected onto DHB governance groups along with mana whenua groups or Māori relationship

boards (members nominated by the respective iwi residing in the DHB region) working alongside DHB governance members as te Tiriti partners.

Informants' primary organisational affiliations are cited in the results section of the article. It should be noted that, in addition to their decision-making roles in their DHBs and/or MHSPs, all Māori informants held decision-making roles in a range of other capacities. Examples include on tribal boards and rūnanga and representing iwi on a variety of governance and advisory bodies across central and local government and the non-governmental organisation sector.

Data collection

An open-ended interview guide was developed based on the overarching research objectives and questions defined in the phase two plan. The questions used as the basis for the interview guide were:

- Which data that highlights Māori health inequities are the most useful for your DHB planning purposes, and why?
- What other potential data that is underutilised, or could be further developed, has the potential to influence outcomes for Māori? How could use be improved?
- How has this data been used for health service planning – development of interventions, policies, redirected resources?
- What are the challenges and highlights for this DHB in using Māori health data to leverage change in health services?
- Which potential case is most useful for addressing the aims of this research?

Ethics approval for the study was granted by the University of Auckland's Human Participants Ethics Committee (Protocol #020 455, December 2017).

Interviews were conducted by a primary interviewer, with a secondary interviewer observing and taking notes. Interviewer roles were flexible, with both posing additional questions as required. In-depth information was elicited using this collaborative approach. After each interview, the researchers debriefed and compiled field notes. All interviews were conducted face to face and averaged 40 minutes to one hour in length. Interviews were audio-recorded and transcribed in full, with transcripts each being allocated a unique code. Transcripts were checked by informants prior to analysis.

Key sub-themes [towards data] emerging included awareness of the potential for using data to address inequity; and scepticism about, and appreciation of, data.

Data analysis

Data was analysed using a qualitative thematic approach to identify patterns in meaning and to make sense of seemingly unrelated material within and across transcripts (Braun and Clarke, 2006). Members of the research team independently analysed at least two transcripts from each of the three case study sites before meeting to carry out a mahi a rōpū process (Boulton et al., 2011), a form of group-level analysis used to further refine independent findings and confirm key themes emerging from the data. The analysis framework used to review the transcripts was developed from key questions in the interview schedule.

Results

Results are discussed below under four major themes arising from the analysis, namely: attitudes towards data; capacity to engage with data; data contributing to more robust decision making; and using data to improve equity.

Attitudes towards data

Attitudes towards data were diverse among informants across the case studies. Key sub-themes emerging included awareness of the potential for using data to address inequity; and scepticism about, and appreciation of, data.

When considering the potential for using data to address inequity, an informant noted that it was critical to use data that would best highlight the inequity issue and expose potential problems in achieving improved Māori health outcomes:

> I think some of that is about knowing … what data is there. What levers to pull … how to present it. What data is the 'right' data or the most appropriate data? … it could be data everywhere – but what's the 'right' data to use? (non-Māori, DHB, KI 11)

The transformational potential of quantitative data in the equity space was further described by another informant:

> we use data to shape, to inform our decisions all the time … we've just done a review of [service] … and the data has been really, just in terms of attendance and proportion of Māori who are attending and, some of the child health outcomes and inequities in those child health outcomes … that's been really useful in terms of informing what we decided to do. (Māori, DHB, KI 4)

Others too were positive about the potential for data to make a difference, with one describing an increased willingness among Māori to engage with it:

> Māori have had a fear … of research generally. Then we've moved, in terms of our journey, to if we like research, we like the qualitative stuff. And I think the next step on the journey is that we're coming to see the importance of quantitative data … that could have a positive influence for us. (Māori, MHSP KI 15)

There was also scepticism, however, about the quality of the Māori data presented by DHBs to inform service-related decision making, with one informant commenting:

> I'm not a great believer ... I know that data can be skewed and how data that is presented is the wrong data ... I'd prefer to know the story behind it. (Māori, MHSP, KI 9)

Even though some were sceptical about the use of quantitative data, they could nevertheless see its potential if adequate interpretation and a willingness to hear the real issues facing Māori were factored in, as the following excerpt illustrates:

> I think data … can be your friend. But it can be your enemy … it isn't just the data. It's the interpretation. It's the messenger. It's the story – and then it's the willingness to hear the challenges. (Māori, DHB, KI 11)

Capacity to engage with data

Informants described significant data capacity issues evident in planning and funding services in the smaller DHB site and in some MHSPs. MHSP informants were often asked to respond to data that identified continuing inequity in outcomes for Māori. When talking about DHB-level data such as rates of immunisation uptake by ethnicity and age, MHSP participants described feeling unable to respond adequately to the data. A lack of dedicated personnel to assist with data review and analysis within some MHSPs was reported, along with the nature of some DHB reports which failed to include adequate analysis information:

> there are times when I kind of feel like I'm ticking their [DHB] boxes. Because we're asked to go to hui constantly where they're presenting us with data and then kind of asking us what our perception is. And I don't have any issue in giving our perception, but I just wonder to myself, so what? What next? What does this mean? (Māori, MHSP, KI 15)

Another informant described her frustration around continually having to rely on somebody else's data and data analysis:

> We're really reliant on data from other people because we don't have someone in this organisation currently – and maybe that's the goal moving forward – who can gather data. Who can have an analytical lens on that data and who then can produce it in a productive manner for us … the next step on the journey is that we're coming to see the importance of quantitative data, um, that could have a positive influence for us. (Māori, MHSP, KI 16)

Informants observed that the manner in which data was presented affected their ability to engage with it at a deeper level.

MHSP informants were not alone in their frustration with the lack of data analyst capacity. A DHB informant observed:

> Our decision support and data framework is quite amateurish … we don't have a sophisticated level of data analysis and information analysis, or the infrastructure to support it. (non-Māori, DHB, KI 17)

Capacity issues were limited not only to type of service provider; some governance groups also had varying capacity to strategically respond to data. The following informant identified challenges around how, and at what level, to 'pitch' information:

> [name of group] are a challenge because of the different levels of understanding … sometimes they dive into 'three years ago with what happened to [name of relative]' … and you can't get them up to a level of understanding and across data and information. (Māori, DHB, KI17)

Data contributing to more robust decision making

There was an appetite among informants for multi-method approaches to data collection and to considering data from a range of perspectives, including those of whānau. Such approaches, it was suggested, would offer decision makers a more complete picture to better inform planning decisions, recognising that a more nuanced understanding of health for Māori communities requires greater appreciation of whānau perspectives and taking these into account in decision making. An informant observed that this does not tend to happen:

> quite often in consultation there's a critical voice missing and that's the voice of our whānau … We think we know what whānau need. We go ahead and do things. (Māori, MHSP, KI 15)

There were those who believed that qualitative data was of particular value and that it should be used to complement, and to contribute to more accurately interpreting, quantitative data. Improved understanding would in turn inform effective approaches to addressing Māori health need. Some wanted a more targeted, or focused, understanding of what population-level data means for communities, as the following example illustrates:

> If you're asking me about use of data for decision-making, then I want the qualitative stuff to support that … what we don't get at the moment is the analysis behind the information that is given to us … What we're getting is target-based – hit the target and miss the point … I think that at a population level … the data should be highlighting specific areas to focus on. With the caution that … the data has to be accurate ... (Māori, MHSP, KI 8)

Informants observed that the manner in which data was presented affected their ability to engage with it at a deeper level. Using dashboards or traffic light graphics,

such as is used in Trendly performance data by DHBs, was described by an informant as being well received by many decision makers, who found these formats accessible. An informant went on to note that, despite the advantages of presenting data in graphic formats, standard statistical data presentation, often described as technical or hard to understand by participants, remained the norm. Another informant further highlighted the importance of presenting data to decision makers in accessible ways:

> smoking cessation or … overnight stays in the hospital – that's the sort of data I think that takes my eye more than … anything that looks too sort of technical. Because I think unless you've been part of preparing that data and have a real understanding of how it reads and what it should look like and all the rest of it, then you don't quite get the full picture. (Māori, DHB, KI 17)

An analyst routinely involved in presenting Māori data described some of the challenges it involved:

> You need the right kind of skills. You need the right kind of questions and … the biggest thing I found … the data doesn't speak for itself. It never speaks for itself. You have to speak for it. You have to frame your … question … You have to … put your graph up … and you actually have to spend quite a lot of time saying what's my audience going to respond to? What's going to get them out of their seat to say 'actually, that's not okay. Actually, that's in my power to change'. (non-Maori, DHB, KI 10)

One informant argued in favour of a clearer direction from management about how those in governance roles should engage with data being presented:

> We're really receiving poor reports from managers … from a data perspective. They're very lengthy reports with a lack of clarity from the outset [around] why we are receiving the report and what management expected from governance … we don't get the analysis behind the information. (Māori, MHSP, KI 9)

Several identified the importance of Māori participating, at an early stage, in designing health services to achieve better outcomes for Māori.

Another informant described using ethnicity data as a lever for health service change. The informant described consciously presenting data to decision makers in ways that best position it to be used to support Māori health gain:

> We strategically structure the information and how we can … get the best gain out of the data; through reporting, through information sharing, through how we structure it. (non-Māori, MHSP, KI 2)

Several informants highlighted the need for data, including health targets, to reflect a strengths-based approach. One informant described this as focusing on what is working well and encompassing a positive view of being Māori:

> I … think I wanna be focused on growing us to be wonderful Māori people and those targets don't help that. And I think what helps that is strengthening people's inner being about their uniqueness and perfectness of being Māori. (Māori, DHB, CS 2)

Others were aware, however, that taking a strengths-based approach to data necessitates a balancing act. It requires data that continues to expose inequity in outcomes while at the same time demanding a commitment to using data positively to support Māori aspiration.

Using data to improve equity

Data was seen as a potential tool for leveraging health service change, provided there was a willingness among decision makers to apply an equity focus to interpretation. In relation to this, one informant favoured prioritising relationships between groups of decision makers:

> We've had the whole discussion about 'the numbers aren't changing' … but we wanted to have a different conversation which didn't necessarily mean looking just at the numbers. Because we know the story … just getting more numbers wasn't going to help us shift … which was why we moved to … 'let's get … the relationship working well so that we can then start to … identify the priority areas and reconfirm those and then look at what's actually happening'. (Māori, MHSP KI 8)

Informants were asked to comment on the role of Māori as a Treaty partner in relation to data. Several identified the importance of Māori participating, at an early stage, in designing health services to achieve better outcomes for Māori. For example, one of these informants observed:

> There's a core point somewhere in the journey where it might be useful if you had people sitting around the table, whether it's iwi reps or, you know … before the decisions are made. Where you're analysing the data as opposed to decisions made and then you take it to iwi … or whether you've got a collection of managers and people like ourselves who are able to see … this is the data, these are the trends, but actually this is the way we think it might be best in our communities and in our context moving forward. So, it's about the interpretation of the data. (Māori, MHSP, KI 15,16)

Another informant promoted using data as a critical tool for advancing Māori health gain:

> I'm not interested in the system getting defensive about, you know, 'has it performed for Māori'? Of course, it hasn't. It's pretty obvious when you look at any system measure that we've got in place at the moment that the system has failed its Māori population. So, let's not waste energy on trying to defend the fact that it's been ineffective. Let's just move straight from discovery into solutions. (Māori, DHB, KI 12)

The same informant shared his observations about the requirement for leadership from central government if data was going to effectively drive changes in equity:

> [We are] working on this with the Ministry at the moment … we've said to them that the one thing they can do to be champions for Māori health equity is just by default … start reporting everything by ethnicity … How hard is that? But not only that, they should be when you look at the legislation … around reducing disparity for Māori. (Māori, DHB KI 12)

… a key task confronting Māori decision makers is to embrace the power of data and take responsibility themselves for using the data, or challenging it if need be, to ensure improvements in health outcomes.

Discussion

The study results highlight that attitudes towards health data among participants range along a continuum from difficulty engaging with data, or scepticism about the potential of data to really effect changes in health service outcomes for Māori, to realising and appreciating the potential for data to be a catalyst for improvements to health inequity through more informed decision making. While a few Māori informants were clustered at the 'disengaged' or 'sceptical' end of the continuum, most were closer to the opposite end: they valued health data, saw the opportunities for change that data presented, yet were also mindful of the challenges it posed. Challenges include ensuring data is accessible and relevant to Māori, as well as strengthening the capacity and opportunities for Māori to authentically participate in decision making.

Qualitative and quantitative data is needed to inform decision making that draws on nuanced understandings of health issues. Decision makers want to be able to 'see themselves' and their whānau in data that ostensibly represents their situation. They identified a role for strengths-based perspectives on issues highlighted by data if data is to inform improved health outcomes for Māori rather than being used to blame or further stigmatise Māori (Curtis, 2016). Strengths-based perspectives place emphasis on Māori self-determination, appreciating that Māori communities are resourceful and resilient in the face of adversity as well as capable of designing responses and services that best address their needs.

If we were considering how this strengths-based approach might be implemented in the data and decision-making arena, we would suggest that Māori are supported and resourced to be involved in all phases of data gathering and analysis; that Māori-led explanations and options for achieving equity are considered when reviewing data, and specifically that issues are considered from a systems perspective whereby the health system is examined for opportunities for change rather than placing emphasis on the 'problem' with the users of the system.

To engage community in decision making around health service design takes time, resources, a genuine relationship and being open to hearing alternative views. The results of our study indicate that the voice of whānau is predominantly filtered through MHSPs, and through Māori decision makers. Exploring options that enable whānau as consumers to engage more directly in decision making around health service design may lead to improved access and outcomes for Māori.

The study highlights a critical role for strengthened Māori data interpretation and related decision-making capacity, a need also identified by Te Mana Raraunga, the Māori Data Sovereignty Network (Kukutai, 2019), and apparent across fields ranging from iwi development (Gifford and Mikaere, 2019) through to lifecourse studies examining ways to prevent Māori ill-health (Theodore et al., 2019).

The passing of the New Zealand Health and Disability Act 2000, and the formation of DHBs, signalled enhanced Māori decision-making opportunities (Boulton et al., 2004). However, recent WAI 2575 findings (Waitangi Tribunal, 2019) indicate that the DHB model has not delivered on the Treaty partnership relationship. Māori relationship boards do not have the statutory recognition and status of the committees described in sections 34–6 of the act. The Tribunal report concludes that there is scant evidence of the Treaty principle of partnership in action.

Addressing the issues raised in our study as well as by the WAI 2575 report is urgent at a number of levels, nationally and locally. Strong leadership, both on the part of central government and locally by DHBs, is crucial if improvements in Māori health outcomes are to be achieved. At central government level, the health minister's letter of expectations (Clark, 2019)[1] and long-term strategic policy guidance in the form of documents such as the New Zealand Health Strategy (2016) and He Korowai Oranga (2014) provide unambiguous direction to the health sector as to the priorities for investment and focus. The minister's most recent letter of expectations (Clark, 2019) overtly

references the need for improved information to support efforts on the part of the sector to achieve equity. The focus on equity within a Treaty framework is critical, ensuring Māori are prioritised in any decision making to improve equity as of right as tangata whenua and as the Crown's Treaty partner, a commitment the Ministry of Health Output Plan (Ministry of Health, 2018b) confirms.

For DHBs to enact these high-level expectations, dedicated expertise, capacity and support to improve engagement with Māori in decision making is necessary. The level of expertise to, first, produce reliable, high-quality data, and then the ability to present data and reports in ways that better meet the needs of Māori is inconsistent across the DHB network. Smaller DHBs in particular struggle to attract and retain data analysts and those able to interpret data for a Māori audience. Investment in data analysis capacity and the communication of that analysis would greatly enhance DHB efforts to make the most of the data that they collect. Finally, a key task confronting Māori decision makers is to embrace the power of data and take responsibility themselves for using the data, or challenging it if need be, to ensure improvements in health outcomes.

Conclusion

Improvement is needed at all steps in the decision-making process to better facilitate utilising data to leverage change in Māori health outcomes. Data is critical to monitoring inequity, and has the potential to drive health service change, if the optimum configuration of data and decision making is in place. Data must meet the needs of Māori decision makers as well as of other central government and health institution decision makers. Māori must be meaningfully included at all levels and stages of decision making. Effective partnerships are critical, not only to challenging the system but to developing viable solutions.

1 The 2018 minister's letter of expectations stated that DHBs would be held accountable for achieving equity for Māori and for meeting Treaty of Waitangi obligations and commitments to increasing equity through, among other mechanisms, 'the use of smart data, analytics and rich insight' (Ministry of Health, 2018b, p.13).

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Kevin Jenkins

Blockchain in Aotearoa
are distributed ledgers the future for our regulators and policymakers?

Abstract

Blockchain technology has been moving beyond cryptocurrency into new areas internationally, with substantial investment from both the private sector and government, including private sector projects in Aotearoa. However, there is not yet clear evidence of successful use cases at scale. The technology offers important benefits through creating tamper-proof records of transactions, and major drawbacks of public networks like bitcoin, such as massive power consumption, do not seem to apply to regulatory uses based on private blockchain networks. But there is debate over whether the technology is as secure as its proponents claim. In exploring blockchain's potential, regulatory designers will want to carefully consider more conventional alternatives such as distributed databases.

Keywords blockchain, distributed ledger, trust, regulatory design

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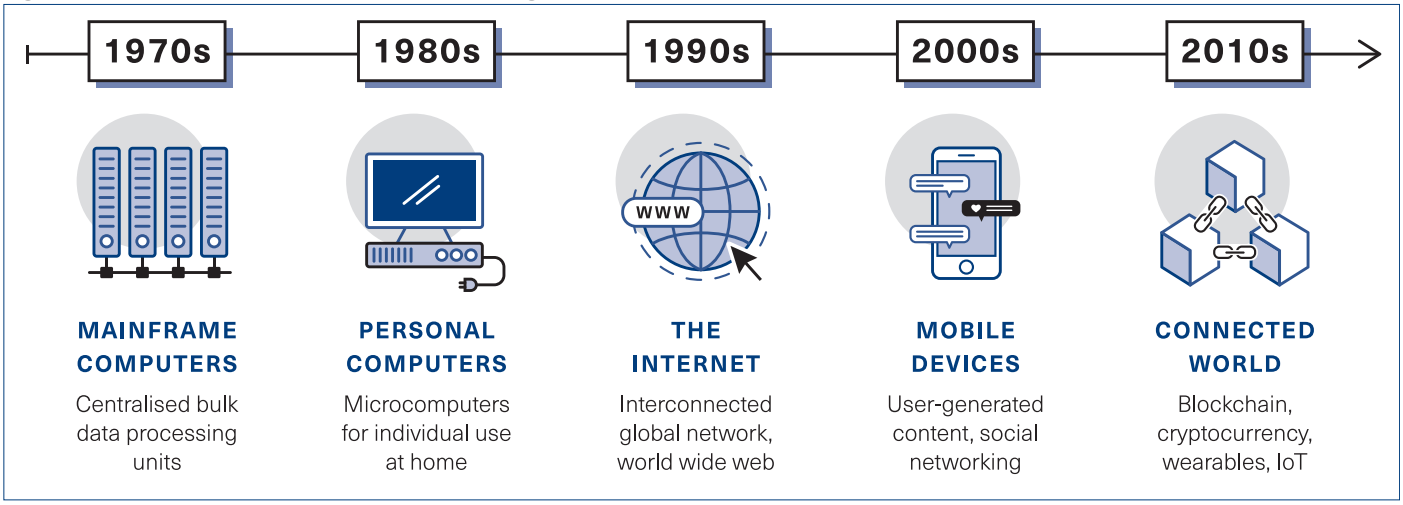
Blockchain technology – the best-known type of 'distributed ledger technology', or DLT – is a complex and very fast-moving phenomenon that has seen large investments from government and industry around the world, including in Aotearoa. There is a mass of commentary and reporting, and frequent announcements of new blockchain projects or pilots.

This article presents the results of my efforts, as a layperson interested in the interface between technological innovation and regulation, to find my bearings in the blockchain landscape, to canvass some of the often wildly diverging views, and to identify relevant questions for regulatory designers to ask in evaluating the technology's potential.

Just cryptocurrency – or a whole world of potential uses?

The OECD has recently declared that 'Blockchain technology has evolved from a niche subject to the hottest tech disruption buzzword' (Berryhill, Bourgery

Figure 1: Blockchain in the context of successive digital revolutions



Source: graphic by Lan Fu, MartinJenkins

and Hanson, 2018). But the debates and commentary in this area indicate that the blockchain industry is facing two possible futures.

One future sees blockchain technology as entwined with bitcoin, the cryptocurrency it was designed to enable, and with which the technology was packaged when it was first released into the world. Saifedean Ammous, for example, a US economics professor, scoffs at the idea of blockchain offering much beyond bitcoin:

> There is no reason, except for ignorance of its mechanics, to expect that it would be suited for other functions ... Blockchain is better understood as an integral cog in the machine that creates peer-to-peer electronic cash with predictable inflation. (Ammous, 2018, p.272)

The other camp sees cryptocurrency as simply the foundation use-case, with many more in play or shortly about to be. This camp says we are only scratching the surface of the benefits that blockchain technology can offer for business, government and citizens in general. For regulatory systems specifically, it is supposed to offer greater effectiveness in the form of better security and accuracy, and also greater efficiency and economy.

So how is this going to play out, including in Aotearoa? A recent report published by the Callaghan Institute, by Joshua Vial of Enspiral, clearly takes the second, more expansive view. Vial argues that 'Distributed ledgers and blockchains are emerging general purpose technologies that are likely to have a significant impact across all aspects of the economy' (Vial, 2018). He argues that in Aotearoa we need a more blockchain-friendly economic and regulatory environment.

Vial's strong statement suggests that this projected blockchain revolution may be as exciting and comprehensive as, say, the personal computer revolution of the 1980s, where, whatever you and your business or agency were doing, putting a computer on your desk was pretty much guaranteed to mean you'd be doing your work more quickly, more accurately or more cheaply, or all three, with significant gains in productivity.

But there have been warnings out there that that great promise is still mostly just a promise. The McKinsey consulting firm wrote at the start of 2019:

> A particular concern, given the amount of money and time spent, is that little of substance has been achieved. Of the many use cases, a large number are still at the idea stage, while others are in development but with no output. The bottom line is that despite billions of dollars of investment, and nearly as many headlines, evidence for a practical scalable use for blockchain is thin on the ground. (Higginson, Nadeau and Rajgopal, 2019)

Early moves beyond cryptocurrency: Ethereum's 'smart contracts'

Vitalik Buterin is the legendary founder of the blockchain-based platform Ethereum, usually second or third to bitcoin for cryptocurrency market cap. Some have suggested he's part-robot, but he seemed like a super-bright, driven, but still very much human entrepreneurial geek when I saw him speak in Wellington in 2017.

Ethereum is an early example of using blockchain technology for more than cryptocurrency. Descriptions can get pretty complicated quickly, but *Blockchain Revolution*, by father-and-son team Don and Alex Tapscott, and the biggest selling blockchain book so far, usefully explains the difference between the platform, the application and the currency (which is called Ether):

> Ethereum is a platform technology, designed from the outset to enable *distributed applications* (DApps) … At the core of distributed applications are smart contracts, software that mimics the logic of a business agreement. … they minimize the need for intermediaries (banks, brokers, lawyers, courts …). If Ethereum is the city grid, and the DApp is the car, then ether is the fuel. (Tapscott and Tapscott, 2016, pp.xxxii–iii)

Ethereum's 'smart contracts' offer the prospect of extending the benefits of blockchain technology beyond cryptocurrency afficionados to cover a vast range of contractual transactions in everyday commercial and personal life. They are supposed to be self-executing and self-enforcing, so that, for example, payment is triggered automatically when

certain conditions are met. A better name for them may, however, be 'dumb contracts', as they essentially just work their way through a series of binary yes–no options to reach a conclusion based on the relevant value at each option point. They have been criticised as too inflexible to handle the nuances and unforeseen circumstances that make up much of the real life of contractual arrangements and disputes (Notland, 2019). But like bitcoin and other blockchain cryptocurrencies, they offer the benefit of a tamper-proof transaction record and eliminate the need for third parties and the costs that they entail.

'Blockchain 3.0' – the next digital revolution?

Melanie Swan, discussing the pattern of the last half century of a digital revolution every decade, places blockchain and smart contracts in the 'connected world' revolution of the 2010s (Swan, 2015). She argues that blockchain represents a whole new layer of the internet that facilitates value transactions.

Swan talks of three blockchain stages. Blockchain 1.0 has been bitcoin and other cryptocurrencies. Blockchain 2.0 has been the extension of blockchain into 'smart contracts' along Ethereum lines: for example, for transactions involving land title, shares and mortgages. What's up next, she says, is Blockchain 3.0, involving the application of the technology to completely different sectors, such as government, health and art.

As the title of their *Blockchain Revolution* gives away, the Tapscotts join Melanie Swan in the broad revolutionary camp, where blockchain steamrolls into new sectors. They call blockchain the 'Internet of Value'. In their eyes what we call the internet is really just the 'Internet of Information' because all it does is move information – copies of documents, photos, audio – from person to person. They see blockchain as revolutionary because it is disruptive of at least seven domains. Financial services is familiar, but they also cite the design of firms, business models, the Internet of Things, economic inclusion, government and democracy, and the creative industries.

Putting those disruptions together, they are saying the world will be remarkably different – and better – in less than a generation because of blockchain. Key to these changes is radical decentralisation, and also a move to most transactions being between things (through the use of smart infrastructure and devices), not people.

From Estonia to Uttar Pradesh, DLT projects abound

There have been plenty of signs of movement into the Blockchain 3.0 zone, from both government and the private sector, often in partnership.

Consistent with our membership of the D9 group of advanced digital nations, which includes Estonia, the United Kingdom, South Korea, Israel and others, New Zealand has seen a lot of activity and investment in blockchain technology, though not yet any government applications.

Estonia has been an early leader in government adoption of distributed ledger technology, as it has in digital government generally, and began experimenting early on with a locally developed form of DLT called 'keyless signature infrastructure' (UK Government Chief Science Advisor, 2016). It has been making use of distributed ledger technology in a number of areas, including identity management and health records (Halim, 2019; Shen, 2016).

Dubai is another governmental leader in the use of distributed ledgers. Its Dubai Blockchain Strategy set the bold target of making Dubai 'the first city fully powered by Blockchain by 2020'. In January 2020 it reported it had succeeded in implementing 24 applicable use cases, including establishing a shared platform that government agencies could use to implement use cases rather than having to invest in individual platforms (Smart Dubai Department, 2020). Fully implemented use cases include verification of property titles, the issuing of university certificates, the licensing of healthcare specialists, and requesting a certificate of loss of passport.

It is difficult to keep up with the announcements of new blockchain or DLT projects internationally – which are, however, frequently only pilots and proof of concept exercises. Blockchain has been discussed as particularly well suited to the transactions of 'prosumers' in areas such as peer-to-peer home-generated solar power that is fed into electricity grids. At the end of 2019, a new pilot along those lines was announced for the Indian state of Uttar Pradesh, which, with just over 200 million people, is the largest sub-country political entity in the world. The pilot involves two state-owned power utilities partnering with an Australian energy blockchain company, Power Ledger. This is Power Ledger's second such pilot in India, adding to a project in New Delhi, but the new project is significant in that Uttar Pradesh would be the first Indian state to amend its regulatory framework to allow peer-to-peer energy trading (India Times, 2019; Lewis, 2019).

… and on to Christchurch

Consistent with our membership of the D9 group of advanced digital nations, which includes Estonia, the United Kingdom, South Korea, Israel and others, New Zealand has seen a lot of activity and investment in blockchain technology, though not yet any government applications.

Centrality (https://centrality.ai/) is a marketplace for decentralised apps (dApps) for software developers that is incubating

blockchain companies. TrackBack, for example, completed a proof of concept to track mānuka honey from New Zealand to Shanghai. TrackBack worked with AsureQuality, New Zealand Post and a producer to tackle the fake mānuka honey trade.

Techemy (https://techemy.co/) is a New Zealand-based community of blockchain companies that invests, owns and develops companies 'at every stage of the blockchain value chain'. Joshua Vial's New Zealand report tells how Amazon's Alexa uses data supplied by Brave New Coin (https://bravenewcoin.com/), launched by Techemy, to answer questions about the price of bitcoin. Another Techemy investment is Sphere Identity (www.sphereidentity.com), which is working to offer self-sovereign identity so we consumers can control our own personal data, while removing the painful issues around online forms and abandonment rates. Other companies working on sovereign identity in New Zealand include SingleSource (www.mysinglesource.io), which partnered with Auckland company Delta Insurance (https://deltainsurance.co.nz/) to provide a decentralised blockchain identity system.

Joshua Vial cites other examples of blockchain start-ups in Aotearoa. Axia Labs is a global blockchain company founded in Christchurch in 2017 by political science and philosophy graduate James Waugh. In 2013 he learnt to use cryptocurrency to avoid PayPal charges when he sold in-game items for real-world money, leading him to focus on blockchain and cryptocurrency in almost all of his free time since.

Axia Labs is focused on 'building a more equitable economy' and, in practice, they provide top-down advice and help leaders and innovators connect more deeply with the blockchain ecosystem. Axia has worked with a wide range of international clients, including institutional corporations, universities, enterprise companies and numerous tokenisation projects. Zeroing in on token economics, decentralised architecture and industry best practices, a large portion of Axia's time has been spent in Silicon Valley and London, focusing on the global market.

We are attracting blockchain entrepreneurs from overseas too. Here's Vial again:

> They include the co-founder of Coinbase (the first billion dollar blockchain company), the co-founder of Augur (one of the first Ethereum initial coin offerings) and the head of innovation at UNICEF who has launched an impact-driven blockchain investment fund.

His report also talks about how Stronghold (https://stronghold.co), an exchange focused on the Stellar platform (www.stellar.org), was attracted to Aotearoa because we have a single regulator (the Financial Markets Authority) 'with a high degree of literacy about crypto-exchanges and a willingness to engage'.

If you're a bitcoin user-owner, no one can mess with your bitcoin because you have your own private digital key, but if you forget or lose your key then of course *you* can't mess with your bitcoin either.

Transacting securely without the need for trust: does the technology deliver on the promise?

The revolutionary content attributed to blockchain technology, and exemplified by bitcoin, is that it addresses the core problem of trust. For example, we can't safely send money through the post, so instead we work through trusted intermediaries like payment companies, banks and governments. Blockchain allows value – either digital cash or other digital artefacts with monetary value – to be transmitted safely.

Some call it 'the trust machine' (Berryhill, Bourgery and Hanson, 2018). But more accurately, as Saifedean Ammous explains, it takes the need for trust out of the equation altogether: that is, the code is transparent, and any change is also transparent and needs to be agreed by a majority of those involved (Ammous, 2018). So it's a trustless set-up, but in a completely benign way.

That said, there are some obvious limits to security without a trusted central authority. If you're a bitcoin user-owner, no one can mess with your bitcoin because you have your own private digital key, but if you forget or lose your key then of course *you* can't mess with your bitcoin either. With conventional banking, losing your bankcard or forgetting a password is likely to cost you only some time and inconvenience. But it's different with bitcoin, as John Lanchester notes:

> the unforgiving power of the public address/private key combination has also seen 7500 bitcoin lost under a landfill outside Newport in Wales, when an IT worker chucked out an old hard drive on which he had stored the private keys from his 2009 bitcoin stash. Current value of loss: £2.1 million. (Lanchester, 2016)

Kai Stinchcombe represents a fairly extreme view among blockchain detractors of the downsides of removing the security offered in the form of banks and other traditional trusted intermediaries. Phrases like 'crap technology' and 'medieval hellhole' give you a flavour of his polemic. He argues that our current trust-based systems more or less work, and that the trustless bitcoin system is just what banking looked like 800 years ago in Europe:

> with weak governments unable to enforce laws and trusted counterparties few, fragile and far between – theft was rampant, safe banking was a fantasy, and personal security was at the point of the sword. This is … what it looks like to transact on the blockchain *in the*

ideal scenario. (Stinchcombe, 2018; emphasis in original)

But can I trust the technology?

Worries about lost bitcoin keys aside, there may be a more fundamental, more 'meta', objection to the claim that blockchain technology provides security without any need for human trust.

The blockchain evangelists argue that the beauty of the technology is that it provides security without the need to trust in the honesty or integrity of any humans or social institutions. But of course you do need to trust in the integrity of the technology itself. And so what if you can't? Or more precisely – how do you know if you can or not?

Saifedean Ammous has criticised the Ethereum platform because, he argues, it suffered a fork – a splitting of the single indisputable record into two versions. He says that, to solve their (alleged) fork problem, Ethereum developers had to create a new version of the record and carry on as if 'this inconvenient mistake never occurred'. Ammous says: 'This re-injection of subjective human management is at odds with the objective of making code into law, and questions the entire rationale of smart contracts.' Bitcoin/blockchain expert Jimmy Song generally agrees. He claims Ethereum has suffered at least five forks, and that each time 'They've bailed out bad decision making' – that is, they've exercised central authority. 'By any measure', Song concludes, 'Ethereum is centrally controlled' (Song, 2018).

When I heard Ethereum's Buterin speak in New Zealand in 2017, he denied it was a fork, and at that point the debate got too technical for me to follow. But reflecting on this later, I wondered if my inability to follow the blockchain story at this point was more than just a research problem and was in fact part of the story, with me as a representative of the non-expert billions.

As a layperson, what am I to do when the experts disagree about whether one or other blockchain platform has suffered a fork, which is nothing less than a disastrous breakdown of the whole system? Which expert do I listen to on this? Do I ask which institution they might be attached to, and then ask about that institution's reputation and credibility? In other words, which expert do I … trust?

It's interesting that in practice most bitcoin users access this market through intermediaries anyway – cryptocurrency exchanges – although perhaps more for convenience than security. Rather than working out how to download the platform software and establish themselves as a blockchain node (all quite doable, depending on your digital competence and access to a suitable computer, but of course most likely time-consuming), the typical bitcoin transactor chooses to go through an exchange and buy or sell bitcoin through them.

So there seem to me to be questions about how successfully blockchain technology replaces trust with clever software. Put another way, and to refashion a story popularised by Stephen Hawking, do we really have a trustless pile of turtles all the way down, or do we inevitably find there's an inter-human trust relationship at the bottom holding the whole edifice up?

As much electricity as a small country

Shift perspective now to that of a regulator or policymaker, rather than a cryptocurrency user. An early question I had about blockchain's potential relevance for government was how the cryptocurrency network architecture would translate to the world of public sector regulation. The short answer appears to be that much of it does not, and doesn't need to, including several negative features that might alarm regulatory designers.

… the bitcoin system is very slow at processing transactions: about seven per second is the best it can do, whereas Visa, for example, handles more than 1,500 per second …

Needless to say, one of your first questions in deciding to approach a cryptocurrency exchange will be which of these intermediaries you should trust. It's not an unimportant question, as shown by the hack of the Japan-based Mt Gox exchange in 2014. Mt Gox was, by 2013, the biggest and most well-known exchange handling bitcoin, dealing with 70% of all transactions. In early 2014 the exchange shut down after losing 850,000 bitcoin to hackers, a loss valued at US$450 million at the time, but at US$8.5 billion by 2019 (Baydakova, 2019).

Mt Gox is not an isolated story. According to Reuters,

> There have been at least three dozen heists of cryptocurrency exchanges since 2011; many of the hacked exchanges later shut down. More than 980,000 bitcoins have been stolen, which today [September 2017] would be worth about $4 billion.

It described cryptocurrency exchanges as having become 'magnets for fraud and mires of technological dysfunction' (Stecklow et al., 2017).

For one thing, the bitcoin system is very slow at processing transactions: about seven per second is the best it can do, whereas Visa, for example, handles more than 1,500 per second (Berryhill, Bourgery and Hanson, 2018, p.33). This is because of the time it takes to record transactions to a new block and then write the new block to the blockchain. So, as a platform like bitcoin gets more and more popular and the transactions increase, it faces problems scaling up.

The bitcoin network also uses a truly horrendous amount of power – in 2018 reportedly about as much as Ireland (Economist, 2018). So there's an unsettling disconnect between bitcoin's clean, digital vibe and all that very real-world energy going in to power the banks of bitcoin-mining computers and the air-conditioning needed to stop them overheating. In this time of Greta Thunberg and potential global

catastrophe, you can't help asking: can the way ahead – the fully unfolded fourth industrial revolution – really look like *this*?

The good news is that both those problems – slow processing and massive energy use – are inherent to bitcoin's public, permissionless network model, but not inherent to blockchain applications generally. It's all because the computing tasks involved in recording and storing the data in this open DLT system are *deliberately* made hard. Satoshi Nakamoto – the he, she, they or it who designed blockchain and bitcoin – set up the writing and storing of the blocks that way, using a 'proof of work' model where bitcoin 'miners' expend massive computing power to solve artificial computing tasks (see Box 1).

By contrast, in a private – or 'permissioned' – blockchain network, access is controlled and permission to write transaction data to the blockchain depends not on proof of work, but simply on proof of authority. We can assume that all the public sector use cases that have been implemented or piloted internationally involve private, permissioned blockchain networks. Translated to regulatory use, writing data in a blockchain network established by a government agency would depend simply on permission from that agency.

Here, of course, we're back in the world of trusted central authorities underwriting the whole system, but still with the advantages of a distributed ledger – along with faster processing and much lower energy consumption. Using a proof of authority model, different levels of permission are possible, including, for example, permission to access and read the information, permission to enter data and transactions on the system, and top-level authority to edit and control access to the network.

Most important, perhaps, government ownership of the network also effectively solves the 'fork' problem that can arise in public networks. The possibility of a fork exists precisely because of the open democracy of a system like bitcoin, where all nodes are equal.

Blockchain in the public sector – what is it good for?

There are detractors, like Kai Stinchcombe,

BOX 1 Bitcoin and blockchain: how it works

Blockchain cryptocurrency technology is a classic example of the coming together of several existing technologies to produce something revolutionary and disruptive: cryptography, online payment processes, game theory and software coding.

It's good to get it straight at the outset that 'blockchain' is the underlying technology and 'bitcoin' is a specific platform or use case. Blockchain is 'a digital distributed ledger system that acts as an open, shared and trusted record of transactions among parties that is not stored by a central authority' (Berryhill, Bourgery and Hanson, 2018). Blockchain is not the only type of distributed ledger technology, or DLT, but it's the best known.

Distribution is key here. All the different users – or 'nodes' – on the network, such as bitcoin owners:

> hold identical 'ledgers' of transactions that are rapidly updated any time a new set of transactions is added. This enables a key feature of the Blockchain architecture: consensus models where nodes in the system confirm the validity of transactions that occur on the platform, and flag inappropriate dealings when necessary. (ibid.)

Joshua Vial of Enspiral puts it this way:

> A distributed ledger is a set of data replicated across many networked computers. … [It] uses protocols so changes are consistently replicated to each computer and the data converges to an agreed known state. (Vial, 2018)

So it's not that each node – each bitcoin user-owner – holds a copy of the ledger, with the accompanying uncertainty that a copy might be altered, deliberately or accidentally, and diverge from the original. Rather, they all hold the same ledger.

Disintermediation

Bitcoin is a *public* distributed ledger system. A buzzword used to describe the effect of such a distributed ledger is 'disintermediation' – that is, the removal of the need for a central authority to act as a trusted intermediary and validator when thousands of individuals who don't know each other and have no particular reason to trust each other want to transact with each other. Or, as Berryhill et al. put it, disintermediation refers to 'The potential to reduce or eliminate the friction and costs of current intermediaries' (Berryhill, Bourgery and Hanson, 2018).

So there's no central authority – some large, stable, possibly government-backed institution – at the core of the system. But it's also more than merely decentralisation. The point is that everyone in the network, every node, is connected to every other node at the same time.

That distinction between decentralisation and distribution was key to Paul Baran's model – now more than half a century old – for communications networks, which was immensely influential in the design of the internet (see Figure 2).

Two steps: validation plus storage

There are two critical steps to the bitcoin-blockchain system. First, transactions are validated, and here the distributed nature of the ledger is key. Validation depends on a majority of all users (or rather their automated software) agreeing that a bitcoin transaction is valid. (The potential for a nefarious 51% vote to agree to validate an invalid transaction is another story.)

It's the next step – writing and storing the record of the validated transaction – where the blockchain itself is key. A 'block' is an encrypted and unique set of validated transactions. Blocks are linked in a 'chain' in a way that means the information is accessible but cannot be tampered with – that is, it's essentially

who would presumably reply, 'Absolutely nothing' here. However, as we have seen from the international examples, a lot of respectable and presumably careful institutions are putting significant resources into exploring the potential in that 'Blockchain 3.0' space projected by Melanie Swan, where both private sector and governmental actors take blockchain's benefits into completely new fields.

So, using a proof of authority network model under government control, in principle what kind of specific regulatory uses does it seem blockchain technology would be best suited to?

The OECD report emphasises that the technology is useful for validating and recording *transactions*, not for general data storage (Berryhill, Bourgery and Hanson, 2018). This suggests a range of potential use cases, such as motor vehicle sales and records of land title. In line with that transaction focus, the OECD also suggests a potential use for smart contracts in providing an automated process for determining eligibility for government services, such as welfare benefits.

A number of countries have in fact already established, or are establishing, new land title systems based on blockchain networks, including Bermuda, Brazil, the UK, Sweden, Russia, Georgia, Ghana and Rwanda. The absence of reliable records of land ownership is a particularly significant problem in developing countries (Kriticos, 2019; Kshetri, 2018). Fragile paper-based systems are often incomplete, and are particularly open to error, forgery and official corruption. This is a barrier to economic development, as without clear title it is difficult to obtain finance, and the risk of expropriation through fraud and corruption discourages owners from developing the land in any case. Blockchain solutions can provide certainty of title, protect against tampering by corrupt officials, and facilitate transfers and development, with lower transaction costs.

There are some significant barriers, however. First, digitising an old paper-based system is a major undertaking, requiring significant investment. Further, there are some problems that a blockchain

Figure 2: Centralised, decentralised and distributed networks

Source: graphic by Lan Fu, MartinJenkins

a list of transactions to which information can only be added. That's why it's called a chain: the blocks are related to each other in a linear sequential order.

Bitcoin mining: the 'proof of work' model

All of the nodes on the bitcoin network are involved in validating transactions, but only some of them – called 'miner' nodes – are involved in storing the transaction records in the blockchain.

The miners – or rather their large banks of computers, often located in cool northern climates to cut down on air-conditioning costs – compete among each other for the right to publish the next block in the blockchain by racing to complete complex mathematical tasks. Winning the race gets you a substantial amount of bitcoin. The system is even designed to make these tasks progressively harder as computing power increases.

This mining system is referred to as the 'proof of work' consensus model. The model is specific to the public – or 'permissionless' – blockchain model that bitcoin represents, where anyone can download the software and join the network and where users can operate pseudonymously – that is, they have an account with a name (or multiple accounts), but it doesn't need to be their real name. Alternative proof models include 'proof of stake', where the blockchain writer must show they have some kind of credentials, like a record of valid transactions.

A private, permissioned blockchain network – the type relevant for regulatory designers – is constructed quite differently, using a 'proof of authority' model. Here, the identifiable parties who set up the network – say, one or more government agencies – or who have been authorised by those who set it up, have the credentials to write to the blockchain.

network obviously can't solve: for example, it can create an authoritative, tamper-proof record of land title and thereby help prevent future disputes, but where there are numerous outstanding disputes as to ownership a blockchain solution isn't itself a means of resolving them.

Sebastian Kriticos notes these problems:

> As many governments, particularly in developing countries, continue to grapple with land governance and administration challenges, including the digitisation of their registries, blockchain is still a long way from being implemented at scale. However, there may already be potential to pilot initiatives in smaller sub-areas where governments have been able to establish a strong record of land titles. (Kriticos, 2019)

The transaction data in a blockchain system can only be as valid and accurate as the input data; as they say in the computer world, 'garbage in, garbage out'.

The limits of blockchain validation?

That problem of pre-existing uncertainty also points to a broader limitation of blockchain technology as a 'validator' of transactions.

A proof of concept exercise by US Customs and Border Protection trialled a blockchain network for receiving and verifying data on origin of goods (US Customs and Border Protection, 2018). Here, it appears, the technology was able to successfully verify the place and producer/supplier of origin, as the identity of the producer/supplier was 'anchored' in the blockchain data. In this case, the identity of the transactor was itself a key element of the input data.

But in other cases blockchain systems may often be of little help as a verifier of real-world facts. If a grower has entered data in a supply chain management system to the effect that a certain batch of produce is organic, blockchain technology can tell you whether anyone has later tampered with that data entry, but it can't tell you whether the grower was lying in the first place and had in fact used pesticides.

So blockchain 'validation' of transactions may often need to be understood in a very qualified sense. Verifying the accuracy and integrity of data will often require another layer of human intervention from testers and inspectors. The transaction data in a blockchain system can only be as valid and accurate as the input data; as they say in the computer world, 'garbage in, garbage out'.

Avoiding the single point of failure problem

Proponents of blockchain solutions in areas such as land governance or identity management in developing countries emphasise the considerable benefits to be gained from moving to these new digital solutions from fragile, incomplete paper-based systems (if a system exists at all). But it should also be emphasised that these are digital solutions of which blockchain technology is just one component.

For example, in advocating for blockchain's ability to solve a number of key problems for governments and citizens in the areas of identity management and government records and services, Joshua Woods presents the advantages of a package of three elements: digital systems rather than paper-based; authentication of identity by biometric information; and blockchain (Woods, 2018). But regulators most likely won't take much selling on the advantages of components one and two: we have been living in the world of mainstreamed digital solutions since the 1980s, and of large-scale applications for biometrics since the 2000s. Two decades into the 21st century we of course don't need bitcoin's Satoshi Nakamoto to tell us of the advantages that those two groundbreaking innovations provide.

So what are the particular capabilities and advantages of blockchain technology compared with *other* technological solutions that would also involve digital-plus-biometric components? Woods, discussing identity management, argues that a distributed ledger provides a secure, 'immutable' record that can't be altered by corrupt officials or hackers:

> even if a unified digital identity were to exist, centralized data storage would provide a major target for hackers who could then breach, steal, and/or change citizen information, voting results, or tax records. Ransomware attacks, for example, on these data types would be devastating. Since all of these breaches would have a high degree of societal impact, data storage systems must be ultra-secure and not built with single points of failure inherent in centralized design.

The Ethereum website similarly emphasises security as a key element:

> Governments and public sector organizations leverage blockchain technology to move away from siloed and inefficient centralized systems. Current systems are inherently insecure and costly, while blockchain networks offer more secure, agile, and cost-effective structures.

So blockchain networks are supposed to provide immutable, tamper-proof records in ways that alternative technologies cannot, particularly through eliminating the single point of failure risk.

We should remember, though, that the strengths of a technology are always context-specific. Immutability won't be a strength if you want to be able to modify the contents of the record in line with changes to the real-world facts it reflects.

Security now and in ten years' time

As we saw, depending on who you listen to there appears to be a question mark over how vulnerable the technology is to forks

and hacks. With a private network the fork problem appears to be eliminated, but, even so, regulatory designers will naturally want to ask very searching questions about the level of security provided by blockchain solutions against hacking. Not only would they want to be confident that the technology is sufficiently secure right now, public sector regulators looking to make major future-proofed investments in new technology would also want to be confident the technology will still be secure in ten years' time. Even if blockchain is as secure as its proponents claim, regulatory designers might well ask: could this turn out to be a case of blockchain being unhackable until it wasn't unhackable any more? Quantum computing, for example, may be just around the corner in mainstream applications. It's a world where the binary language foundation of modern computing, where any given bit is either a 1 or a zero, is upended by the possibility of a bit being both a 1 and a zero at the same time.

In October 2019, Google announced a successful trial of its new quantum computer, claiming that it had taken seconds to solve a problem that would have taken the most powerful supercomputer thousands of years (CNBC, 2019). Critics pushed back, saying Google had exaggerated its achievement: IBM, the main quantum computing rival, said a supercomputer with some more storage could solve the same problem in several days, rather than several millennia (ibid.).

But overselling from Google or no, we could be forgiven for imagining that by 2025, quantum computing – and solutions to previously unsolvable computing problems – might be a newly established part of our world, much as Uber and the new disruptive digital platforms are today, and with qualitatively new potential for hackers to breach systems like blockchain.

Considering the alternatives

In evaluating the potential of blockchain solutions, it will be important for regulatory agencies investing in new technology to think hard about their specific need and context; to ask exactly what problem they want to solve and what their current pain points are. As well as considering whether blockchain technology will solve that problem, they will also need to ask whether blockchain will do it better and more cost-effectively than alternatives.

Apart from non-blockchain DLT systems, alternatives include distributed databases of the more conventional type. All distributed databases are designed to appear to the user as if they were accessing a centralised database stored at a single physical site. However, compared with a centralised database, distributed databases can provide superior rates of reliability and availability and speed of processing requests, although at the cost of greater complexity. Regulators may find that the level of security and functionality a distributed database provides is sufficient for their needs. The cost of designing and implementing it may also be relatively low.

Different types of distributed database offer different packages of pros and cons. A 'replicated' distributed database includes complete copies of the database at each site and so, like blockchain, provides protection against single point of failure risk (as well as allowing parallel processing of user requests). However, it also creates the need to constantly update all sites and to manage concurrent access by users, to avoid inconsistency between copies (the fork problem again). With 'fragmented' distributed databases, the data is divided up and held at different sites, to make up a single copy of the one logical database. This doesn't provide redundancy protection, but there's also no risk of inconsistency.

Regulatory designers will need to consider the size and make-up of their particular network, including whether or not it will include private sector actors, such as with a supply chain management network. We have seen that beyond cryptocurrency blockchain technology may be well suited for other networks that involve a very large number of user-nodes, in the hundreds or thousands: for example, peer-to-peer electricity networks involving 'prosumers', where there is a need for recording many transactions and where prices can shift rapidly from transaction to transaction. By contrast, the needs of a regulatory system involving just a handful of nodes – perhaps different agencies or sub-agencies – may well be met by a more conventional distributed system.

As a foundation for cryptocurrencies, blockchain has already changed some of the international financial services landscape, and it is clearly appropriate that the Reserve Bank of New Zealand is exploring the technology's potential.

Guarding against unreasonable expectations

As a foundation for cryptocurrencies, blockchain has already changed some of the international financial services landscape, and it is clearly appropriate that the Reserve Bank of New Zealand is exploring the technology's potential. But it's also appropriate to warn against having unreasonable expectations for widespread blockchain use cases, particularly in the near future.

Blockchain technology may well revolutionise large parts of our lives over the next generation. However, that will require first a shared, well-founded understanding of exactly what the technology is suited to, and a clear track record of successful scalable uses.

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Trisia Farrelly and Laura Green

The Global Plastic Pollution Crisis

how should New Zealand respond?

Abstract

The management of plastic waste is a global problem which currently lacks a global solution. As one of the highest per capita producers of household waste in the developed world, New Zealand has a key role to play in addressing the plastics crisis at multiple levels of governance. This article analyses the various policy options available to the New Zealand government and offers a series of recommendations, including prioritising policy and investment at the top of the waste hierarchy (refuse, rethink, redesign, reduce and reuse); linking plastic waste to toxicological risk and commitments to carbon reduction targets; implementing global commitments domestically; and supporting a proposed international legally binding agreement that captures the full lifecycle of plastics and regulates the transboundary flows of plastic pollution.

Keywords plastic waste, New Zealand, product stewardship, plastic pollution treaty, waste hierarchy, Basel Convention, Waste Minimisation Act 2008

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The management of plastic waste is a global problem which currently lacks a global solution. Yet plastic pollution is a transboundary issue. Plastics and their associated toxicants are found thousands of kilometres from source, including at the bottom of the Marianas Trench, in Arctic ice, and in the cuticles of Amazonian insects. Indeed, scientists are regularly discovering new vectors and pathways for the transboundary migration of macro and microplastics: they are highly mobile in air and have been found in deep lung tissue (Wright et al., 2019); they raft invasive species and pathogens vast distances across marine territories, carrying persistent organic pollutants into food systems and posing biosecurity risks; and they are carried across geopolitical boundaries in the guts of birds, mammals and fish.

Until recently, China imported and recycled over half the globe's post-consumer plastics and paper, with New Zealand sending 15 million kilograms of waste to the country annually (Sage, 2018). However, in January 2018 China enacted a National Sword Programme banning imports of polyethylene tetraphthalate (PET), polyethylene (PE), polyvinyl chloride (PVC) and polystyrene (PS), and setting much tougher standards for

acceptable rates of contamination in shipments of scrap plastic (from 90–95% purity to 99.5%). The Blue Sky 2018 customs initiative then seized smuggled waste over the next ten months. With recyclable materials subsequently stockpiling in New Zealand's ports, and the government looking to alternative markets, by September 2019 some of the countries identified as emitting the world's highest volumes of waste into the marine environment (Malaysia, Indonesia, the Philippines, Thailand and Vietnam) were receiving about 58% of New Zealand's plastic waste exports – a 22% increase since 2014 (Beattie, 2019).

In March 2019, United Nations member states, including New Zealand, agreed to an amendment of the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. While the convention goes some way to addressing the transboundary flow of waste via trade, plastic pollution transgresses geopolitical boundaries via ocean and air currents, and no binding global commitment exists to address such pathways. While several international agreements cover marine debris, including the International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL), the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 and the Honolulu Strategy,[1] they do not address plastics entering the ocean from land-based sources.

In the November 2018 issue of *Policy Quarterly*, Blumhardt outlined the policy options available to the New Zealand government to unlock the potential of the Waste Minimisation Act 2008 in addressing the waste crisis (Blumhardt, 2018). As one of the highest per capita producers of household waste in the developed world (Kaza et al., 2018), New Zealand has a key role in addressing plastic pollution domestically, regionally and internationally.

Two years on from Blumhardt's analysis, and with public awareness and action on the plastic pollution crisis growing, this article evaluates where progress has been made, and identifies gaps, particularly considering the developments set out above. The article puts forward the following policy recommendations for New Zealand:

To overcome the reliance on exporting plastic waste, the New Zealand government will need to take significant regulatory actions under the Waste Management Act.

- focus on the top of the waste hierarchy;
- avoid 'false solutions' that lead to financial, infrastructural and cultural 'lock-in' at the bottom of the waste hierarchy and perverse outcomes;
- implement policy that responds to the link between plastics and climate change;
- demonstrate international leadership by implementing the January 2021 Basel plastics amendment to the Basel Convention, and ratifying the Basel Ban Amendment;
- support the call for an international, legally binding agreement to regulate plastic pollution at the fifth United Nations Environmental Assembly in Nairobi, February 2021.

Prioritising the waste hierarchy

To address plastic pollution, ensuring long-term sustainable solutions through 'zero waste' and 'circular economy' mechanisms, greater attention needs to be paid to mechanisms at the higher end of the waste hierarchy (see Figure 1). This includes designing fossil fuel-based synthetic polymers out of the economy where feasible and banning the production of disposable, unnecessary, toxic and avoidable plastic products (hereafter 'priority plastics'), as well as disincentivising producers from externalising the full costs of their products. Currently, these complementary approaches cannot realistically exclude 'end of pipe' (waste management) solutions such as recycling. However, any waste management options for single-use plastics can only be considered short- to medium-term investments and cannot be considered part of New Zealand's 'ultimate suite of solutions' to the plastics crisis. In addition, the government and private sector must avoid financial long-term 'lock-in' for those waste management investments intended as short- or medium-term solutions which divert valuable financial capital and resources away from solutions at the top of the waste hierarchy.

To overcome the reliance on exporting plastic waste, the New Zealand government will need to take significant regulatory actions under the Waste Management Act. At present, New Zealand's woefully low waste disposal levy of $10/tonne (applying to municipal landfills only) has failed to prevent a 48% increase in waste to landfill over the last decade (Ministry for the Environment, 2019b, p.14) and the plastics economy remains almost entirely unregulated, save for a mandatory phase-out of plastic microbeads in personal care and cleaning products (2017) and single-use plastic shopping bags (2018). The government must follow through with the proposed increase and expansion of the waste disposal levy, a national container deposit scheme that prioritises refill and return over recycling, and regulated product stewardship schemes that focus on the top of the waste hierarchy. Significant improvements in New Zealand data on volumes of plastic imports, as well as plastic to landfill, offshore trade, carbon emissions, and onshore recycling and environmental leakage will also be needed to guide future policymaking, as acknowledged in the 2019 *Rethinking Plastics in Aotearoa New Zealand report* (Office of the Prime Minister's Chief Science Advisor, 2019).

Regulated product stewardship schemes

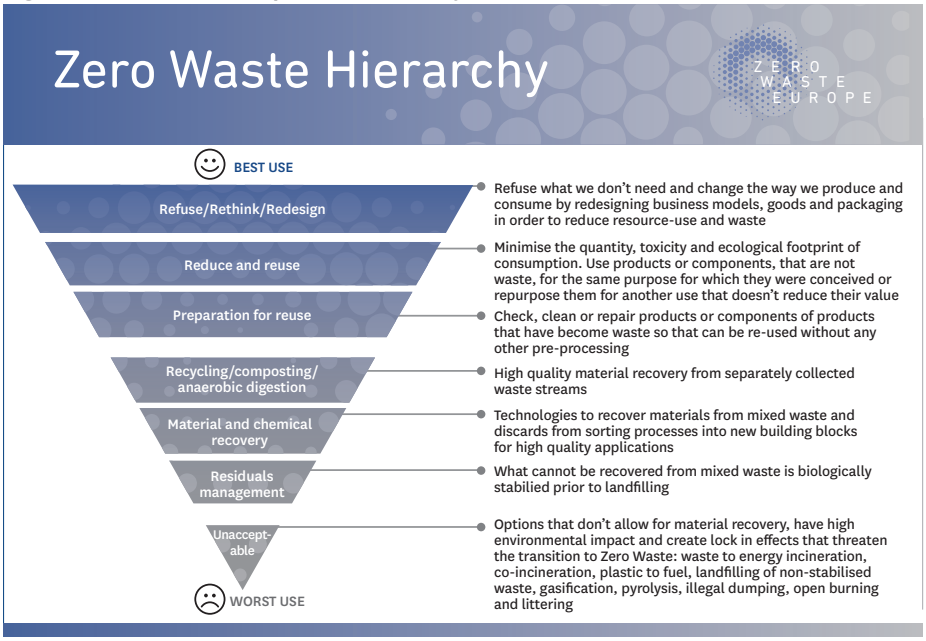
Under the Waste Management Act, the most effective tool available to government to drive waste minimisation

and internalise externalities is product stewardship, through the power to declare certain products 'priority products'. The Ministry for the Environment defines product stewardship as 'when people and businesses take responsibility for the life cycle of their products, either voluntarily or in response to regulatory tools' (Ministry for the Environment, 2019a, p.7). Priority products are those that are difficult and costly for consumers and councils to dispose of, and declaring them priority products prohibits their sale except in accordance with an accredited product stewardship scheme. Such a declaration therefore triggers the compulsory development of a scheme designed to regulate the products through a suite of potential policies, including reduction, reuse and recycling targets, mandatory take-back schemes and deposits, advanced disposal fees, labelling, contribution to research and development, and 'right to repair'[2] provisions.

Regulated product stewardship schemes have proven successful overseas. In Canada such schemes have been established at the provincial level since the 1990s and now encompass 94 product categories. Not only has the move driven green chemistry and sustainable innovative design and technologies, but it has also significantly raised diversion rates from landfill (over 90% of tyres) (Ministry for the Environment, 2019a, p.22). Mandatory regulation has also proven effective in Europe by increasing recycling rates, with similar tyre diversion rates (over 80%) (ibid.). The EU Packaging Directive 94/62/EC is also credited with having successfully decoupled packaging production and packaging waste disposal from economic growth across the EU (EUROPEN, 2015).

In contrast, New Zealand's waste policy has emphasised industry-led and voluntary waste minimisation measures. Despite the inclusion of the option in the Waste Management Act in 2008, to date no priority product has ever been declared. New Zealand's industry actors typically resist regulation and advocate for voluntary corporate and individual responsibility. While New Zealand does have some accredited product stewardship schemes, including for plastic packaging, these schemes are all voluntary and predominantly industry-led. The New Zealand Product Stewardship Council strongly criticised this approach in its submission to the parliamentary commissioner for the environment, *(Un) changing Behaviour*, in 2018 (New Zealand Product Stewardship Council, 2018). Driving plastic product redesign to ensure safe reuse and developing innovative delivery systems that do not require disposable plastic packaging necessitates major changes to the way most industries currently operate, changes that only a fraction of New Zealand industries have embraced voluntarily.

Figure 1: Zero Waste Europe waste hierarchy



Source: Simon, 2019

Some argue that while it is industry that produces plastics, industry have also been instrumental in investing more heavily in these solutions than governments have: for example, by participating in the Ellen MacArthur Foundation and UN Environment's *The New Plastics Economy Global Commitment* in October 2018, in which businesses and governments committed to a set of targets (Ellen McArthur Foundation and UN Environment, 2018). While this shows promise, the commitments are still relatively weak, focusing on recycling rather than reducing single-use plastics. Another example of voluntary industry commitment to addressing plastic pollution was establishment in 2019 of the Alliance to End Plastic Waste (endplasticwaste.org). While this has resulted in US$1 billion dedicated over the next five years to developing improved plastics recycling, the companies promise little that will tackle the source of the problem. Hypocritically, in 2019 the alliance's founding companies are among the world's biggest investors in new plastic production plants (Williams et al., 2019). Consequently, many charities from around the world consider the Alliance to End Plastic Waste a greenwashing stunt (McDermid, 2019).

The most powerful government response is to create a level playing field and compel industry to get serious about implementing sustainability strategies through regulation, a point emphasised by Ma, Park and Moultrie:

> We are thus caught in a plastic packaging trap, where all stakeholders are waiting for others to act. Companies won't act without either legislative pressure or consumer demand. Consumers won't act whilst there are cheaper solutions available. Governments are reluctant to intervene in the market and impose solutions on firms. Whilst this impasse remains, progress in eliminating plastic will progress much more slowly than it needs to. (Ma, Park and Moultrie, 2020, p.11)

The current New Zealand government recognises that urgent action is required through regulation and is working to implement regulatory change needed before the next general election in September 2020. The government's announcement in August 2019 of a proposal to declare several 'priority products', including single-use plastic packaging for consumer goods, beverage packaging and farm plastics, is the first time the government has sought to implement regulated product stewardship schemes (Sage, 2019b). If implemented, it could drive a revolution across the board, from consumer packaging and bottling, to farm practice, IT equipment and the tyre sector, with major policy repercussions. The almost simultaneous release of this proposal alongside the government announcement that it would fund a working group to design a nationwide container return scheme for beverage containers (Sage, 2019c) follows sound logic, as the two are interdependent. The container deposit scheme, initially designed for beverage packaging together with a regulated product stewardship scheme has the potential to ensure that beverage containers that cannot be recycled or reused through a nationwide container return scheme are designed out of New Zealand's economy. The government is also reviewing submissions on its proposal to increase the landfill levy (Sage, 2019d).

It is also encouraging to see the government's announcement of the phase-out of polystyrene and PVC food containers (Ardern and Sage, 2019) following the *Rethinking Plastics in Aotearoa New Zealand* report. Regulatory action such as this has the potential to drive innovation for bio- and eco-benign materials based on green chemistry. Plastic construction waste, particularly PVC and polystyrene, should be added to the proposed list of priority products, as well as disposable sanitary products, synthetic turf and discarded plastic fishing gear.

Avoiding false solutions

On the road to advancing 'zero waste' and 'circular economy' mechanisms, 'false solutions' and paths leading to dependence on solutions positioned low on the waste hierarchy must be avoided.

While most plastic products can only be downcycled (e.g. into roading, fence posts or outdoor furniture) and cannot be recycled to produce the original product ... other plastics (thermoplastics) *can* be recycled, albeit a limited number of times ...

In 2019 New Zealand established the National Resource Recovery Taskforce to respond to China's National Sword policy. However, their recommendations prioritised infrastructural waste management approaches rather than producer responsibility, and increasing recycling rates, rather than prioritising investments in strategies and systems to restrict the flow of priority plastics into New Zealand's economy (Sage, 2019a). In response to the taskforce's report, in July 2019 Shane Jones, the minister for regional economic development, announced that the government's $40 million Provincial Growth Fund would invest 'in projects that convert waste, including plastic waste, into materials and products useful to businesses and consumers' (Jones and Sage, 2019). In addition, the Waste Minimisation Fund invested $3 million in PACT Group's plan to recycle PET into food contact materials in Auckland (Nadkarni, 2019).

There are several risks and problems associated with these investments. While most plastic products can only be downcycled (e.g. into roading, fence posts or outdoor furniture) and cannot be recycled to produce the original product (Envirotech, 2018), other plastics (thermoplastics) *can* be recycled, albeit a limited number of times before the product becomes brittle and has to be discarded. Plastics producers claim that PET and high-density polyethylene (HDPE), two of the most recyclable thermoplastics, can be reprocessed up to ten times before disposal (e.g. ESE Group, 2018). However, virgin plastics and additives must be added at each reprocessing to increase the physical integrity and performance of the product (Spary, 2019). Fundamentally, recycling will do little to stem the flow of single-use plastics production. Currently, approximately 14% of all plastics produced are recycled (Ellen MacArthur Foundation, 2016), while investments in the petrochemical and plastics industries continue to increase by a projected 40% by 2050 (Geyer, Jambeck and Law, 2017). Without making serious efforts to stem the flow of single-use plastic production, recycling will continue to lag behind production rates (Wilkins, 2018).

Socio-environmental externalities across the full life cycle of plastics must also be factored in. Faith in plastic recycling as a principal solution to the plastic waste problem fails to appreciate its human health consequences. Toxicants used in plastics production are currently tested as safe by the Environmental Protection Authority at 20,000 times higher than current endocrinological studies show are safe (Institute for Green Science, 2020). These toxicants include bisphenols (e.g. BPA), phthalates and perfluorinated compounds and are toxic at extremely low doses (parts per million). In addition, non-intentionally added substances (NIAS) are introduced in plastics production and each recycling process. These toxicants pose health risks to humans particularly when recycled plastics are used for food and beverage packaging, or children's toys (Geueke, 2018, p.3; Coniglio, Fioriglio and Laganà, 2020; Muncke et al., 2014).

Foreign investors are also promoting municipal waste to energy (WtE) incinerator plants (Zero Waste Network, 2019) as a solution in New Zealand. Yet

WtE is a dying industry. Globally, countries are moving to circular approaches instead, recognising that municipal WtE incineration constitutes a polluting, carbon-intensive and linear waste management system. Even the latest incinerator technology cannot remove dioxins from the air, nor does it replace landfills given that dioxin-filled filters and fly and bottom ash resulting from incineration are landfilled (Weidemann, 2014; Blue Ridge Environmental Defense League, 2009). Moreover, a recent report states that incineration produces the most CO_2 of all possible plastic waste management methods (CIEL, 2019). In addition, WtE destroys resources that could otherwise be recycled, reused or repurposed, and competes with New Zealand's renewable energy goals and commitments to a circular, low-emissions economy (GAIA, 2018, p.2), including New Zealand's recent commitments in its Climate Change Response (Zero Carbon) Amendment Act 2019.

In response to growing concern over single-use plastics, a range of single-use bioplastics have appeared on the New Zealand market. A report released by the parliamentary commissioner for the environment already outlines known and undetermined risks associated with bioplastics, confusion around labelling of products including terms such as 'bioplastic', 'biodegradable' and 'compostable' and their fates, and the need for appropriate waste infrastructure (Northcott and Pantos, 2018). Relatedly, there is a growing call from ecotoxicologists for the modern testing of all toxicants associated with plastics, including bioplastics, to determine safe levels (Endocrine Society, 2014).

Plastic pollution and climate change

Plastics' impacts on the climate have not been widely published. Perhaps the first comprehensive analysis of the relationship between these two environmental challenges is a 2019 report investigating the greenhouse gases emitted throughout the full life cycle of plastics. The report concludes the following:

> if plastic production and use grow as currently planned, by 2030, emissions could reach 1.34 gigatons per year – equivalent to the emissions created by more than 295 500-megawatt coal power plants. By 2050, the production and disposal of plastic could generate 56 gigatons of emissions, equivalent to 10–13 percent of the entire remaining carbon budget. (CIEL, 2019, p.4)

... in terms of policy implications, the best way to reduce the climate impact of plastics is through drastic reductions in volumes of priority plastics moving through the New Zealand economy.

New Zealand has committed to tackling climate change, legislating for zero carbon targets at home, and engaging with the Carbon Neutrality Coalition at the global level, but the CIEL report gives a very short time frame to reverse global trends. Importing these carbon-hungry materials and then exporting them for 'recycling' uses huge amounts of carbon and incineration adds more. In addition, methane is emitted from landfilling bioplastics, and when plastics are exposed to sunlight (Royer et al, 2018). When addressing plastic pollution, New Zealand must consider the reduction of plastics-related greenhouse gases.

The greatest level of greenhouse gas abatement from any waste policy comes from actions at the top of the waste hierarchy (McQuibban, 2019). Therefore, in terms of policy implications, the best way to reduce the climate impact of plastics is through drastic reductions in volumes of priority plastics moving through the New Zealand economy. Implementing effective and ambitious product stewardship schemes that go beyond recycling to achieve real reductions in plastic consumption could be considered a climate change policy.

International leadership

On 10 May 2019, United Nations member states made significant changes to the Basel Convention, an international legal instrument regulating the movement and management of hazardous waste. With 186 parties out of the 193 UN members, the convention includes all top plastic waste exporters, except the United States. While most plastic waste was not originally subject to the convention, the plastics amendment adopted in May 2019 significantly widens the scope of plastic waste covered and grants legal credence to plastic waste as a hazardous material.

The amendment, which comes into effect on 1 January 2021, makes two key changes. First, it adds plastic waste as a category of 'other wastes' under Annex II. This subjects it to the general obligations of the Basel Convention, which establishes a strict regulatory system based on the concept of prior informed consent (PIC). These obligations, applicable to both 'hazardous wastes' and 'other wastes' (including household waste and residues from municipal waste incineration), impose conditions on import and export, and stringent requirements for the notice, consent and tracking of movement across national boundaries. Second, 'solid plastic waste' is removed from the list of non-hazardous waste under Annex IX, as its inclusion under this annex was often used to export plastic waste as 'green' waste.

The amendment will result in increased traceability, more control and less illegal dumping of plastic waste, as only batches of clean, separated, individual non-halogenated polymers[3] intended specifically for recycling can be freely traded. All other plastic waste types will require the importing country's PIC. Making transboundary movements of

plastic waste more difficult forces states to take greater responsibility for the plastic waste they generate and consume.

Basel Convention Ban Amendment

Another amendment, the Basel Ban Amendment, was adopted at the Basel Convention's second conference of parties in 1992 and came into force on 5 December 2019. Whereas the plastic amendment subjects most plastic waste to the convention's regulatory system, the Ban Amendment goes further. It expressly prohibits OECD countries, the European Union and Lichtenstein from all transboundary movements to non-OECD states of hazardous wastes covered by the convention that are intended for final disposal, and all transboundary movements of hazardous wastes covered by paragraph 1(a) of article 1 of the convention that are destined for reuse, recycling or recovery operations.

The Basel Ban Amendment is the only way to prevent non-municipal hazardous plastic waste exports (e.g. spent pesticide containers) to developing countries, forcing New Zealand to commit to managing such waste domestically. In doing so, the Ban Amendment can ensure that the proposed regulated product stewardship schemes are implemented and effectively target top-of-pipe innovative solutions to prevent the import and retail of priority products.

More broadly, the amendment addresses the use of PIC, introduced through the amendment, to justify waste dumping. The problem with reliance on PIC is that developing countries can feel pressured by the economic powers of developed countries to consent to accepting the world's waste. The Ban Amendment also closes loopholes in waste movement management across the world. For example, recent research by the Basel Action Network revealed that, despite the Indonesian government stating that hundreds of consignments of illegal waste imports from the US would be 're-exported to their country of origin', only 12 of the 58 containers were returned. Thirty-eight containers were diverted to India, three to South Korea, and one container each went to Thailand, Vietnam, Mexico, the Netherlands and Canada (Basel Action Network, 2019). Only by preventing these waste shipments in the first place can back-door consignments to developing countries be closed.

New Zealand is one of five countries (along with Japan, the US, Canada and Australia) that have repeatedly made efforts to undo, weaken and delay the Ban Amendment from entering into force.

New Zealand is one of five countries (along with Japan, the US, Canada and Australia) that have repeatedly made efforts to undo, weaken and delay the Ban Amendment from entering into force. In a letter from David Parker to the first author, the minister defended New Zealand's decision not to ratify the amendment, stating that New Zealand's 'geographical isolation and lack of economies of scale' means it could not be responsible for managing its own hazardous waste domestically, and that the amendment would mean that we could no longer export such waste to non-OECD countries offering high technology recycling and treatment facilities (personal communication, April 2019). However, if a state-of-the-art facility were to be established in a developing country, it is unlikely that that country would have the resources, capacity, or robust policies and legislation to support adequate monitoring of emissions, and the enforcement required to protect workers, communities, the environment and human health. These are costs that are externalised by waste trade and that are often ignored by those who export waste to developing countries.

While technically the Basel Ban Amendment is only binding on those that ratify it (in accordance with article 17(5) of the convention), New Zealand as a Basel Convention party must still respect the import prohibitions of other parties. Notably, Malaysia and Indonesia, destination countries for New Zealand's post-consumer plastics, are two of the 98 member states that have ratified the amendment – a clear announcement that they no longer want New Zealand's hazardous waste (including contaminated plastics). New Zealand can no longer export hazardous waste, including Annex II waste, to these countries.

Moreover, the political impacts of the amendment will mean that New Zealand will be under growing pressure to ratify and to refrain from hazardous waste exports to all non-Annex VII countries (non-OECD countries) regardless of whether or not they have ratified it:

> Generally, with the force now of international law, exports of hazardous waste from rich industrialised powers to poorer countries will be perceived as a criminal or irresponsible act as will other forms of exploitive externalisation of real costs and harm to poorer countries. (Basel Action Network and IPEN, 2019, p.9)

Increasing numbers of non-Annex VII countries that have not yet ratified the Ban Amendment are likely to do so, to update their Basel commitments and to protect themselves from hazardous waste imports.

Support for an international, legally binding treaty on marine litter and microplastics

The global governance of plastics has been described as 'characterised by fragmented authority, weak international institutions, uneven regulations, uncoordinated policies, and business-oriented solutions' (Dauvergne, 2018, p.22). In contrast to other global pollutants, such as chlorofluorocarbons (CFCs) and persistent organic pollutants (POPs), plastic pollution has received little global policy attention, despite growing science-

based evidence of its widespread harms and persistence in the environment.

While the Basel Convention amendments represent important progress, the convention's operative provisions primarily focus on managing existing waste, so do not address the root of the plastic pollution problem. The benefits of a comprehensive international agreement are well known. A global architecture with a multi-layered governance approach could fill existing gaps, providing improved standards, guidelines and annexes for priority chemicals, plastics requiring special attention, and products of concern for marine plastic litter and microplastics, as well as legislative guidance and sharing of best available technology and environmental practices (Raubenheimer, Oral and McIlgorm, 2017, p.125).

A global governance framework will ensure that continued pollution in one region does not negate efforts in another. Currently, capacity to prevent and mitigate plastic pollution locally and nationally varies based on available waste management capacity (Borrelle et al., 2017, p.9995). While New Zealand already supports several political initiatives, including the Clean Seas Campaign and the New Plastics Economy Global Commitment, international evidence of failing voluntary measures and agreements indicates that only an international legal agreement can set clearly defined, binding waste reduction targets and address inconsistent national and regional capabilities (ibid.). In this regard, New Zealand has a responsibility for its Pacific Islands partners.

At the second session of the United Nations Environmental Assembly (UNEA-2), member states adopted resolution UNEP/EA.2/Res.11 on marine plastic litter and microplastics, in which governments requested an assessment of the effectiveness of relevant international, regional and subregional governance strategies and approaches to combat marine plastic litter and microplastics. The resolution called for identification of possible gaps and options for addressing these gaps. This work concluded that current efforts 'provide some degree of progress but combined may not reach the desired outcomes at a global level of protecting the environment, human health and food security' (Raubenheimer, Oral and McIlgorm, 2017, p.153).

If it is to champion the needs of Pacific Island countries and territories, New Zealand can do much more to show regional and global leadership on plastic pollution and related issues.

Subsequently, NGO members of the UN Ad Hoc Open-Ended Expert Group put forward a 'thought-starter' in November 2018 outlining four pillars of action required to establish an international, legally binding plastic pollution treaty. The proposed treaty will likely take ten years to come into force. However, in a decade, at status quo, global plastic-related pollution will have reached catastrophic levels. Accordingly, the group proposes a start-and-strengthen approach (CIEL, Massey University and EIA, 2018).

New Zealand briefly addressed plastic waste in its national statement at UNEA-4, noting its plastic bag and microbeads bans, and highlighting the challenges that marine plastics and waste disposal pose across the Pacific. However, New Zealand did not call for an international, legally binding agreement. In contrast, all eight member states of the Secretariat of the Pacific Environmental Programme at UNEA-4 made interventions in favour of a multilateral governance structure with the potential to establish an international, legally binding plastic pollution treaty.

Conclusion

New Zealand must replace its current 'take, make, waste' economic model with a regenerative one, in which priority plastics have no place. This is a critical time for New Zealand to move in a safe, healthy and environmentally sound direction away from 'false solutions', such as WtE incineration, recycling plastics for food contact materials and without considering the risks associated with alternatives such as bioplastics, and downcycling plastics into roading and fence posts. New Zealand's first steps during 2019 are acknowledged, including proposals to establish regulated product stewardship schemes and increase and expand the waste disposal levy, funding allocated to design a national container return scheme, and a clear intention to direct government funding towards waste-related projects (although the latter has, thus far, been invested too low down the waste hierarchy).

To harness the potential generated by these first steps, New Zealand must begin designing a policy framework and investment plan that drives economic activity towards the top of the waste hierarchy. At this juncture there is a risk that poorly conceived or under-ambitious investments and product stewardship schemes could create policy or financial lock-in of short-sighted false solutions that perpetuate an ineffective and potentially hazardous waste management approach. This will require a precautionary approach. Policies need to be flexible and future-proofed. While recycling plastics cannot feasibly be avoided immediately, long-term planning and action based on reducing the priority plastics flowing through our economy is crucial.

New Zealand is failing to meet political commitments made at the international level, remaining one of the highest producers of household waste in the developed world per capita. If it is to champion the needs of Pacific Island countries and territories, New Zealand can do much more to show regional and global leadership on plastic pollution and related issues. New Zealand must consider the harmful diplomacy the refusal to ratify the Basel Ban represents. This refusal sends a message to the international community that New Zealand will continue to export

hazardous waste to developing countries if they so wish even though they are party to the Basel Convention which now forbids this type of trade. New Zealand will be seen by other nations as ideologically opposed to the Ban Amendment and, by extension, in support of the externalisation of costs for the products New Zealand imports, produces and consumes onto developing countries.

By the time the amended Annex II of the Basel Convention comes into force on 1 January 2021, New Zealand should have ratified the Basel Ban and implemented the Basel Ban Amendment domestically. In addition to presenting a national statement at UNEA-5 on the need for an international, legally binding agreement, tackling the whole life cycle of plastics would demonstrate commitment to change, and fulfil broader responsibilities, particularly towards New Zealand's Pacific Island partners. New Zealand must play its part, not only in accelerating efforts at home, but also in showing leadership on the regional and global level, including responding to the wider impacts of plastics on human health, climate change and environmental justice.

1 A framework for a comprehensive and global collaborative effort to reduce the ecological, human health and economic impacts of marine debris worldwide.
2 These provisions require manufacturers to design longer-lasting products and make spare parts readily available in an effort to reduce waste.
3 Limited to polyethylene, polypropylene and polyethylene terephthalate.

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Ben Brooks

From Tough Justice to Smart on Crime

criminal justice lessons from the Lone Star State

Abstract

New Zealand has one of the highest rates of imprisonment in the OECD. The current Labour prime minister and the most recent National prime minister have both expressed support for addressing the rate of imprisonment. Nonetheless, New Zealand's prison population continues to grow and is forecast to continue growing. This article investigates Texas's experience of criminal justice reform; in particular, how they achieved a bipartisan consensus in favour of reform. It then looks at what lessons Texas's experience might offer New Zealand. Finally, it highlights shortcomings of the Texan approach and what these might mean for New Zealand.

Keywords prison, reform, corrections, justice, Texas

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Texas: tough on crime and back again

In the 1970s Texas's imprisonment rate was only marginally higher than New Zealand's current rate of imprisonment. Texas wasn't the most progressive state in America, but it had a lower rate of imprisonment than other large states such as California and Florida.

All that changed in the early 1990s when Texas enthusiastically embraced a tough on crime approach to law and order (see Figure 1). Although similar approaches had already been taken in other states, Texas was one of the most enthusiastic adopters. By the end of the 1990s its imprisonment rate had tripled, leaving it with more prisoners than any other state in a country with the highest rate of imprisonment in the OECD (Duffin, 2019).

But all that changed in the mid-2000s, with Texas turning away from a tough on crime approach to (at times hesitatingly) embrace criminal justice reform. Since 2006 Texas has managed to reduce its prison population by nearly 15,000 and its imprisonment rate by over 23%. Over the same period the crime rate dropped by

nearly 45% and the violent crime rate by nearly 20%.

Meanwhile, in New Zealand ...

New Zealand's recent history has been very different (see Figure 2). Like Texas, New Zealand has experienced a steady decline in crime rates. However, New Zealand's imprisonment rate has been steadily increasing. Directly comparing Texas and New Zealand, while both countries experienced large drops in the crime rate between 2002 and 2014[1] (43% in Texas and 30% in New Zealand), Texas's imprisonment rate declined by 17%, while New Zealand's increased by 33%.

Despite the fact that New Zealand's crime rate is expected to continue to decline, the most recent justice sector forecast, shown in Figure 3, suggests that the prison population will continue to rise, albeit at a slower rate than previous forecasts (Ministry of Justice, 2018). This is a continuation of a long-term trend that commenced in the late 1980s, before which New Zealand's prison population had grown at around the same rate as the population for nearly 30 years (Ministry of Justice Criminal Policy Justice Group, 1998).

This article focuses on two narrow questions: how did Texas reduce its prison population; and what lessons, if any, might this have for New Zealand? The article does not address other important questions relating to New Zealand's imprisonment rate, including whether it should be reduced. However, both the current prime minister, Jacinda Ardern, and former prime minister Bill English have made comments supportive of addressing the imprisonment rate. This suggests that a discussion of a similar jurisdiction that has reduced its imprisonment rate would be a useful addition to the policy discussion.

But ... Texas?

Even for those who accept that New Zealand's high imprisonment rate is a problem that needs to be addressed, Texas may not be the most obvious model. Instead, the Scandinavian countries are often held up as the best model to follow. They are much more successful at rehabilitating prisoners: their two-year reoffending rates are 20–35%; New

Figure 1: Texas imprisonment rate and crime rates

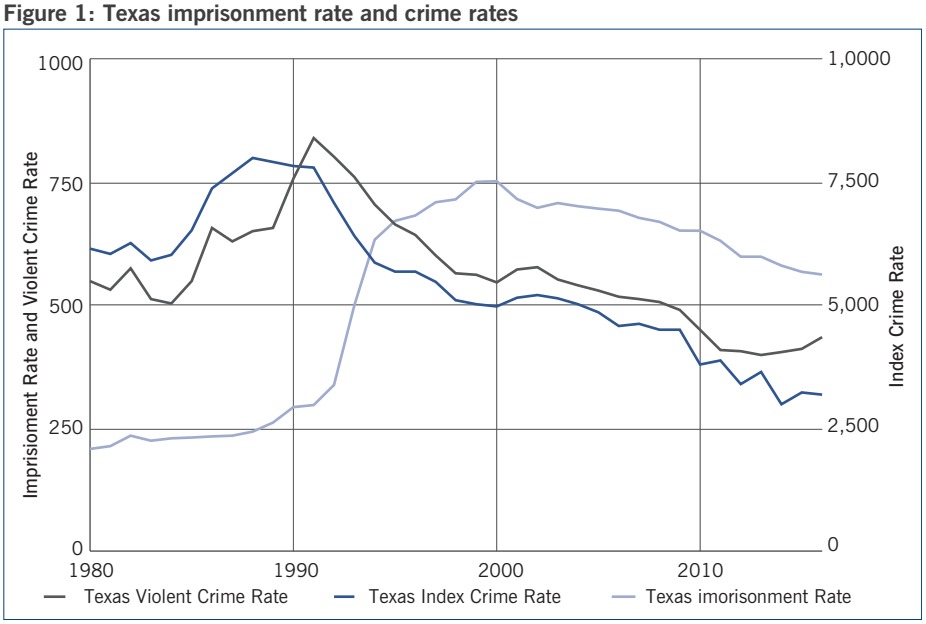


Figure 2: New Zealand crime rate and imprisonment rate (1993-2014)

Figure 3: New Zealand prison population and forecast (2018)

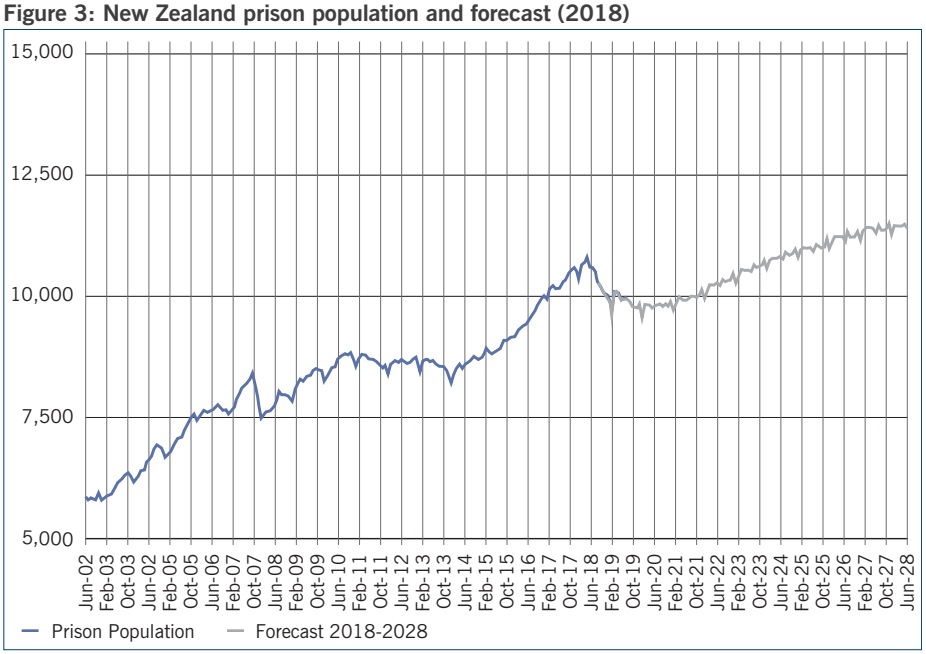


Table 1: Comparability of Scandinavia and Texas to New Zealand

	Scandinavia	Texas
English-speaking	✘	✔
Large minority population	✘	✔
Significant recent drop in imprisonment	✘	✔
Rapidly growing population	✘	✔
History of 'tough on crime' policies	✘	✔

Table 2: Murder rates of various jurisdictions (2016)

Australia	0.94
England and Wales	1.22
United States	5.35
Texas	5.3
OECD average	3.7
New Zealand	1.06

Source: United Nations Office on Drugs and Crime Intentional Homicide Victims database, 2018 (Australia, England and Wales, United States); NZ Police, 2018a; OECD, 2016; Texas Department of Public Safety, 2017 (Texas).

Zealand's rate is around 60%. They do this while having a low rate of imprisonment and prison conditions that are less harsh than those in most Western countries.

Many New Zealand researchers have investigated the Scandinavian model and returned with valuable information (for instance, Sinclair, 2017; Ministry of Justice Criminal Policy Justice Group, 1998; Pratt et al., 2013). However, to the degree that they were hoping to change the trajectory of the prison population their efforts haven't been a success. New Zealand's prison population has continued to grow.

There are two obvious potential explanations for this:

- the Scandinavian countries are simply too different from New Zealand for their model to be easily adopted;
- their model is adoptable but looking there provides information on what we should aim for, but no guidance on how we should get there.

Texas can help address both of these issues. As Table 1 shows, it is similar to New Zealand in some important respects. These similarities may mean that it is easier to implement aspects of the Texas model in New Zealand, or that there are lessons that can be taken from Texas that cannot be taken from Scandinavian countries.

The other advantage of investigating Texas is that it can offer evidence of how to begin the journey to a lower level of imprisonment. In this respect, research on the Scandinavian countries has provided valuable information on the end point, but no guidance on how to start making changes to get there. Research on Texas will help to fill this gap and provide a more complete picture of the changes needed.

No jurisdiction is a perfect analogue of New Zealand and Texas is different in important ways. However, differences between New Zealand and other jurisdictions generally and Texas in particular are often overstated. For instance, the Department of Corrections paper 'Where New Zealand stands internationally: a comparison of offence profiles and recidivism rates' (Boomen, 2018) is often cited as a demonstration that New Zealand's high imprisonment rate is a response to more serious offences or that other jurisdictions have only succeeded in reducing their imprisonment rate because they are managing less serious offenders. However, there are a number of factors that prevent these conclusions from being drawn.

The Corrections paper's initial promise is to investigate a factor that may influence New Zealand's high imprisonment rate. However, the factor chosen – prison offence profile – has very little explanatory power. It should not be surprising that a country with a high rate of imprisonment responds to offending, particularly serious offending, with harsher penalties. For this to be even a partial explanation for New Zealand's high rate of imprisonment these types of offences would have to be more common in New Zealand than in other jurisdictions.

Comparing crime rates between jurisdictions can be challenging (see, for instance, Alvazzi del Frate, 2010). Murder is sometimes used as a proxy for overall crime because it is subject to fewer of these challenges. Table 2 shows murder rates in a variety of jurisdictions.

These figures support the contention that rather than New Zealand's high imprisonment rate being a reaction to serious crime, New Zealand sentences are harsher than those of other countries for similar offences.

There is also some evidence that New Zealand takes a broader definition of violent crime than other countries. For instance, Segessenmann (2002) finds that taking definitions at face value, New Zealand's violent crime rate in 2000 was around twice that of the United States, but, adjusting for definitional differences, New Zealand's violent crime rate is actually around one fourth of the United States'.

'Where New Zealand stands internationally' also makes the claim that 'the high proportion of prisoners sentenced for violence offences means New Zealand lacks the same high numbers of non-violent offenders other jurisdictions (such as Texas, Portugal, Georgia, and Italy) have targeted to reduce their prison numbers' (Boomen, 2018). This is based on analysis of a paper from 2009 from the Council of State Governments which assessed Texas's 2007 reforms. This was one part of a large package of reforms passed in Texas in 2007. This means that the Corrections paper ignores the reforms passed in the six subsequent legislative sessions. Reforms that were ignored include measures that achieved a nearly 80% reduction in the number of young people in prison – a group typically at higher risk of reoffending and with clear relevance to New Zealand (achieving the same outcome here would result in a roughly 3.5% reduction in the prison population). Even looking solely at the 2007 reforms, it is unreasonable to conclude that Texas focused primarily on 'decreasing technical violations and recalls', given that they also included measures such as prison and community-based drug treatment and pre-trial diversion.

A valuable point that the paper could have made is to highlight the challenge of path dependency. New Zealand may have

similar overall levels of offending, but our response to this offending has tended to be harsher than in comparable jurisdictions and this has likely been the case for over 30 years. In this scenario, it is valuable to have an example of a jurisdiction that has followed a similar path to New Zealand and has managed to change course. This is one of the respects in which Texas's experience may hold useful lessons for New Zealand.

Key questions

Achieving a durable change to New Zealand's criminal justice system will require gaining and maintaining the confidence of at least two of: the Labour Party, the National Party and the public. The word 'confidence' is chosen deliberately. Enthusiastic support isn't necessary; even indifference from the public or opposition can be enough, as long as the party in power is motivated to act.

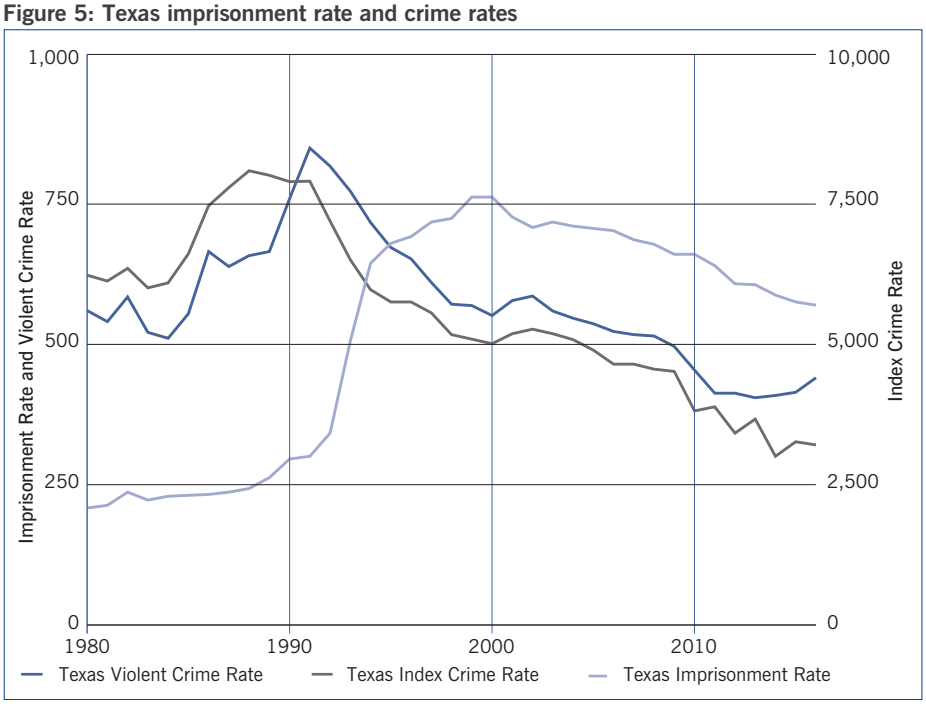
For instance, Finland reduced its rate of imprisonment by over 50% between 1950 and the late 1990s. This was achieved after the public lost confidence in the status quo,[2] giving experts and politicians permission to overhaul the system to address their concerns without requiring a deep understanding of or involvement in the details of the overhaul (Younge, 2001).

In the case of Texas it appears that the two political parties reached a consensus that reform was needed. Therefore, one of the key questions this article seeks to answer is: how did Texas reach a bipartisan consensus on the need for criminal justice reform? The model of reform described above is obviously a simplification. For instance, the three parties aren't independent of each other – a major loss of confidence by the public would be likely to undermine the confidence of one or both major political parties. This is a substantial challenge to any reform because, by their nature, reforms involve making large changes to a complex and dynamic system designed to manage risk rather than certainty. Problems and unforeseen issues should be seen as an inevitable part of any reform of the scale of the criminal justice system. So, the second key question is: how did Texas maintain public confidence in the changes being implemented and the broader criminal justice system through the process of reform?

Figure 4: Texas prison population

Source: Bureau of Justice Statistics National Prisoner Statistics Program, 2018

Figure 5: Texas imprisonment rate and crime rates



Answering these questions will help New Zealand in its efforts to commence an overdue reform of our criminal justice system.

How did Texas reach a bipartisan consensus?

To understand how Texas decided it needed to reduce its imprisonment rate, it is necessary to consider how it reached such a high rate of imprisonment in the first place (see Figure 4).

In the 1970s Texas's prison population was substantially lower. While its rate of imprisonment wasn't one of the lowest in America, it was lower than in other large states such as California and Florida. In the 1990s a range of factors came together to drive a massive increase in the prison population. First, crime rates, particularly violent crime rates, sharply increased from the mid-1980s to the early 1990s, leading to increasing punitiveness and support for harsh punishments, such as the death penalty (Siegel, 2016). Second, there was a growing pessimism about the ability to reform offenders (known as the 'nothing works' movement) (Miller, 1989). Even though this pessimism was well on the way to being disproved, it had received substantial publicity and held sway over

policymakers. This led to bipartisan support for tough on crime policies: Bill Clinton provided $US12.5 billion for new prisons for states that passed harsher sentencing laws (Chettiar and Eisen, 2016), while Texas's Democratic governor built 100,000 new prison beds between 1990 and 1994 (Wilson, 2014).

As Figure 5 shows, growth in the prison population continued at a slower rate in the late 1990s, falling to a (relative) trickle in the early 2000s.

In 2005 Jerry Madden, a Republican, was appointed to lead the House Corrections Committee, with one instruction from the ultraconservative Republican speaker: 'don't build new prisons, they cost too much'. Colleagues advised him that the expert on criminal justice reform was Democratic senator John Whitmire. Madden and Whitmire realised that new prisons would be required unless substantial reform was implemented. Together Madden and Whitmire crafted a package of reforms that they thought could receive support from both their parties.

Madden's instruction not to build new prisons reflected a concern among Republicans that prison costs would undermine their ability to pursue other priorities, such as keeping the size of government (and taxes) small. Republican support was also driven by an emerging loss of faith in prisons. There was no debate around prison for the most serious offenders, but Republicans had begun to doubt whether the prospect of prisons was deterring crime, or whether prisons were the best place to reform, particularly for people whose offending was a symptom of more fundamental mental health needs or drug and alcohol addiction.

Democratic support was easier to achieve. Democrats were out of power in the House and Senate and did not hold any of the six elected statewide offices. Criminal justice reform was not one of their key priorities, but it aligned with their values and they were willing to offer their support.[3]

For both parties the decision was made easier by a steady decline in the crime rate, which meant that while the public still generally supported tough on crime policies, it was not an issue of major concern to most voters. This was consistent with surveys of public attitudes which found that key voting groups were open to reform, particularly regarding moving to a rehabilitative rather than punitive focus for people whose offending was related to mental health or drug and alcohol addiction.

For both parties [Republican or Democratic] the decision was made easier by a steady decline in the crime rate, which meant that while the public still generally supported tough on crime policies, it was not an issue of major concern to most voters.

However, things did not progress smoothly. In 2005 Governor Rick Perry vetoed their legislation after it had passed both the Texas Senate and House with bipartisan support (Henson, 2005). Since the Texas legislature sits only in odd-numbered years, this meant reform couldn't be put in place until 2007 at the earliest.

To improve the likelihood of success the two key legislators assembled a bipartisan group of think tanks and advocacy groups to develop a package of reforms. The group included five organisations, ranging from the American Civil Liberties Union to the Koch brothers-funded Texas Public Policy Foundation. The two legislators promised to consider any package of reforms the group produced, with two conditions: the package had to be evidence-based, and every measure had to have consensus support.

Reforms were given added impetus by projections that Texas would need an additional 17,000 beds in five years, at a cost of US$2 billion to build and operate. Texas has to operate a balanced budget (i.e. they are not allowed to run a deficit), meaning funding this prison expansion would have required tax hikes, which was anathema to the Republicans who controlled the legislature, or extreme spending cuts that would have been unpopular and difficult to pass. This fact coupled with the reform proposals that had been crafted by the think tanks finally meant progress could be made. In 2007 a US$241 million package of reforms was passed by the House and Senate and signed into law by Governor Perry.

Reflecting on the 2007 reforms and subsequent efforts, both Madden and members of the coalition (subsequently formalised and expanded as the Texas Smart-On-Crime Coalition (Texas Smart-On-Crime Coalition, 2019)) believed that the bipartisan coalition and the focus on consensus were essential to the reforms. Different members of the group were able to use their relationships and credibility with different members of the legislature to build support and the focus on consensus guaranteed that only reforms with broad support progressed.[4]

The think tanks also, particularly among liberal groups, highlighted the value of drawing on lived experience. A large number of the people involved in policy development and advocacy had personal experience of imprisonment and drug and/or alcohol addiction, or being a victim of crime. These experiences gave them increased credibility with legislators and the media and helped to put a human face to those in the criminal justice system. This made it easier to build support for reform and has resulted in profound changes in the views of some legislators.

How did Texas maintain public confidence?

As in New Zealand, the media is one of the public's key sources of information on criminal justice in Texas. However, because the media in Texas tends to operate at either the city or national level, it is less

likely that a high-profile crime will result in a widespread loss of support for reform among legislators. For instance, a high-profile crime in Dallas will be covered in detail in local Dallas media, but is less likely to be covered in Fort Worth media and very unlikely to be covered in Houston media.

However, many individual reforms operate at the county level, meaning there is a greater risk of local reforms being derailed by a loss of public confidence. The first critical step in reducing the risk of a loss of public confidence is to engage the public prior to a high-profile event occurring. For instance, providing some basic factual information in an engaging manner either directly or through the media can help to build general support for the criminal justice system. This is consistent with New Zealand research which found a correlation between low levels of self-reported knowledge of the criminal justice system and low levels of confidence in its effectiveness (Colmar Brunton, 2016).

Highlighting success stories from community-based programmes can also help to ensure that the public have a source of information on the extremely high success rates of community-based programmes. As in other areas, this is also an example of Texas making use of lived experience to help engage and inform the public and decision makers.

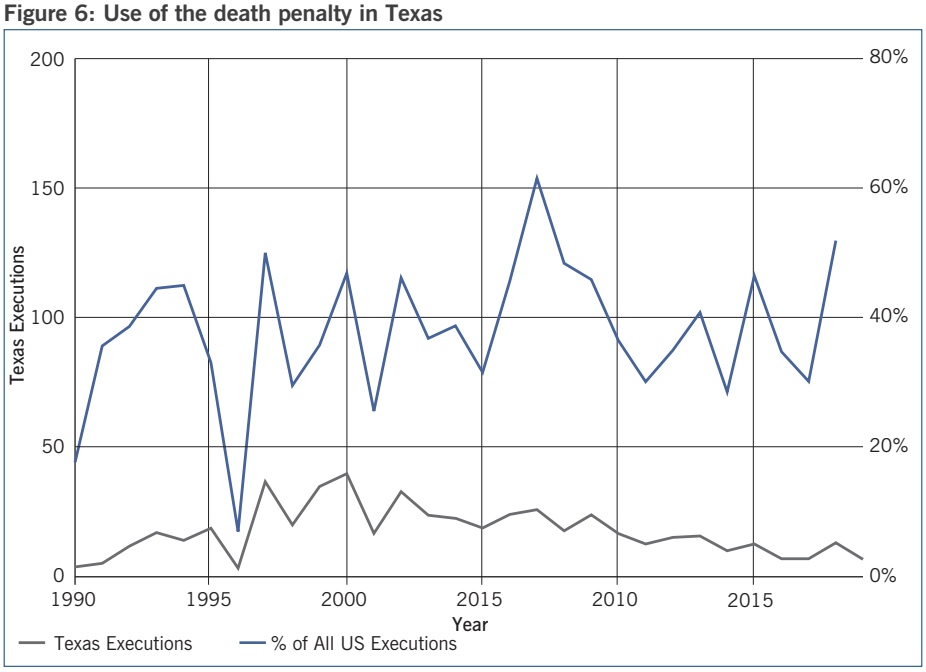
Advocates in Texas also worked directly with key figures in the media to ensure they had some basic knowledge of the criminal justice system and access to key factual information. This ensures that negative media is placed within a broader context. This often results in failures being presented as isolated cases rather than indicative of broader systemic failures.

Unfortunately, the criminal justice system fundamentally involves dealing with risk; even a perfectly functioning system will not be able to prevent all harm. Where serious harm has occurred there is a risk of a public loss of confidence, particularly when the individual has previously committed a serious offence (even if the individual was unlikely to offend, the public and media are more focused on seriousness than risk) or has a large number of previous offences.

Texas has not been able to identify any easy response to this situation. However, there were two recurring themes – leadership and credibility. It is essential that the person ultimately responsible for a programme is confident in the programme and willing to work hard to maintain it in the face of obstacles. Second, the person needs credibility. In general, this seemed to refer to basic things such as being able to front media credibly. This is usually less of an issue in New Zealand, but can be problematic in Texas where there are a much larger number of elected officials who may feel an obligation to engage with the media.

Importantly, being willing to persevere shouldn't be confused with a refusal to make changes. There were numerous examples of changes made to programmes after failures both large and small. However, these failures and the consequent changes were always seen as isolated and not indicative of more fundamental systemic issues.[5]

Figure 6: Use of the death penalty in Texas



Source: Death Penalty Information Center, 2018

Problems and limitations with Texas's approach

Although there is a lot for New Zealand to learn from what has happened in Texas, it is also important to highlight problems they have faced and limitations to their approach.

The death penalty

Advocacy groups from the left and right of Texas politics have been able to work together by focusing on their common goal of reducing the prison population. On the right this goal is driven by fiscal and effectiveness concerns, while on the left it is driven by concerns over inequity and unfairness. These different motivations mean that they disagree on some important issues or their relative priority, which is reflected in limited progress addressing these issues.

One example is the death penalty (see Figure 6), where Texas consistently accounts for between a third and half of all executions in the United States (for comparison, Texas accounts for nearly 9% of the United States population and around 10% of all prisoners). For the left this is an important area where reform is required. For the right, the fiscal impact of the death penalty is negligible and the evidence on effectiveness is ambiguous.

This demonstrates that while Texas has forged a bipartisan consensus on the need to reduce the imprisonment rate, this consensus is based on a narrow area of agreement and progress has been limited in areas where the two groups' priorities do not align.

Racial inequality

In New Zealand, Māori make up around 15% of the population but around 50% of the prison population. In Texas, African Americans make up around 12% of the population but around 33% of the prison population.[6]

The African American imprisonment rate has declined slightly in recent years. However, it is clear that progressive groups in Texas saw addressing this as a much greater priority than did more conservative groups. Again, this indicates a difference in priorities: those primarily interested in reducing the number of people in prison will be less interested in racial inequality than those driven by concern for inequity and fairness.

This is a critical issue for New Zealand. For instance, the expansion of home detention (as has recently been discussed) would reduce the prison population, but based on the existing approach this would most likely be by releasing primarily Pākehā prisoners (Horwood, 2012). For anyone concerned simply with reducing the prison population this would be a success, but for anyone concerned about the extremely high rate of Māori imprisonment concerns would remain.

Long-term investment in prevention

Finally, Texas has struggled to build support for large investments in early intervention even when these can be shown to have a long-term pay-off in terms of preventing offending. This has tended to be less of an issue for New Zealand. For example, the social investment model championed by Bill English could be seen as an attempt to develop a rigorous approach to early intervention and prevention.

Conclusion

The aim of my research was to answer two key questions: how did Texas reach a bipartisan consensus, and how did Texas maintain public confidence?

Texas formed a bipartisan consensus on the need for reform, but not on the reasons why this was necessary. Republicans were primarily driven by concerns about the cost of prisons and a loss of confidence in prisons' ability to effectively reform (particularly in comparison to programmes in the community). Democrats were driven by concerns about inequality and fairness.

For New Zealand, this suggests that seeking to appeal to conservatives primarily on the basis of inequality or fairness, or liberals primarily on the basis of fiscal responsibility, is unlikely to be successful. Instead, the need for reform should be argued for on the basis of their existing values: arguments aimed at conservatives should primarily focus on the cost of prison and its ineffectiveness at improving public safety, while arguments aimed at progressives should primarily focus on fairness and equality.

At the state level the media landscape in Texas made it harder for public confidence to be undermined statewide. Local officials worked hard to build public confidence by proactively educating the public and media on the effectiveness of programmes, making particular use of lived experience. Unfortunately, there is no magic bullet for maintaining public confidence in the face of a crisis; the only approach that worked in Texas was to make use of credible people who could lead a public response.

New Zealand currently has around 10,000 people in prison, costing around $1 billion per annum just to manage the prison system. Texas has demonstrated that it is possible to make significant reductions in the imprisonment rate, realising large savings and simultaneously improving public safety. A similar opportunity is available to New Zealand, if politicians, the media and the public are willing to take it.

1 NZ Police changed the way it recorded crime in late 2014, focusing on victim and offender numbers. This makes it difficult to make longitudinal comparisons after this date.
2 Interestingly, the reasons for this contain echoes of the Texan experience – see Lahti, 2017.
3 This is not to say that no Democrats were interested in criminal justice reform or that no Republican was concerned about equity. These are generalisations about the overall parties. Within each party there will be individuals and factions with slightly different viewpoints and priorities. While there were subtle differences in approach, this section provides a high-level overview of the approach taken to gaining support from the parties.
4 The description of reform efforts and reflections on them are primarily based on personal conversations with Jerry Madden, Marc Levin from the Texas Public Policy Foundation, Doug Smith from the Texas Criminal Justice Coalition and Nick Hudson from the American Civil Liberties Union, Texas.
5 For an example of the opposite approach, consider Corrections' decision, subsequently deemed unlawful, to substantially limit access to the Release to Work programme after Phillip John Smith absconded: see Fitzgerald, 2019.
6 The Latino imprisonment rate is similar to their overall proportion of the population, but this represents a significant increase in Latino imprisonment levels compared to historical levels.

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