Wellbeing budgets and the environment

A promised land?

December 2021

Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata

Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata
PO Box 10 241
Wellington 6140
Aotearoa New Zealand
Phone 64 4 471 1669
Email pce@pce.parliament.nz
Web pce.parliament.nz

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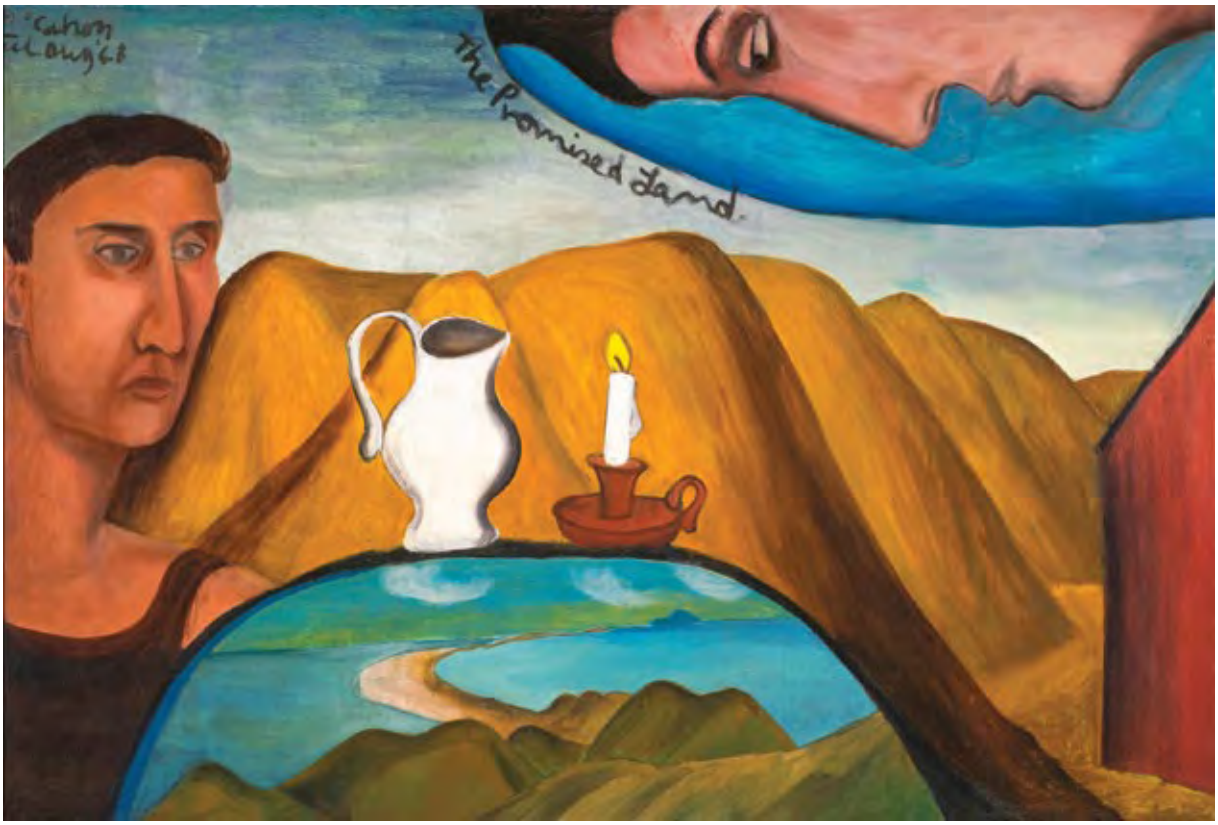

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Introduction

This review examines the way in which the environment has – or hasn't – been incorporated into the process of constructing wellbeing budgets. It is the last of three reports about environmental information that I have undertaken that started with a 2019 review of environmental reporting, followed by a 2020 review of publicly funded environmental research.

The extension of the original review to the current field flows from my observation that "environmental data is not collected for the sake of it. We collect it for the same reason that we collect data about the economy, the education system, or people's health: these things matter for our wellbeing".[1] Collecting good quality environmental information and using it can contribute to wellbeing.

Wellbeing budgets are New Zealand's latest effort to erect a high-level goal that guides the expenditure of public money. In principle, those areas where improvements will contribute the most to wellbeing should be the preferred target of public spending.

In one sense, there is nothing new in that ambition. From the outset, governments in New Zealand have claimed the advancement and wellbeing of their citizens as the object of their endeavours even if they haven't always used that word. But in another sense it represents an important change in how wellbeing is measured and regarded. It is, in part, a reaction to a lengthy period when the achievement of economic growth was often crudely equated with improved wellbeing.

While the link between rising productivity and rising living standards across a wide range of measures remains undisputed, the call for economic growth as shorthand for an improvement in wellbeing has come to be seen as increasingly unsatisfactory given a range of social, distributional and environmental ills that have emerged despite relatively continuous economic expansion.

The fact that aggregate gross domestic product was never claimed to be a measure of wellbeing didn't stop it being used, misleadingly, for that purpose. A determination to marshal public expenditure behind the cause of wellbeing rather than economic growth assumes that wellbeing can be defined in terms that are publicly and politically communicable. Furthermore, it assumes that governments can make choices on the basis of whether or not its decisions will advance wellbeing. That in turn requires a wider array of measures against which the outcomes of public policy and public expenditures can be judged.

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[1] PCE, 2019.

This review takes no issue with the decision to align expenditure with the pursuit of wellbeing as the pre-eminent goal of fiscal policy. But it cannot be assumed that wellbeing will necessarily be construed in the same way by different governments over time or even that it will remain a headline goal. For a period during the 1990s, controlling expenditure to slow and then reverse the accumulation of public debt became the over-riding goal. The pandemic has shown us how the focus of government expenditure can be radically redirected by a sudden and unexpected shock to the economy. It is equally plausible that at some future time the rising costs of climate change could radically reorder fiscal priorities.

But if wellbeing is to be the lodestar of public expenditure, and environmental outlays are to be justified in relation to this goal, then the links between the state of the environment and wellbeing need to be understood. As the body of this review explains, these links are only tenuously developed if at all. While it is not hard to make the connection between the immediate benefits of safe drinking water or access to parks for recreation, trying to think about the impact of an evolving biophysical environment we understand very incompletely on unborn generations becomes vertiginously challenging. These are not the sorts of questions that are easily accommodated by something like the budget cycle.

In a very real sense, the budget process never ends. No sooner have this year's allocations been put to bed than next year's beckon. A significant part of the public sector's attention is permanently engaged by the process of approving and allocating financial resources. That is why trying to make changes in that process will always be very difficult.

For that reason, I am not recommending large systemic changes based on some of the almost metaphysical questions that get raised when we start thinking about wellbeing. While I hope there are some politicians and policy advisors who think about them, making some modest progress that is compatible with existing processes seems the best way to avoid a new round of navel gazing.

Chapter five proposes some practical initiatives that could make a difference. They include:

- improving the way the environment is handled in the budget's templates
- improving the quality of information available in the budget process to reflect what is known about future risks, uncertainty and tipping points
- reviewing the way cost–benefit analysis is applied to budget initiatives to ensure that budget proposals with enduring benefits to future generations aren't effectively discounted away to nothing
- improving the presentation of critical environmental information in the budget process.

All of them would be useful to any sort of budget process that wanted to take the environment seriously. All of them address wellbeing budgets as they are currently being conceived. But they are not dependent on wellbeing as the unifying point of reference for prioritising expenditure.

Indeed, in the course of this review I have come to doubt whether constructing budgets around the goal of wellbeing will make much of a difference for the environment. I worry that if we try to make that link in a meaningful, evidence-based way, we could divert a large amount of energy from tackling environmental issues that are already long overdue for attention.

Why linking wellbeing to environmental action is problematic

The core framework that has been used to support wellbeing budgets – the Living Standards Framework (LSF) – incorporates the environment in two ways. In the version of this framework that has supported wellbeing budgets to date, it is identified as a 'domain' of current wellbeing – one of twelve. And it is represented as a source of wealth or a capital stock on which future wellbeing will depend.

Though the LSF carefully distinguishes between 12 domains of current wellbeing, it stops short of providing guidance on how expenditure should be prioritised in terms of the different ways these domains might contribute to wellbeing or the different timescales over which this contribution might be felt. There is plenty of literature to support the proposition that green space in urban settings is good for both mental wellbeing and moderating the effects of a warming climate. There is also plenty of literature to support the proposition that access to inadequate housing can impose life-long costs and a raft of social dysfunctionality. In practice, decision makers obviously try to make reasonable decisions bearing in mind all the dimensions of wellbeing.

But our ability to define these different contributions varies significantly. Without much better information about the contribution of the environment to current wellbeing, it is very likely that more direct, quantifiable and monetisable contributions will be more persuasive. Hence the case for improved environmental information on which trade-offs and policy accommodations can be made.

But even a vastly improved information base is no guarantee that many claims for environmental expenditure will be preferred. If it is hard enough to assess the environment's contribution to the here and now, then doing so over extended time frames is orders of magnitude more difficult.

So many environmental issues involve dynamic living systems whose disruption today will lead to unknown perturbations with significant consequences for the wellbeing of younger generations as well as generations to come. We know even less about what future societies are going to value for their wellbeing. So there is radical uncertainty about what can be said about the criticality of investments in the environment for intergenerational wellbeing. What we do know is that humans can cause irreversible changes to the environment when thresholds and tipping points are passed.

As part of the most recent version of the LSF, the Treasury has proposed four 'analytic prompts' with which to assess the impact of policy proposals. They cover resilience, sustainability, productivity and distribution. There is currently no guidance available on how these might be used. Applying them to natural capital would, ideally, enable us to say something about:

- the key risks to natural capital and how its resilience can be measured
- how the sustainability of claims on natural capital are to be measured
- resource productivity measures
- the intergenerational distribution of benefits implied by current resources use.

These are all vital – and extraordinarily challenging – matters. But the difficulties involved in answering them provide me, at least, with little confidence that the present wellbeing budget framework will see environmental issues with long shadows being given budget priority.

The decision to spend $100 million over four years combatting wilding conifers is instructive. The increasing seriousness of the problem has been known about for decades. Only in very recent times has the emergence of multiple, quantifiably costly problems energised significant public investment. Farmers have seen productive land invaded, tourist operators have seen allegedly 'iconic' landscapes and views disappearing and settlements have been threatened by the risk of forest fires. Recent modelling has estimated that at least $400 million will be needed to remove all known wilding conifer infestations if action is taken now and costs are not deferred into the future.

It is not obvious to me that erecting wellbeing as the goal of public expenditure would have been decisive in preferring the need to address this problem or that it will make investment in the avoidance of similar emergent problems more likely. Certainly, the experience of the first wellbeing budgets discussed in this review provides little evidence that anything much has changed.

Decision makers still grapple with advice and assessment that all too often focuses on the short term, the relatively certain, and the relatively less risky. The Treasury's reasons for recommending against the environmental proposals scrutinised as part of this review in the context of the first three wellbeing budgets were almost invariably drawn from a traditional menu of arguments honed to rein in budgetary creep. There are no signs to date that spending proposals are being knocked back on the basis of their potentially negative impacts on current or future wellbeing.

I have a concern that the complexity of the requirements for wellbeing budgets could end up disadvantaging environmental proposals since the informational requirements are, in practice, often much more demanding than they are for proposals that seek social and economic outcomes in the nearer term. The continuous demand to render long-term environmental considerations in terms of wellbeing may simply end up complicating the budget prioritisation process for marginal added value.

The government and its advisors should at least be open to considering the possibility that it may be worth treating environmental spending and investment priorities in a different way that acknowledges the radical uncertainties that surround potential tipping points and the lengthy time frames over which major environmental issues are known to be evolving. Identifying key, long-run, systemic challenges and developing investment priorities designed to progressively address them can be done without continually framing the underlying analysis in terms of wellbeing.

Challenges such as trying to eliminate fossil fuel emissions to the atmosphere, stopping the flow of microplastics into the environment or arresting the decline in native biodiversity all require urgent action because a failure to do so will bring about changes that irreversibly commit current and future generations to a world with greatly reduced options.

This can be expressed as a concern for intergenerational wellbeing, but we have no way of being able to say how wellbeing will be construed in the future. It may be better simply to say that we want to preserve future options. Are we really aiming to rid our native ecosystems of exotic predators by 2050 to enhance the future wellbeing of New Zealanders? In a sense we are, but that rationale doesn't seem to make the case for investment any more potent or provide any better guidance on how it might be weighed up against other proposed investments affecting our natural wealth or, indeed, other aspects of our national wealth.

As chapter two points out, there is no one wellbeing, only wellbeings, and those wellbeings are distributed through time. How people understand the environment's contribution to their wellbeing is not monolithic. This becomes particularly clear when Māori are asked how we should address the subject.

In the course of trying to understand wellbeing from a te ao Māori point of view, I was particularly struck by the account offered by Dr John Reid of the Ngāi Tahu Research Centre at the University of Canterbury. So struck, in fact, that I asked him to distil his thinking in a brief essay, which is reprinted immediately at the end of this report (chapter seven). I would strongly recommend that readers take the time to read it carefully.

Dr Reid identifies five core concepts in Māori thinking that are essential to make sense of wellbeing: mauri, whakapapa, utu, tauutuutu and tapu. He describes their relationship with the idea of wellbeing in these terms:

> "wellbeing emerges through relationships where tapu is respected, mauri is able to manifest itself and unfold, and mana is upheld. However, given that this is not always possible in the real world, where imbalances constantly emerge, actions are required to continually re-establish balance. In terms of applying these underpinning principles to the economic sphere, the practice of tauutuutu uses 'seesawing' mana and mauri enhancing obligations to establish social security, maintain whānau and hapū autonomy, form interdependence, uphold dignity, and drive productivity and innovation."

The idea of balance and the constant need to re-establish it to maintain a healthy, vital relationship between people and the environment of which they are a part will appeal to anyone who has pondered the idea of sustainability and living within limits. But in te ao Māori that ideal is ultimately underpinned by the essential sacredness – tapu – of the created universe, animate and inanimate. As Dr Reid notes, our social and economic models (as reflected in the LSF) are at odds with this. They conceive of nature instrumentally – as a source of value for humans rather than seeing humans as part of an organic whole in which the material utility and intangible properties of both human and non-human entities are treated as one.

As a result of work commissioned by the Treasury and the Tax Working Group, an alternative framework to the LSF has been developed – He Ara Waiora – which places wairua (spirit) and taiao (environment) at the centre. For the moment, it sits in parallel with the LSF. But as Dr Reid points out, the metaphors that underpin these two frameworks are in conflict. Whether we can find some convergence between them remains to be seen, but it won't be easy given that, for many New Zealanders, a sense of the sacred has atrophied – if it exists at all – in a world dominated by rational calculation and scientific scepticism.

And yet we know that we need to find a way back from the hugely exposed position in which we find ourselves. We have leveraged our entire civilisation on a bet that the life-supporting capacity of our physical world can sustain the demands we make of it. The biophysical indicators suggest the bet may be misplaced – or as Māori who observe these things might say, the mauri of the place is in trouble. We may have bought a measure of current wellbeing at terrible cost to future generations.

I am not confident that entangling the environment in an analysis of wellbeing will make much difference to budget decisions. Dr Reid has some ideas about how a convergence of metaphors might be attempted. They are certainly worth considering. In the meantime, the evaluation of public expenditure has to do a better job of making an assessment of environmental impact a more integral part of the process whether or not that is then subjected to the frame of wellbeing.

Doing a better job of ensuring that the environment receives consistent attention in any budget process

The principle environmental challenges we face are like rust – they never sleep. Problems stemming from our intervention in the carbon and nitrogen cycles (more popularly labelled climate change and water quality) or the loss of biodiversity and increasing fragility of ecosystems represent chronic, systemic dysfunctions. They are not going to be 'solved' any time soon. More importantly still, our ability to tackle them raises social and economic questions easily as challenging as any technical fixes or strategies we may devise.

If the fundamental investments in environmental information that I have previously recommended are made, it should be possible to ensure that part of *every* budget cycle includes a crisp, high-level stocktake of how the management of these key long-term environmental issues is being progressed.

As this review notes on several occasions, the budget process never ceases, and clogging it with extra checklists does no one any favours. Having a short but comprehensive list of key standing environmental issues that are raised consistently, year on year, would be one way of ensuring a steady focus on the issues that continue to eat away at our 'natural wealth'. It would also avoid the temptation for agencies to dress up environmental expenditure to emphasise those elements of wellbeing that for the moment command political favour.

Such an approach may also be simpler for agencies that don't deal with the environment as part of their core business but still need to take account of it to approach these issues directly rather than through a wellbeing lens.

Expecting ministers to absorb a vast amount of complex information on topics they may not be familiar with is not realistic. But a bare minimum is required if they are to be able to judge the adequacy of whatever responses are proposed. This can be in summary form. No budget ignores the impact of the Crown's outlays on its future liabilities. Why should it be any different with respect to environmental liabilities?

The question is not rhetorical. An immediate answer is that the scale and nature of those liabilities stretch far into the future, are often uncertain, and even when they are not, cannot be easily monetised. We can estimate the trajectory of public debt with a reasonable level of confidence under different scenarios. We need a similar, though not necessarily monetised, way of estimating the trajectory of accruing environmental liabilities.

One way to do this would be for the Ministry for the Environment and the Treasury to identify 'tipping points' beyond which irreversible change to natural capital may occur. This flags not only the potential loss of ecological benefits that flow from natural capital but also costly fiscal liabilities that may flow from a failure to grapple with the problem much sooner.

Ultimately, whether or not we are underinvesting (or overinvesting) in the environment is a normative question that is adjudicated through political considerations. That is not a reason to discard the need for making much better cases for that investment. In a democracy at least, political decisions should be supported by plausible evidence. But the basis on which policymakers should be asked to settle their priorities could be more straightforward – and more transparent.

The sort of long-term environmental challenges I have alluded to remain challenges whether politicians choose to acknowledge them as priorities or not. The best that can be hoped for is that their existence and trajectory is brought consistently into the frame of budget conversations – whether they are welcome or not. Precedents for doing this are not lacking.

Since 2006 the Treasury has, every four years, prepared a Statement on the Long-term Fiscal Position of the government, looking at least 40 years into the future to examine the potential effects on the economy of long-term macro-economic trends. It would not be difficult to require that statement to include environmental issues given the very significant fiscal risks they imply. The most recent statement includes some analysis of the fiscal impacts of climate change.

Much more recently we have seen the inception of a system that requires the chief executives of government departments to prepare long-term insights briefings. These are a further opportunity to see that governments are made aware of long-term environmental challenges and their trajectories. In both cases, these reports can provide Parliament as a whole with the material needed to debate the adequacy of budgetary provision for environmental expenditure and investment.

A similar incorporation of long-run environmental issues in the budget priority setting process is needed. For that reason I have come to the view that at least every three years, officials should provide the Minister of Finance with a report containing advice on how well existing policies and initiatives are addressing the environmental issues identified in the most recent state of the environment report, prepared under the Environmental Reporting Act 2015.

This briefing should include how much expenditure is allocated to each of the environmental issues and what is known about the effectiveness of that expenditure. The most recent state of the environment report, *Environment Aotearoa 2019*, provides an authoritative starting point outlining the priority environmental issues for New Zealand.

The Minister of Finance should then, each year at the time of the presentation of the budget, publish a report that outlines how new fiscal initiatives, as well as any changes to baseline expenditure, respond to the environmental issues identified. This report should then be referred to the Environment Select Committee. Both elements of this proposal would serve as useful inputs into the Government's response to the state of the environment reports, which I have previously recommended.

I have not formalised a recommendation on how environmental reporting and the budget system might be formally linked in this report. I am, rather, leaving that to form part of a short follow-up synthesis report next year that will draw together the threads of my two earlier reports, Focusing Aotearoa New Zealand's environmental reporting system and A review of the funding and prioritisation of environmental research in New Zealand, with this report. Environmental data, research into our knowledge gaps, and the use of both to make high quality, effective investments in protecting our environment are inextricably linked.

Details aside, the key message of this report is clear: key long-term environmental issues need to be explicitly acknowledged and responded to as part of the budget process. They carry serious implications for fiscal risks in the future and cast long shadows on the resilience of the nation's natural capital. Governments are elected to make choices. They can't do everything, and allowing environmental deficits to accumulate may well be the outcome of a given budget process. But any such outcome should be an informed one, for which New Zealanders should be able to hold the Government to account. A better use of environmental information in the budget process could ensure that.

Simon Upton
Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a te Whare Pāremata

2

Adiantum fulvum

Wellbeing, the environment and wellbeing budgets

What exactly 'wellbeing' means is different for different people. As some of these differences are grounded in different worldviews, like te ao Māori, some differences may be irreconcilable. No matter what we understand wellbeing to mean, there is broad agreement that the environment is linked to both our economic and non-economic wellbeing *now* and to the economic and non-economic wellbeing of citizens in the *future*.

As part of the movement towards measures of success beyond gross domestic product (GDP), wellbeing has recently been adopted as the goal of fiscal policy in New Zealand. While wellbeing may well be a worthy goal, there remain foundational difficulties with integrating environmental considerations into a wellbeing approach. These include the absence of a granular understanding of the relationship between dimensions of the environment and dimensions of wellbeing, the difficulty of reducing the values of the environment to considerations of wellbeing, and radical uncertainty about how the environment might contribute to the wellbeing of future generations.

These foundational difficulties suggest that there may be benefits to including environmental considerations into fiscal processes independent of a wellbeing approach.

Wellbeing: What is it?

How the New Zealand Government talks about wellbeing

"Wellbeing", according to the New Zealand Government, "means giving people the capabilities to live lives of purpose, balance and meaning to them."[1]

It appears to be something multidimensional and separate from material living standards,[2] and – in the context of budget processes – a property of individuals rather than groups or societies (or plants, animals or ecosystems).[3]

'Wellbeing' has become commonplace in official government documents and legislation. It is not a recent arrival. The Resource Management Act 1991 is about enabling "people and communities to provide for their social, economic, and cultural well-being",[4] and a similar formula was recently reinserted into the Local Government Act 2002.[5] The New Zealand Productivity Commission Act 2010 establishes "supporting the overall well-being of New Zealanders" as part of the purpose of the Productivity Commission.[6] The Public Finance Act 1989 has also recently been amended to include multiple references to wellbeing.[7]

While the Government often uses the term wellbeing, the meaning of this term is typically left open. When the Government wishes to talk about wellbeing more specifically, it often draws upon the Treasury's Living Standards Framework (LSF).[8]

The LSF makes a distinction between *current* wellbeing and *future* wellbeing.[9] Current wellbeing is about wellbeing here and now; future wellbeing is about a state in the future that depends upon sustaining in the interim whatever wellbeing relies upon. Future wellbeing is understood to be underpinned by human capital, natural capital, social capital, and financial and physical capital. These capital stocks are understood to "represent the wellbeing of our people; our environment; our communities; and our finances and built infrastructure."[10]

The Government nonetheless recognises that there are multiple definitions of wellbeing.[11] This begs the question: What are these other possible definitions, and more importantly, what is at stake in the way wellbeing is defined and understood? A related question lurks in the background: What are the consequences of pursuing wellbeing as the goal of public policy? What is the alternative?

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1 New Zealand Government, 2019a, p.3.

2 New Zealand Government, 2017, p.7.

3 An exception to this is the distinction between the "wellbeing of all New Zealanders" and the "wellbeing of … the environment we live in" (New Zealand Government, 2017, p.7). In the legislative context, reference is made to both the wellbeing of individuals and communities.

4 Resource Management Act 1991, s 5(2).

5 Local Government Act 2002, ss 3(d) and 10(1)(b).

6 New Zealand Productivity Commission Act 2010, s 7.

7 Most notably, ss 26KB, 26M and 26NB of the Public Finance Act 1989.

8 See, for example, New Zealand Government (2018, p.7).

9 See, for example, New Zealand Government (2018, pp.4–5).

10 New Zealand Government, 2021, p.4.

11 New Zealand Government, 2018, p.3.

The challenge of defining wellbeing

In academia, it is widely recognised that defining wellbeing is a challenge,[12] which "has given rise to blurred and overly broad definitions."[13] It has been described as "intangible, difficult to define and even harder to measure".[14]

The challenge of defining wellbeing has practical implications: What should be measured to understand wellbeing, and how should that be interpreted? In the context of public policy, it also concerns precisely what that policy should be orientated towards. This is ultimately a political choice, reflecting value judgements.

In recent decades, the study of wellbeing has been characterised by two approaches. First, a subjective tradition that views wellbeing through three sets of ideas: positive and negative affect; satisfaction with life; and eudaemonic wellbeing.[15] Second, an objective tradition, which views wellbeing through ideas like capabilities, material circumstances, human development, living standards, and environmental sustainability.

Despite the existence and persistence of these different traditions, there is now consensus that wellbeing is a multidimensional construct.[16] This conveniently broad church understanding of wellbeing finds its way from the work of Stiglitz, Sen, and Fitoussi to the Organisation for Economic Co-operation and Development (OECD), the New Zealand Treasury and statements by the New Zealand Government.

However, declaring wellbeing to be multidimensional does not constitute agreement on what wellbeing *is*. At best, it provides a framework for defining wellbeing and places some limitations on what that definition should look like.

Te ao Māori conceptions of wellbeing

If a te ao Māori (Māori world) view is taken, wellbeing is understood differently again. Te ao Māori conceptions of wellbeing are centred on connection with all things, animate and inanimate, across space and time. Te ao Māori understands the world through people's descent from the primordial parents Ranginui and Papatūānuku (Sky Father and Earth Mother). All things, living or not, are related within this whakapapa (genealogy).

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[12] Dodge et al., 2012.

[13] Forgeard et al., 2011, p.81.

[14] Thomas, 2009, p.11, in Dodge et al., 2012, p.222.

[15] OECD, 2013, p.10.

[16] See, for example, Michaelson et al. (2009) and Stiglitz et al. (2009). From the standpoint of measurement, the gap between subjective and objective approaches can be attenuated by using objective measures but using the strength with which those measures affect subjective wellbeing as a key selection criterion.

Source: Rawiri Barriball, 2021

Figure 2.1: All things whakapapa to Ranginui and Papatūānuku. This include animals, rivers, ecosystems and people as understood through genealogical ties.

> "Whakapapa is a central principle used by Māori to organise and interpret the world. Through the whakapapa lens, everything in the world is related as a family member to every other thing. A tree in a forest, or a lizard in the grass, is a cousin, albeit distant. Recent advances in genomics demonstrates this view of the world to be factual, that is all living things descend from a common ancestor, and are therefore literally relatives.[17] However, Māori also extend the notion of family to the physical entities, the land, the seas, the sun, and air, that give rise to and support this life."[18]

[17] See tree of life project: https://evolution.berkeley.edu/evolibrary/news/160505_treeoflife.

[18] Reid, 2021, p.2.

This connection can be explained through mauri. Although difficult to define, it encapsulates the life force of an entity and the supporting capacity of that entity with other entities. All things have mauri, including rivers, forests, animals and rocks. Mauri can be affected by actions that reduce the supporting capacity of that thing. For example, a polluted river may have its mauri diminished because wildlife is unable to flourish. When these imbalances emerge, actions are required to re-establish the balance. Mauri applies not only to humans as individuals but also to whānau, communities and societies.

> "Just as humans can have their mauri compromised, and become unwell, so too can societies, which may fail to create the conditions in which the mauri of its members can express itself in its full vitality. The capacity of an entity, human or non-human, to express its full vitality and presence is referred to as mauri ora."[19]

Te ao Māori is founded and centred on the relationship that people have with their environment. It permeates and is celebrated in ritual, mātauranga (knowledge) and language. This understanding was developed into a code of ethics, values and systems to guide and regulate many aspects of life, including the balanced use of resources in practical activities like food production, clothing and dwelling construction.[20]

Although wellbeing is an essential conception in te ao Māori, perspectives of wellbeing for Māori are diverse. However:

> "the commonality across these perspectives is that wellbeing is multidimensional, it originates from an identity as Māori, which has collective, individual, spiritual and material elements, and is reinforced and reproduced through affiliation with and engagement in te ao Māori."[21]

The connection to past, present and future is also important to Māori wellbeing. Kaumātua (respected older Māori women and men) provide traditional knowledge, wisdom and support, but the vitality and efforts of youth are also essential for the overall wellbeing of Māori.[22]

Further, the whānau is central to enduring wellbeing; it is multigenerational and supports individual wellbeing as well as collective wellbeing. Here strong reciprocal relationships are important – wellbeing in one enables wellbeing in others.[23]

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[19] Reid, 2021.
[20] Mika, 2021.
[21] Mika, 2021, p.17
[22] Mika, 2021.
[23] Kukutai et al., 2017, in Mika, 2021.

Use of the term wellbeing in this report

In this report, the term *wellbeing* is used to denote a holistic conception of living well, combining notions of objective and subjective wellbeing.[24] This clarification is provided to enable readers to understand how the term is used in this report rather than to argue that this is how wellbeing *should* be defined.

This approach to *human* wellbeing is broadly consistent with many emerging national and international wellbeing frameworks,[25] and is consistent with both the New Zealand Government's wellbeing approach and the Treasury's LSF. The He Ara Waiora framework used by the Treasury goes further in its holistic conception of the interconnected domains of wairua (spirit), te taiao (the natural world – the environment) and te ira tangata (the human domain).

Wellbeing, in the conception used in this report, has three basic and interacting dimensions: a material dimension, a relational dimension and a subjective dimension.[26] Broadly speaking, the material dimension refers to what people have, the relational dimension refers to how people are able to use what they have, and the subjective dimension refers to the level of satisfaction that people have – that is, the quality of life people derive from the material and relational dimensions of their wellbeing.[27]

There is no one wellbeing, only wellbeings, and, moreover, wellbeings are distributed through time.

By itself, any single dimension provides only limited insight into the wellbeing of people at a particular point in time. This holistic and multidimensional approach attempts to integrate the idea of subjective wellbeing (life satisfaction) and objective wellbeing (having the capacity to function well). Whether this integration of perspectives works is a matter for debate.

What is clear, is that to think of wellbeing in this sense is fundamentally anthropocentric. It is concerned with human wellbeing, and insofar as the environment is relevant to wellbeing, it is as a means to human ends.

As such, there are limits to this approach to wellbeing from the standpoint of the environment – and arguably from the standpoint of public policy more generally. No mainstream economic treatment of wellbeing appears to depart from this anthropocentric perspective.

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[24] See McGregor and Pouw, 2016.

[25] McGregor and Pouw, 2016, p.1124.

[26] McGregor and Pouw, 2016, p.1124.

[27] We provide these three dimensions to round out the conception of wellbeing used in this report; however, we do not consistently explicitly operationalise this conception.

Wellbeing and the environment

There is an increasing awareness among New Zealanders that the natural environment is fundamental to their wellbeing.[28]

That dependency makes intuitive sense. An environment supplying clean air, water and food will support healthy lives. A degraded and polluted environment undermines and jeopardises our own wellbeing now and into the future. Establishing a general link between the environment and wellbeing is one thing; establishing links between dimensions of the environment and dimensions of wellbeing is another. Establishing the magnitude of these links is another thing again. From an environmental perspective, it is possible that more hopes are being invested in a wellbeing approach than it can bear.

We are used to wellbeing being described in economic and social terms. Understanding the fundamental importance of the environment to social and economic progress challenges economists and government officials to describe this reliance using language that was developed for other purposes. The environment is sometimes described as a stock of 'natural capital', which refers to land, soil, water, flora and fauna, as well as the broader ecosystems they are part of. The idea of natural capital is not new.[29]

Adopting this terminology, a comprehensive description of the links between the environment and wellbeing *could* embrace three 'channels': uses of natural resources captured in market transactions (the economic channel); environmental services that lie outside the market (the non-market channel); and the capacity of natural capital to sustain future wellbeing (the capital stocks channel).

But we cannot forget there are other ways to look at wellbeing and the environment – for example, in te ao Māori. A different lens can bring different linkages into focus or even into view.

The economic channel between the environment and current wellbeing

The first channel is about the way environmental resources and services become harnessed to economic processes. The link to wellbeing here is indirect – in other words, it is through the transformation of environmental services into economic output that they contribute to our wellbeing.

It can be characterised as the harvest of raw materials from the natural environment (e.g. timber), which is then combined with other types of capital (e.g. financial and human) to produce goods ranging from food to manufactured items that people use to support their wellbeing. This channel also works in reverse. When economic production processes generate unwanted by-products (pollution and contaminants), the environment is degraded, and with it the flow of environment services, leading to significant negative impacts on the economy and our wellbeing.

The economic channel is largely recorded in market transactions and, as such, is captured by GDP. However, relying on recorded gains from extraction of natural resources, as well as recorded losses to GDP from lost productivity as a measure of compromised wellbeing, ignores the many non-market ways a degraded environment can affect current and future wellbeing. Some economic measures – such as the World Bank's Adjusted Net National Income (ANNI) – attempt to correct for these omissions, but deficiencies persist.

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[28] Country-level analysis confirms the strength of this link. See Vemuri and Costanza (2006).

[29] The genesis of natural capital as an idea was over 100 years ago with the writings of the economist Alvin Johnson. Ecological and environmental economists in the 1990s brought the idea into more mainstream economic literature, where today it is widely employed by environmental policymakers and practitioners. For further information, see Missemer (2018).

The non-market channel between the environment and current wellbeing

The second channel is where the flow of environmental services provides a direct link to current wellbeing that does not flow through the market. Consider, for example, wetland ecosystems, which are the environment's 'sponge'. They purify water by trapping sediment, storing nutrients such as phosphorus and nitrates, and generally filtering other pollutants. All of this helps to keep water healthier for drinking, swimming and gathering food.

Source: Peter Kurdulija, Flickr

Figure 2.2: Wetlands, West Coast. The purification of water provided by wetlands are an example of the non-market channel between the environment and current wellbeing.

That the direct contribution the environment makes to wellbeing is not delivered through the market does not make it any less valuable or important to current wellbeing. Nevertheless, estimating the monetary value of such services can provide a broad sense of the scale of what is at stake and its relative importance, given the competing uses that exist for some environmental services. Scarcity cannot be wished away by banishing numbers.

The capital stocks channel between the environment and future wellbeing

A third channel links natural capital to future wellbeing by accounting for how much we leave for future generations. Without a healthy environment, economic and social wellbeing will not be able to be sustained into the future.

The OECD notes that:

> "our ability to sustain economic and social progress in the long run will depend on our capacity to reduce dependence on natural capital as a source of growth, abate pollution, enhance the quality of physical and human capital and reinforce our institutions."[30]

[30] OECD, 2017a, p.3.

Drawing down on natural capital beyond a certain point can result in the irreversible loss of a flow of environmental services.

This is often talked about as undermining the resilience of natural capital or, alternatively, as reducing the stock of natural capital. Ecosystem assets – characterised by the interaction between living and non-living components – are the source of ecosystem services. If a functioning ecosystem were to collapse, the means or factors of ecological production we rely on to produce environmental services could vanish with it. Avoiding ecological tipping points is an important mechanism to secure future wellbeing.

Source: Edgar Williams Collection, Alexander Turnbull Library

Figure 2.3: The historical harvesting of native timber and landscape clearing in New Zealand significantly reduced the stock of natural capital and associated benefits bequeathed to future generations. (An unidentified man standing alongside large sawn logs, with hills in background deforested by logging, [Northland]. Williams, Edgar Richard, 1891–1983: Negatives, lantern slides, stereographs, colour transparencies, monochrome prints, photographic ephemera. Ref: 1/4-056091-G. Alexander Turnbull Library, Wellington, New Zealand. /records/30645487).

The capital stocks channel links the environment to future wellbeing across a diverse set of temporal scales. Some links between the environmental and future wellbeing can be largely understood from the standpoint of generations currently alive; understanding other links between the environment and future wellbeing demands attention to intergenerational wellbeing, including generations yet to be born.

Te ao Māori conceptions of wellbeing and the environment

While the above schema is consistent with the conceptual basis of wellbeing economics, it does not exhaust the relationship between the environment and wellbeing. Rather, it captures only a perspective on what wellbeing *is* and the relationship between the environment and wellbeing. In Aotearoa New Zealand, te ao Māori represents a constitutionally and normatively important conception of wellbeing and the environment.

For Māori there is no compartmentalisation of human wellbeing and the environment, they are one and the same, where the whakapapa of people extends to non-human kin groups, including inanimate entities such as the land and the seas.[31] The whakapapa that connects people to the environment is seen as reciprocal:

> "The relationship between people and the physical environment is not one of permissible domination, exploitation, and exacting claims on sections of the land because of an assumed superiority of human consciousness and toil; quite the opposite. In te ao Māori, the environment is respected and engaged as kin, an ancestor, an elder in the hierarchy of genealogical time and space, acknowledged as both a spiritual and physical being whose needs and preferences trump those of humanity because it was here first."[32]

Durie's health and wellbeing model Te Whare Tapa Whā explains four dimensions: taha wairua (spiritual dimension), taha hinengaro (psychological dimension), taha tinana (physical dimension) and taha whānau (family dimension), where all elements need to be balanced to achieve good health and wellbeing.

Underpinning this is the health of the environment. This is inseparable from Māori wellbeing, where access to the land and a clean and healthy environment are essential. In a recent study of Māori wellbeing, almost all participants agreed that protection and sustainability are essential,[33] as is a reciprocal relationship between people and the environment – we look after the environment and it looks after us. Actions by humans can diminish or enhance the mauri and thus affect the wellbeing of the environment. Because the two are connected and mutually interdependent, enhancing the mauri of the environment will enhance the mauri of people.[34]

What is probably most obvious and important is that the way wellbeing is understood in te ao Māori relies heavily on the relationship between *all* things that make people healthy and well. Thus, Māori wellbeing is still human orientated but not anthropocentric as it shifts the importance to the connections of all things, not just to the individuals themselves.

Individual wellbeing for Māori is dependent on the connectivity of a person to whānau (across generations), culture and whenua that spans space and time and is reinforced when Māori experience and live within te ao Māori. Further, Māori wellbeing encapsulates a reciprocal and respected relationship where there is a cause-and-effect understanding of resource use because of the kinship between people and the resource.

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[31] Reid, 2021.

[32] Mika, 2021, p.13.

[33] Tūhono Trust, 2020, in Mika, 2021.

[34] Reid, 2021.

Fiscal policy, wellbeing and the environment

The limits of gross domestic product

Much of the current interest in wellbeing as the goal of fiscal policy stems from a dissatisfaction with the perceived imperialism of contribution-to-GDP output as the basis for policy choices and the litmus test for judging policy success. Whether GDP was ever used quite so myopically is another matter.[35] While it is easy to construct and then demolish a GDP straw man, it is important to reckon with some of its limitations.

From the standpoint of the environment, three limitations of GDP are particularly relevant. Firstly, GDP does not measure some environmental factors that contribute to wellbeing – for example, ecosystem services not traded in markets. Secondly, GDP measures some environmentally relevant expenditure that corresponds to a reduction in wellbeing – for example, costs associated with converting a wetland into pasture. Finally, GDP does not measure the sustainability of natural capital over time, let alone the sustainability of wellbeing (see Box 2.1).[36]

GDP is merely a tally of products and services consumed within a country. It is an apparently peculiar feature of the history of GDP that its limits were recognised and then quickly forgotten. It has become traditional, in this respect, to note the distinction made by Kuznets in 1934 between *national income* and *national welfare*.[37] Today, that same point might be made in terms of national income and wellbeing.

However, GDP is not without advantages as a metric of national progress. Firstly, it is relatively easy to measure at the national level (at least relative to other potential measures of national progress). Secondly, it is a tested lens for gauging macro-economic market-based developments. Thirdly, it is correlated with more granular metrics of national progress, such as health and education outcomes. Fourthly, it is, in general, positively correlated with general measures of wellbeing or welfare.[38]

[35] OECD, 2011, p.16.

[36] OECD, 2011, pp.16–17.

[37] Kuznets, 1934, p.7.

[38] In fact, early indexes of wellbeing underperformed GDP as measures of wellbeing. Delhey and Kroll, 2012.

Box 2.1: Gross domestic product is not an accurate measure of people's wellbeing[39]

GDP is a measure of the value of final goods and services produced within a country in a given time period. Although GDP was never intended for use as a measure of social welfare, some (including the OECD) have used GDP as the main metric to gauge whether societies are prospering.[40] From the perspective of assessing wellbeing, GDP as an aggregate measure has some important shortcomings, including the following.

- GDP is an imperfect approximation of the economic resources actually enjoyed by individuals and households.
- GDP does not provide information on how economic resources or wealth more broadly is distributed across individuals and communities.
- GDP does not measure some services that are produced outside the market and contribute to wellbeing, such as unpaid childcare and unpaid care for the elderly.
- GDP includes activities that correspond to a reduction in wellbeing, such as higher transport costs due to increased congestion and longer commuting.
- GDP includes activities aimed at remedying some of the social and environmental costs associated with production, such as spending on pollution abatement.
- GDP does not adequately capture a range of key attributes of individuals and communities, such as health status, happiness, and social connections.
- GDP cannot show whether even traditionally defined consumption, let alone wellbeing more broadly, can be sustained through time.
- GDP can increase but at the same time GDP per capita can decrease, which may give the false appearance of prosperity but represent declining incomes per person across the population.[41]

[39] Adapted from OECD, 2011, pp.16–17.

[40] OECD, 2011, p.16.

[41] This is a consistent theme of the Productivity Commission. See, for example, Productivity Commission (2021, pp.3, 20–21).

Nonetheless, aggregate GDP has serious limitations. These limitations would be seriously amplified if it were to be claimed to be synonymous with wellbeing or the exclusive aim of public policy. In practice, governments always pursue multiple objectives – recognising that GDP is just one.

Beyond gross domestic product and towards wellbeing

In recent years, a large literature on the limits of GDP as a measure of welfare and wellbeing has spurred efforts to develop alternative indicators. Collectively, these efforts are known as the 'Beyond GDP' movement.[42]

In the wake of the 2008 global financial crisis, the French Government's *Report by the Commission on the Measurement of Economic Performance and Social Progress* argued it was necessary to shift the attention of economists and policymakers from production and growth to a concern for sustainable human wellbeing.[43] This report – which made the case that GDP had incorrectly been treated as a measure of wellbeing[44] – gave a significant push to expanding measures of wellbeing beyond income.

The OECD's Better Life Initiative embedded the approach recommended by the Commission. The associated wellbeing framework included the environment as a domain of current wellbeing ("Environmental Quality") and as one of four resources that sustain wellbeing through time ("Natural Capital") (see Figure 2.4).[45]

The framework is composed of three dimensions: quality of life, material conditions and capital stocks. These, broadly speaking, map onto the three environmental channels discussed above: quality-of-life factors broadly align with non-market outcomes; material conditions broadly align with market outcomes; and capital stocks broadly align with the capital stocks channel.

An important focus of the Beyond GDP movement is the development of alternative measures of wellbeing. Prominent measures include the Human Development Index, the Happy Planet Index and Genuine Progress Indicators.[46]

The Better Life Initiative also includes the Better Life Index. Because it is based on a multidimensional understanding of wellbeing, the OECD adopts a dashboard approach to wellbeing indicators rather than a synthetic, composite wellbeing index. It does, however, provide an interactive tool that allows users to weight indicators associated with the 11 dimensions of current wellbeing – thereby underscoring that what constitutes living well (wellbeing) varies between individuals and communities.

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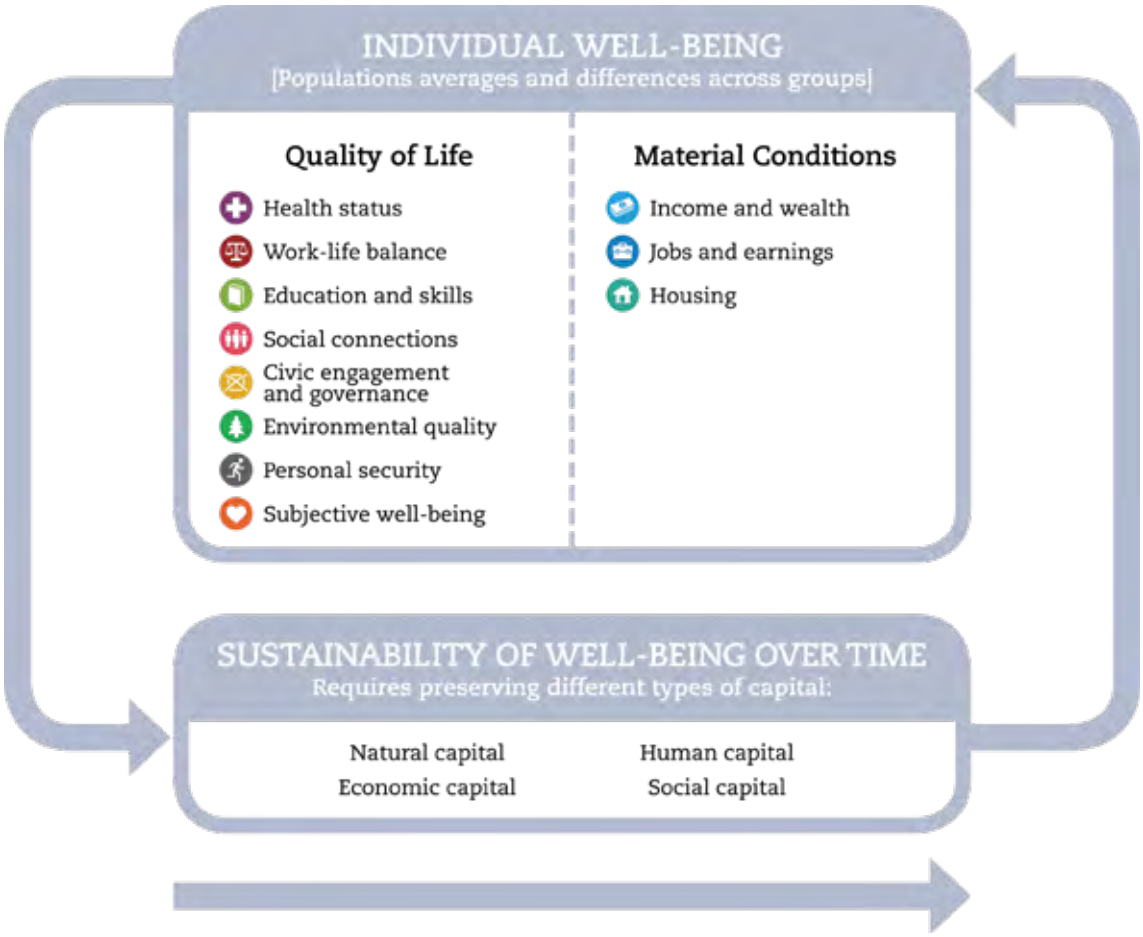
[42] See, for example, Easterlin (1995) and Stiglitz et al. (2009). For an overview, see Radermacher (2015). In New Zealand, an important contribution to this literature has been provided by Marilyn Waring (see Waring, 1988).

[43] Stiglitz et al., 2009.

[44] Stiglitz et al., 2009, p.21.

[45] See, OECD 2017b, p. 22.

[46] Berik, 2018.



Source: OECD, 2017b

Figure 2.4: The OECD's Better Life Initiative wellbeing framework distinguishes between individual wellbeing and the sustainability of wellbeing over time.

In addition to international efforts, a growing number of countries – including Australia, Ecuador, Germany and Japan – have developed national-level measures of wellbeing.[47] National-level measures of wellbeing go back to at least 1972 in the case of Bhutan.[48]

The limits of wellbeing?

While the limits of GDP have been mainstreamed over the last two decades, there is comparatively little discussion about the potential limits of wellbeing and measures of wellbeing. Wellbeing's value is frequently represented as being self-evident. This is not helpful.

[47] Exton and Shinwell, 2018.

[48] See Grimes (2021).

Being aware of the potential limits of wellbeing as *the* lodestar of public policy is essential if it is to be meaningful. Holding up wellbeing as *the* goal of fiscal policy risks returning us to the same dance that characterised the dominance of GDP: everything that is not consistent with a wellbeing approach is expunged from the policy process only to be reintroduced by decision makers when they are confronted with competing fiscal claims. Decision making in a pluralistic society involves different values that can underpin different conceptions of wellbeing or, in some instances, do not appear capable of being reduced to wellbeing. Additionally, there is no clear way to aggregate wellbeing across populations.

Wellbeing may well be the best approach to public policy, but underlying issues should be made explicit and confronted directly. Being able to articulate with reasonable precision the contribution the environment makes to wellbeing is essential for a wellbeing budget. In the absence of this, no grounds for discriminating between alternative policies – and judging their effectiveness – can be identified. It is not clear that the state of our understanding of the environment and its links to wellbeing is up to this task.

A fundamental theme of this report is that the current wellbeing approach to budget formation does not currently provide a clear and practical means of prioritising public expenditure through reference to the overarching goal of promoting wellbeing. It may be that such hopes are unachievable.

Despite the apparent self-evidence of a wellbeing approach to public policy, "fundamental conceptual issues continue to be debated including the precise meaning of wellbeing, the nature of its components and determinants, the way it ought to be measured, and how it might best be improved."[49] Rather than providing a catalogue of potential limits, some brief comments from an environmental perspective are offered.

The limits of wellbeing from the standpoint of the environment

From an environmental perspective, many of the limits of wellbeing replicate limitations of approaches to public policy that focus on natural capital.

Firstly, a wellbeing approach is potentially reductionist in the sense that it attempts to reduce nature to the benefits that are provided to people.[50] The focus of wellbeing is on the goods and services that are useful to people. Such an approach is instrumental and, ultimately, utilitarian. In the attempt to characterise environmental goods and services in terms of their instrumental relationship to wellbeing, wellbeing advocates risk losing sight of the importance of nature for nature's sake.

As a practical consequence, decision making focused on wellbeing may focus on the goods and services produced by nature as an asset, rather than nature itself.[51] Over the long term this may, paradoxically, reduce the value of those goods and services. Successful decision making that is focused on the benefits provided by nature is related, in some sense, to our knowledge of *how* these benefits are produced by nature and *what* natural processes are required for their ongoing supply. In practice, this approach assumes we have a complete understanding of the natural world and that there is nothing we do not know that cannot hurt us. The hubris of this approach has repeatedly come back to haunt civilisations, including our own.

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[49] Wolf and Boston, 2018, p.1.

[50] Maris, 2015, p.34.

[51] Clark, 2018, pp.62–63. This has implications for measurement and valuation. A focus on environmental goods and services should not overtake the focus on metrics concerned with quantity, quality, functioning and thresholds.

A second, related point is that it is likely that a wellbeing approach is considered by many New Zealanders to be inappropriate as the principal goal of environmental policy.[52] A wellbeing approach is anthropocentric and restricts the values of nature to its values to people. However, the values of nature do not end where nature ceases to provide value to people.[53] For many New Zealanders, it appears that nature has an intrinsic value independent of its other values. For example, the National Parks Act 1980 speaks of "preserving in perpetuity" the "intrinsic worth" of our national parks.[54] Within te ao Māori, nature and people have an inherent sacredness with their own mauri. It is the relationship that determines whether mauri is enhanced or not. Wellbeing is an outcome of the relationship between nature and people, not the goods and services that are provided to people.[55]

The assertion that the environment has intrinsic value is, of course, a value judgement and is not shared by every New Zealander. In a pluralistic society, many values that are important to many New Zealanders are not shared by all New Zealanders. The decision to pursue a wellbeing budget is, likewise, a value judgement.

Thirdly, wellbeing relies on a modernist separation between nature and society. On the one hand, such a separation only represents a certain perspective on society–environment relations. This understanding is not only inconsistent with te ao Māori but with many scientific frameworks such as deep ecology, as well as moral frameworks held by many New Zealanders. On the other hand, it is also empirically problematic: the idea that nature and society are distinct objects emerged *as* human societies accelerated the intensity of their interactions within nature, to the point where we now dominate nature on a global scale.[56]

Many of these issues are visually captured by the Nature Futures Framework, a heuristic developed by researchers in the scenarios and models expert group of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. The framework builds on three of the main values of nature: intrinsic values (nature for nature), instrumental values (nature for society) and relational values (nature as culture) (Figure 2.5).

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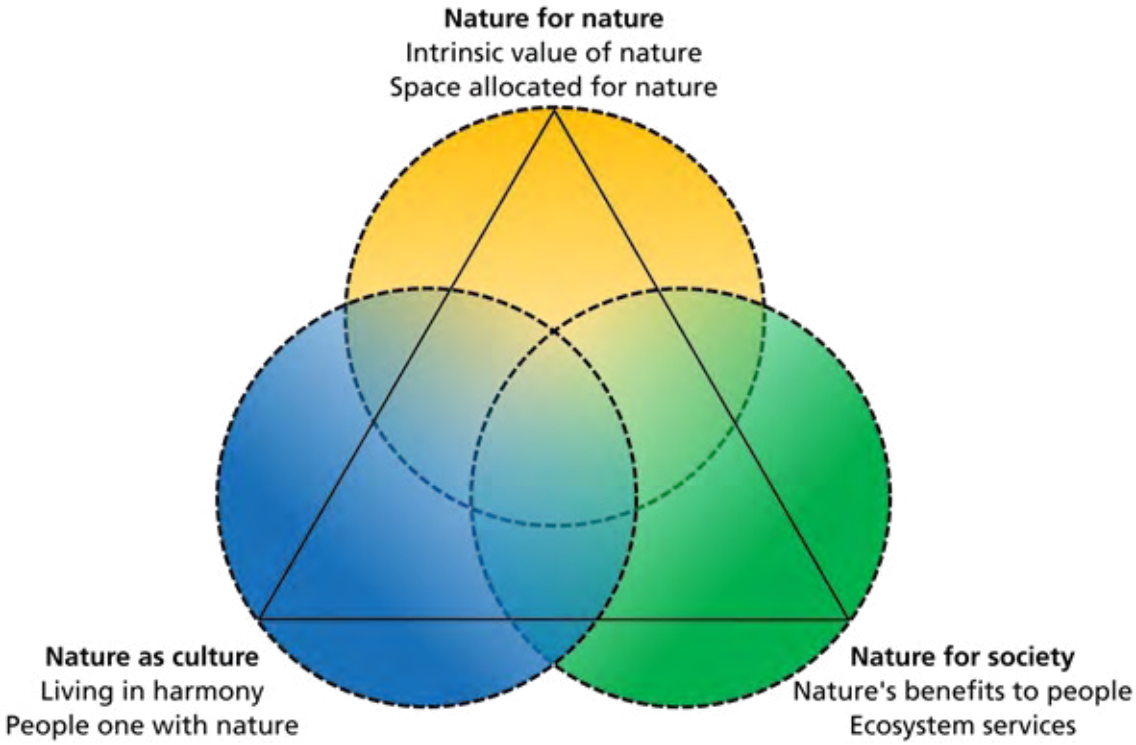
[52] While the first point above is concerned with the potential for a wellbeing approach (in particular, the instrumentalism of a wellbeing approach) to undermine intergenerational wellbeing, this second point is concerned with the normative appropriateness of a wellbeing approach.

[53] Maris, 2015, p.33.

[54] National Parks Act 1980, s 4(1). See the discussion in Waring (2018, pp.76–77).

[55] Reid, 2021.

[56] Latour, 2012.



Source: Pereira et al., 2020

Figure 2.5: The Nature Futures Framework triangle, which represents the different values of nature. Only the 'Nature for society' pole is entirely consistent with an instrumental understanding of the environment.

Wellbeing and the environment: The New Zealand context

The Living Standards Framework: A brief history

At its most fundamental level, the LSF is a wellbeing framework orientated towards analysing and measuring *intergenerational* wellbeing.[57] To assist with the measurement of intergenerational wellbeing, the Treasury has been developing a dashboard of wellbeing indicators known as the LSF Dashboard.[58]

The LSF is an economic model – specifically, a traditional capital stocks and flows model.[59] In such a model, a 'capital' is an asset that can be built up or can depreciate, and which enables a future flow of productive services. In its classical form, economic capital produces goods and services from which income is derived. In recent decades, the concept of capital has been extended to include human capital, social capital, natural capital and cultural capital.

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[57] See, for example, The Treasury (2018e, p.1).

[58] The Treasury, 2018f, 2019e. For more information on the LSF Dashboard, see Appendix 2.

[59] This is more transparent in early articulations of the LSF. See, most notably, Gleisner et al. (2011). More precisely, the LSF draws upon an aggregate production function. For some of the few more recent explicit references, see The Treasury (2016b, p.8), Makhlouf (2018, p.2) and Ormsby (2018, p.3). See also Smith (2018). In the standard neoclassical production function, capital and labour produce an undifferentiated output; a utility function describes how this undifferentiated output is consumed to affect the utility of people.

From the standpoint of the environment, a chief advantage of a stocks and flows model is that it provides a structured, well-established approach to thinking about sustainability.[60] In this context, the distinction between current wellbeing (which is a result of the flows produced by capital stocks now) and future wellbeing (which relies on potential flows that could be produced by capital stocks in the future) is primary. An additional advantage of a capital stocks model is that it provides an organised approach to thinking about how capital stocks produce wellbeing. For example, the inclusive wealth framework points to the importance of the efficiency with which capital stocks are used to generate wellbeing.[61]

The 2018 LSF is grounded in a theoretical framework that conceives of human flourishing as enabled by core capabilities.[62] This is made explicit through the Treasury's definition of wellbeing in terms of the "capability of people to live lives that they have reason to value."[63] The capability approach is, in part, filtered through the work of the OECD.[64] As such, the LSF has been influenced by the broader Beyond GDP movement.

The LSF has changed substantially through three main articulations in 2011, 2018 and 2021. The 2011 LSF appears to be a response to external criticism of the Treasury – in part, aligned with the Beyond GDP movement.[65] The development of the 2018 LSF – which drew extensively from the OECD's How's Life framework – was accelerated to support the Government's application of a wellbeing approach in Budget 2019.[66] Prior to this, the LSF had largely been an internal framework used by Treasury officials in the context of its stewardship role in providing advice on economic policy. The 2021 LSF appears to be a focused response to external criticism of the 2018 LSF; in particular, concerning the integration of children's wellbeing and culture.[67] Other external criticism – for example, concerning the integration of the environment – has not produced substantial change.[68]

The 2011 Living Standards Framework

The 2011 LSF was focused on capital stocks and flows generated by these stocks.[69] Four capitals were identified (including natural capital), and a number of flows were identified (including flows of environmental services and environmental amenities).

The 2011 LSF promoted a focus on intergenerational wellbeing by making central the preservation of natural capital (and other capital stocks) to ensure future flows of environmental services and environmental amenities. A policy tool – a pentagon that placed capital stocks at its centre – supplemented the 2011 LSF.[70] The policy tool identified sustainability as a central consideration for policy advice.

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[60] Gleisner et al., 2011, p.14.

[61] See Arrow et al. (2012).

[62] See Sen (1980).

[63] See, for example, The Treasury (2018e, p.8). Cf. The Treasury (2021c, p.28).

[64] See, for example, The Treasury (2019e, p.3). The work of the OECD, in turn, draws upon the work of Stiglitz, Sen and Fitoussi.

[65] Gleisner et al., 2011, p.6. See Huang (2020, p.9).

[66] New Zealand Government, 2019b, p.9. While the LSF has been used to support wellbeing budgets, the Treasury has retained full control over its development.

[67] The Treasury, 2021c, p.1.

[68] See, for example, Waring (2018).

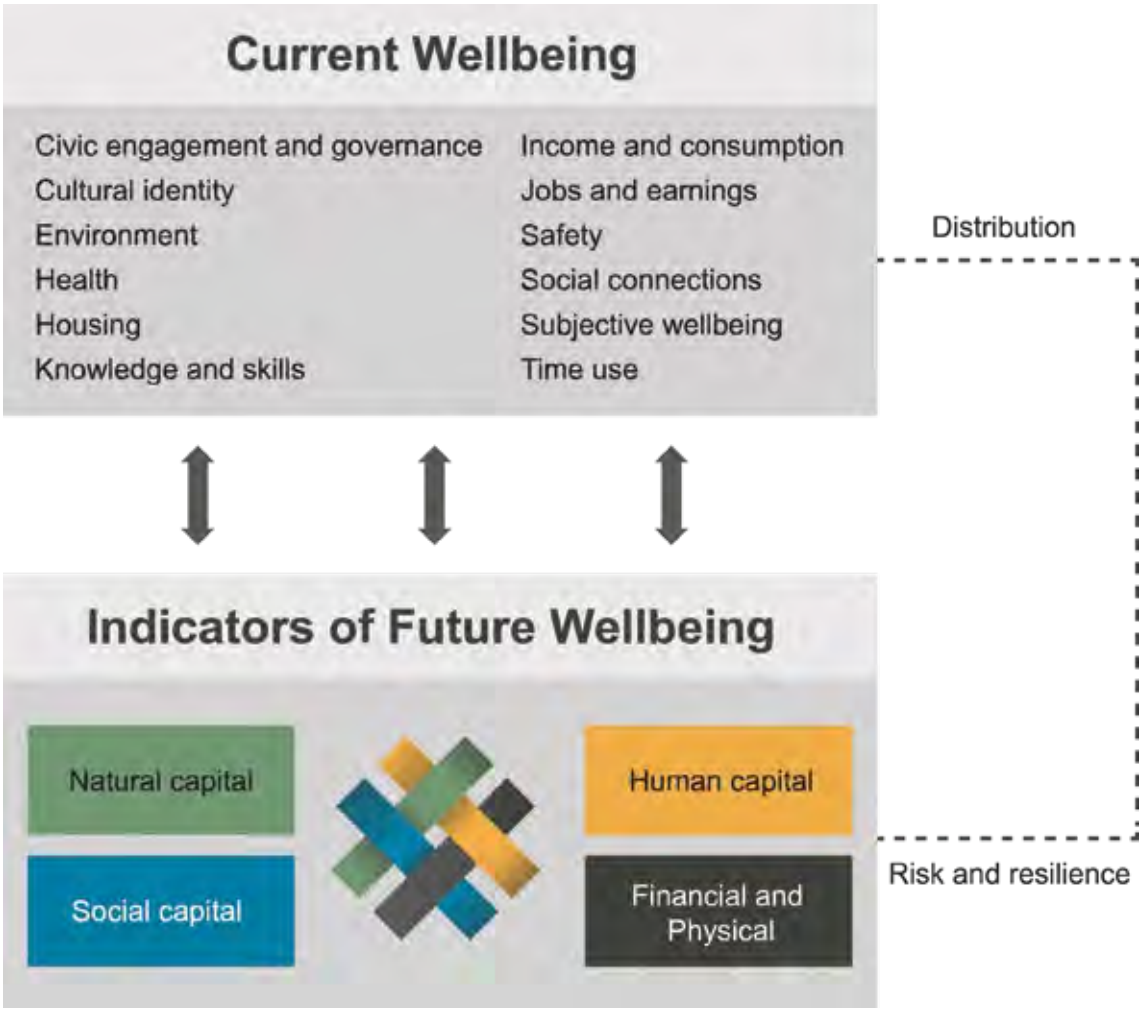
[69] Gleisner et al., 2011.

[70] The Treasury, 2012.

The 2018 Living Standards Framework

The 2018 LSF continued a focus on capital stocks but moderated it by introducing 12 domains of current wellbeing.[71] As can be seen in Figure 2.6, natural capital remained one of the four capital stocks (now linked to future wellbeing) while 'environment' was introduced as a domain of current wellbeing.

An additional component of the 2018 LSF was 'risk and resilience'. While the 2011 LSF promoted a focus on intergenerational wellbeing, the 2018 LSF enabled a focus on trade-offs between current and future wellbeing. The split between current wellbeing (domains of wellbeing) and future wellbeing (capital stocks, risk and resilience) is decisive for understanding the relationship between the environment and wellbeing through time. Nonetheless, the phrase 'future wellbeing' may gloss over different temporal scales. As noted above, natural capital is linked to future wellbeing across a diverse set of temporal scales.



Source: The Treasury, 2018f

Figure 2.6: The 2018 Living Standards Framework distinguished between current and future wellbeing.

[71] The Treasury, 2018e, 2018f, 2019e.

The 2021 Living Standards Framework

The 2021 LSF continues a focus on capital stocks but reconfigures their role in the LSF – just as it reconfigures the role of the 12 domains of wellbeing. As can be seen in Figure 2.7, the 2021 LSF distinguishes between individual and collective wellbeing (which represents micro-wellbeing) and wealth (which represents macro-wellbeing).[72] Between macro-wellbeing and micro-wellbeing lies a newly added layer of institutions.

The 12 wellbeing domains include 'environmental amenity', which replaces the 'environment' wellbeing domain from the 2018 LSF. Environmental amenity is reframed as a domain of individual and collective wellbeing. Relative to the 2018 LSF environment domain, the definition of this domain is expanded to include the built environment.

The four aspects of wealth include 'natural environment', which replaces 'natural capital' from the 2018 LSF. Natural environment is reframed as an aspect of wealth rather than a capital stock, and its explicit definition is expanded.

The 2021 LSF also has four analytic prompts: distribution, resilience, productivity and sustainability.

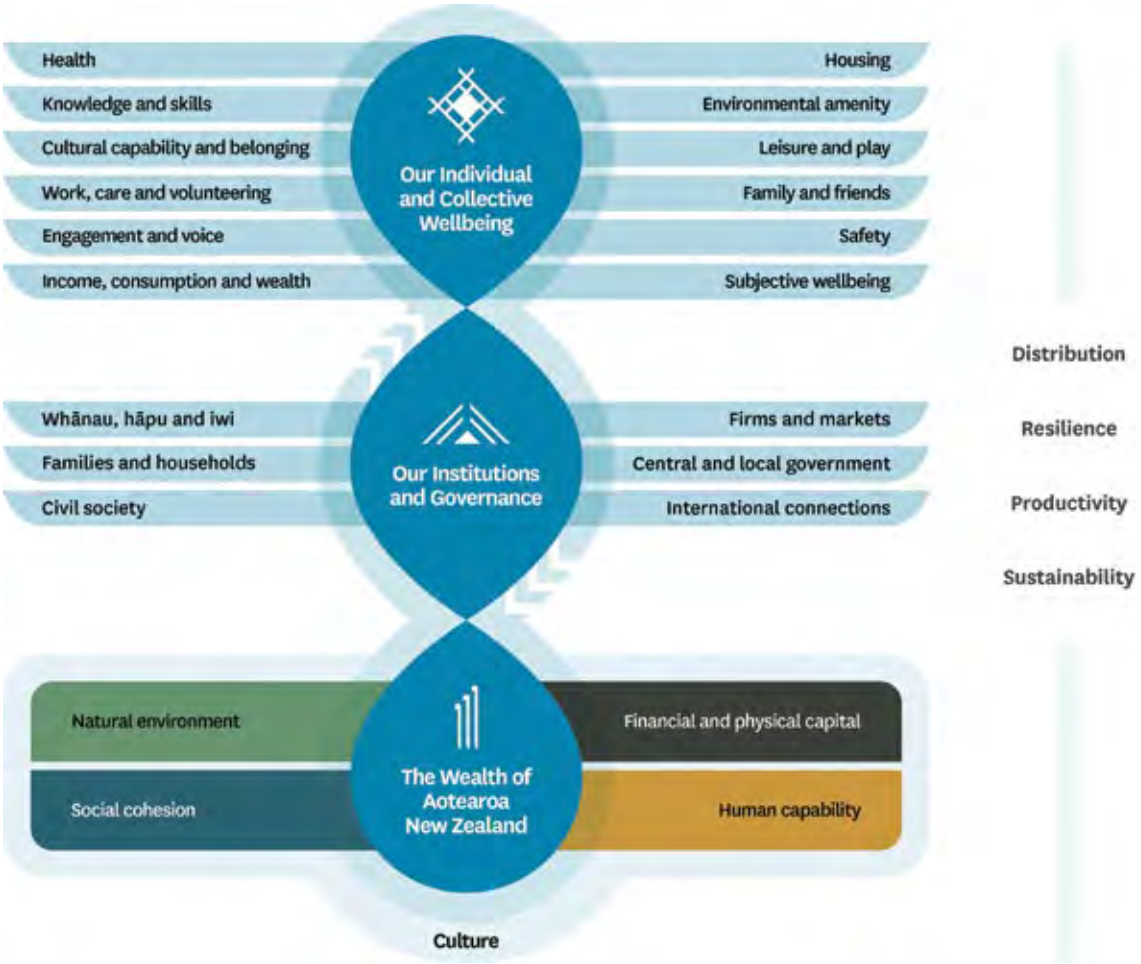
In short, the 2021 LSF splits the environment into two aspects: one that captures access to and benefit from the environment by individuals and collectives (environmental amenity), and one that captures the aggregate wealth represented by the environment (natural environment).

For all this busyness, it is not clear that the 2021 LSF improves the clarity with which the environment's contribution to wellbeing is described. Indeed, there are reasons to believe it is a step backwards or, at least, a step sideways.

The limits of the Living Standards Framework from the standpoint of the environment

As discussed earlier, the environment can be understood to have three types of links to wellbeing: uses of natural resources captured in market transactions; environmental services that lie outside the market; and the capacity of natural capital to sustain future or intergenerational wellbeing over time.

[72] The Treasury, 2021c, pp.26, 50.



Source: The Treasury, 2021c

Figure 2.7: The 2021 Living Standards Framework no longer distinguishes between current and future wellbeing but adds sustainability as an analytic lens.

From the standpoint of wellbeing, it is not clear that the 2021 LSF captures important dimensions of the relationship between the environment and wellbeing. Instead of capturing these different relationships, the 2021 LSF is structured around economic categories (micro- and macro-wellbeing), and for this reason so is the following discussion of its limits. No comment is made on the addition of an institutional layer between the micro and macro levels of the framework.

The environment and individual and collective wellbeing: Environmental amenity

In the 2021 LSF, there is no exclusive environmental wellbeing domain. Instead, the environmental amenity domain refers to having access to and benefiting from the natural and built environment.

The Treasury's rationale for including the natural and built environment in a single domain is that it can be difficult to distinguish what is 'natural' and what is 'built'.[73] An additional rationale is the design principle of parsimony and the associated desire to include no more than 12 domains of wellbeing.[74]

Nonetheless, there are at least three reasons why including both the natural and built environment in a single domain is potentially problematic.[75] Firstly, there is a potential issue of communication, especially in light of the use of the word "environment" in the 2018 LSF to refer exclusively to the natural environment.[76] Secondly, including the natural and built environment in the same domain belies the complexity and heterogeneity of policy issues relevant to the natural and built environment. Thirdly, by including both the natural and built environment in the same domain, trade-offs between the natural and built environment are made less transparent.[77]

In its discussion of the combined natural and built environment domain, the Treasury notes that it may often make sense to disaggregate the environmental amenity domain into those amenities that relate to the natural environment and those that relate to the built environment.[78] Given the importance of being able to communicate the boundaries of wellbeing domains to ministers in the budget process, having a divisible catch-all domain – in which there are almost inevitably going to be trade-offs between different elements – seems far from ideal. It is highly likely that this domain will need to be frequently disaggregated to facilitate both analysis and communication.[79] That suggests the domain's subject matter should never have been aggregated in the first instance.

It appears important for any wellbeing framework to separate the natural environment from the built environment. This would also fit loosely with a te ao Māori concept of wellbeing.[80] It would also allow impacts on the environment to be more readily communicated. In terms of the 2021 LSF this does not require a change to the proposed domain name but would require a change to the proposed definition of the domain – in particular, moving reference to the built environment to a domain where it is more relevant.

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[73] The Treasury, 2021c, p.36. It is worth noting that this same concern has not resulted in a combined capital stock, composed of both natural wealth and built wealth. Instead, natural wealth is separated out from "man-made assets such as buildings, machinery and infrastructure", which are included as part of financial and physical capital (see The Treasury, 2021c, p.52).

[74] In addition, the inclusion of the built environment into this domain allows for the inclusion of transport in the LSF. The inclusion of transport is consistent with stakeholder feedback received on the 2018 LSF (see The Treasury, 2021c, p.36).

[75] In addition to the three points enumerated, combining the natural and built environment in a single domain runs counter to the proposed Natural and Built Environment Act. Amongst other things, the proposed Act pointedly includes environmental limits with the purpose of ringfencing aspects of the natural environment to separate it from the impairment of 'natural amenity' that inevitably follows from developing 'constructed amenity' in the built environment.

[76] The Treasury, 2018e, p.27.

[77] This lack of transparency would seem to be broadly similar to the consequences of combining the 'work, care, volunteering' domain and the 'leisure and play' domain into a single domain.

[78] The Treasury, 2021c, p.36.

[79] For its part, the Treasury notes that disaggregating between the natural and built environment "may often make sense" in more detailed applications of the LSF (see The Treasury, 2021c, p.36).

[80] Reid, 2021.

The title of the domain name (environmental amenity) suggests a focus on those aspects of the environment that take the form of amenities – as opposed to disamenities, hazards, the underlying quality of the environment, or the intrinsic value that the environment holds for many people. The adoption of the word 'amenity' is a surprising word to have been chosen given the controversy that has surrounded its inclusion in the Resource Management Act.[81]

The actual definition of the domain (with its references to access to and benefits from the environment) is expansive, extending to transport networks that would not normally be associated with the environment in people's minds. To be in any way meaningful, the terms *access* and *benefit* need to be understood as referring to both the presence and absence of these states.[82] By contrast with its predecessor, the 2021 vintage of the LSF proposes an unyieldingly experiential account of the environment's relationship to wellbeing and arguably marginalises the integrity and resilience of the natural environment as a precondition of human wellbeing.[83]

The environment as wealth and natural capital: Natural environment

In the 2021 LSF, the environment is framed as an aspect of wealth rather than a capital stock (as in the 2018 LSF). As indicated previously, there are good reasons to be cautious about framing the environment as natural capital. It is not only reductionist but is inconsistent with how many New Zealanders understand the environment. The environment is more than a stock that produces a flow of ecosystem services. Many aspects of the environment are not substitutable with other capital stocks (nor with each other).

Feedback to the Treasury indicates that many people would prefer a visual representation of the environment that emphasises that all social and economic activity is embedded within the natural world.[84] I myself have argued that the environment is *prior to* the economy and society.[85] Within te ao Māori, for example, the environment is part of the extended non-human family. Rather than having an extractive relationship, Māori tend to hold a symbiotic or commensalistic relationship with the environment, where attempts are made to ensure the mauri is balanced.[86]

The reason for the change in terminology appears to be a recognition that the environment is valued for reasons other than just its role in the economic production process.[87] The definition of what was previously categorised as natural capital has been expanded to clarify that the wealth of Aotearoa includes "all aspects of the natural environment which support life and human activity, whether valued for spiritual, cultural or economic reasons."[88]

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[81] See, for example, Randerson et al. (2020, p.74). The word 'amenity' has been ruled *res non grata* in the Natural and Built Environment Bill, which is proposed to replace the Resource Management Act.

[82] As the Treasury has noted previously in the context of environmental considerations, "benefits can be both positive and negative" (The Treasury, 2018e, p.37).

[83] The 2018 LSF included reference to the "quality of the outdoor environment and quality of our interactions with it" ("accessing, viewing and interacting") (The Treasury, 2018e, p.27). Interpreted charitably, the 2018 LSF included both the positive and negative contribution of the environment to wellbeing, as mediated by the quality of the environment and of the dynamic interactions between people and the environment within ecosystems. At the least, it made explicit that the full spectrum of direct and immediate interactions between people and nature are important for wellbeing.

[84] The Treasury, 2021c, p.15.

[85] PCE, 2020b, p.10.

[86] Reid, 2021.

[87] The Treasury, 2021c, pp.5, 15.

[88] The Treasury, 2021c, pp.16. Cf. The Treasury, 2021c, p.53.

Though this is a welcome clarification, it is consistent with the concept of natural capital and was, moreover, already implied in the 2018 LSF insofar as the flows of services produced by natural capital were explicitly intended to extend beyond the 'income and consumption' and 'jobs and earnings' domains of wellbeing. While both the concept of natural capital and the 2018 LSF are instrumental, in neither is this instrumental standpoint only concerned with *economic* production.

It is not clear that this change in definition achieves anything substantial. Physical and financial capital can be and routinely are valued for spiritual, cultural and economic reasons. More importantly, it is not clear that this change in definition is sufficient to transform the role of the environment away from that of a capital stock. The Treasury appears to agree with this interpretation, noting that the term natural capital can be used interchangeably with the term natural environment in the context of the 2021 LSF.[89]

The 2021 LSF appears to remain an instrumental framework, in which wealth (or capital stocks) generates a flow of services that produces wellbeing. In terms of the environment, the natural environment (and other components of wealth) produces wellbeing. If the Treasury wants to move away from an instrumental conception of the environment as a capital stock, then it would be productive to clarify how precisely the 2021 LSF is different from a natural capital approach.

Insofar as the LSF excludes the intrinsic value of nature, it excludes some of the values of many New Zealanders. To be sure, a weak intrinsic value of nature can be inferred from its being culturally valued by New Zealanders. This weak rendering limits the intrinsic value of nature to the intrinsic value of nature *for* people. This rendering admits only a shadow of the idea of nature possessing intrinsic value, which may be understood as a value that is in some senses incommensurate with other values. This deeper understanding of the intrinsic value of nature is, for example, reflected in the National Parks Act. It reflects the idea that at least some of our environment is not substitutable and should not be traded off against other, more fungible forms of wealth.

More broadly, there is a general lack of conceptual clarity concerning the dimensions of natural capital that are relevant to individual and collective wellbeing as it is currently experienced, and the generation of individual and collective wellbeing in the future. Instead of conceptual clarity, the LSF has only ever provided a litany of stocks of natural capital: land, soil, water, plants and animals, minerals and energy resources.[90] Interestingly, this list has changed over time. In some versions land has been absent,[91] trees have been replaced with plants,[92] animals have been absent,[93] and the atmosphere has been included.[94] In one version of this incantation, ecosystems (including forests, soil, aquatic environments and the atmosphere) made the list.[95]

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[89] The Treasury, 2021c, p.49.

[90] The Treasury, 2019e, p.4. More conceptual clarity has been present concerning the flows that are generated by the stock of natural capital. For example, the Treasury refers to the provisioning, regulating, and cultural services these stocks provide (see The Treasury, 2018e, p.37).

[91] The Treasury, 2018e, p.37.

[92] The Treasury, 2018d, p.5.

[93] The Treasury, 2018e, p.37.

[94] The Treasury, 2018d, p.75. See also The Treasury (2018d, p.5) (where energy resources are absent).

[95] Makhlouf, 2018, p.6. This litany (and the associated definition) seems to be based on an unofficial definition provided by Van Zyl and Au (2018, p.2).

While a natural capital litany provides a certain concreteness in each incantation, it does not replace the kind of conceptual development necessary to structure a measurement framework or provide a policy framework that is sufficient to support a budget prioritisation process. As Marilyn Waring notes, what was missing from the 2018 LSF were "explicit descriptions" of what terms like natural capital, environment, and ecosystems mean in the context of the LSF, "how they are differentiated from each other, and what their limitations are as descriptors."[96]

Much the same can be said for the 2021 LSF. Like its predecessors, it is not underpinned by a clear conceptualisation of the different dimensions of environmental wealth, the characteristics that distinguish them from other aspects of wealth, or the manner in which these dimensions (along with other aspects of wealth) produce wellbeing. This is not an easy thing to accomplish. However, a clearer understanding of what the natural environment is (and how it produces wellbeing) is a precondition for a set of policy-relevant indicators, and for ensuring that the LSF can function adequately as a policy framework.

For example, without a developed concept of natural capital, a policy-relevant set of indicators would only be assembled by chance. While individual indicators are illuminating, a developed concept of natural capital is a precondition for ensuring that advice to decision makers is cognisant of both what is known and what is not known concerning the state of the environment, proximity to tipping points, historical trends, and likely future states. A biophysically grounded concept of natural capital would imply an emphasis on indicators and forms of analysis that can express the centrality of non-linearities to many aspects of the environment – for example, genetic diversity. It would also draw attention to critical life-supporting elements of natural capital that cannot be substituted.

The Treasury recognises that further work on developing the conceptual dimensions of natural capital is desirable but prioritised work on culture and child wellbeing for the 2021 refresh of the LSF. A comprehensive examination of the environment awaits a subsequent iteration of the LSF.

More generally, reframing capital stocks as aspects of wealth diminishes the role of the environment in generating future wellbeing because it displaces the core analytical leverage provided by translating a capital stocks model into a wellbeing framework. In particular, it displaces an emphasis on intergenerational wellbeing and trade-offs between current and future wellbeing. The distinction between current wellbeing and future wellbeing is fundamental to integrating environmental considerations into the LSF, given that environmental considerations are often long-term considerations.

In the 2018 LSF, the environment's contribution is split *temporally* (along the lines of current and future wellbeing). In the 2021 LSF, the division is made instead between micro wellbeing and macro wellbeing. The Treasury had noted in 2018 that a consideration of the 'health' of capital stocks enables an assessment of how well agencies are delivering on their stewardship role.[97] By de-emphasising capital stocks, considerations of sustainability, intergenerational wellbeing and stewardship are likely to move to the periphery.

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[96] Waring, 2018, p.59.

[97] The Treasury, 2018j, p.4.

The Treasury's rationale for moving away from a temporal split is to recognise that both the domains and the capital stocks are relevant to current and future wellbeing.[98] In particular, the Treasury considers that capital stocks underpin our wellbeing today, as well as tomorrow, and that the decisions that are made about drawing down or investing in those capitals is a balance between current and future wellbeing. For the Treasury, the distinction between the micro-economic (wellbeing domains) and the macro-economic (wealth) is considered to be "more useful" than the distinction between current and future wellbeing.[99]

While the Treasury has added productivity and sustainability as lenses for the analysis of wellbeing,[100] these additions do not appear to enable the 2021 LSF to prioritise intergenerational wellbeing with the same potency as the 2018 edition. For example, the sustainability lens does not appear to define sustainability in a precise, positive sense. This is concerning given that there are multiple, inconsistent views about what sustainability means and how these views are to be operationalised. An answer to the question 'How well are we safeguarding our national wealth for the benefit of future generations?' will change markedly depending on how sustainability is understood.

For example, some perspectives on sustainability imply that all ecosystems and natural resources are perfectly substitutable with one another and with other capital stocks, and that it is the total stock of capital that should be preserved. Other perspectives on sustainability recognise that sustainability may require the maintenance of certain capital stocks in at least some circumstances.

In the absence of clarity around what sustainability means to the Treasury, it is not possible to form a definitive view on what impact the inclusion of this lens might have. But it appears likely that it will fail to provide the analytic leverage provided by the distinction between current wellbeing and future wellbeing. More generally, it appears that the emphasis that the 2018 LSF had on long-term, intergenerational wellbeing has been significantly reduced.

The limits of the Living Standards Framework from the standpoint of te ao Māori – He Ara Waiora

The LSF does not easily capture the full breadth of wellbeing from a te ao Māori perspective because it does not illustrate the relational component of wellbeing between people and the environment (reciprocal relationship, kaitiakitanga), and because the LSF is inherently human centric.[101]

A large component of Māori wellbeing is based on the relationship between people and the environment, but it is not a one-way relationship. The 2018 LSF did not clearly communicate that wellbeing is also derived from caring for and protecting the environment. From a te ao Māori perspective, reducing natural capital and the goods and services provided to us to a 'use' benefit fails to illustrate the benefit to wellbeing when we contribute back to the environment.[102] This relationship cannot be represented by economic parameters only because there are spiritual values that cannot be meaningfully quantified.

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[98] The Treasury, 2021c, pp. 19, 26.
[99] The Treasury, 2021c, p.26.
[100] The Treasury, 2021c, p.16.
[101] McMeeking et al., 2019.
[102] Reid, 2021.

The LSF makes distinctions between categories that are inconsistent with the way wellbeing is understood in a holistic and integrated way like te ao Māori. To some extent this has been ameliorated in the 2021 LSF by including the category 'individual and collective wellbeing' and by including whānau among the institutions that mediate the relationship between capital stocks and individual and collective wellbeing.[103] It remains to be seen what consequences this will have.

Another further concern for those Māori who take a te ao Māori view is that they do not recognise the distinction between current and intergenerational wellbeing. Wellbeing today is wellbeing in the future. In te ao Māori it is not simply how much of the environment is left for future generations but how much improvement today is needed for the future.

The LSF also centres human values. This creates a tension for the reciprocal relationship between people and the environment as conceived by Māori. The positioning of te taiao close to the centre of the model better reflects the sequence of Māori creation or cosmology. Within te ao Māori, people are seen as teina (junior) to the environment because the atua created the environment before people.[104] This way of thinking does not place people at the centre of the universe, nor separate from it; rather, it places them within the ecosystem.[105] The wellbeing of te taiao is paramount as well as being determinant of human wellbeing.

Treasury has identified that the LSF needs to do more work on how to better represent the wellbeing of Māori, and noted that the Crown–Māori relationship is integral to all four capitals in the LSF.[106] The Treasury has made changes in the 2021 version of the LSF to make it more compatible with wellbeing as understood in te ao Māori (and by Pacific peoples). However, the Treasury has decided not to comprehensively incorporate everything that is important for te ao Māori into the LSF but instead to use the LSF alongside in-depth frameworks, such as He Ara Waiora for a Māori perspective on wellbeing and Pacific Aotearoa – Lalanga Fou for a Pacific perspective on wellbeing. This approach maintains the integrity of these complementary perspectives while also minimising the complexity of the LSF.

He Ara Waiora is a tikanga-based framework that was developed by the Treasury and the Tax Working Group and has undergone subsequent development. Its most recent version is not human centric, and it considers te taiao (the environment) paramount to human wellbeing. The model remains inherently relational and articulates the essential behavioural values of kotahitanga (working in an aligned, coordinated way), tikanga (making decisions in accordance with the right values and processes, including in partnership with the Treaty partner), whanaungatanga (fostering strong relationships through kinship and/or shared experience that provide a shared sense of wellbeing), and manaakitanga (having a deep ethic of care for the people affected) (Figure 2.8). Tiakitanga is an additional principle that is being integrated into He Ara Waiora. It encompasses stewardship of the environment and other important processes and systems.[107]

[103] The Treasury, 2021c, pp.11, 14.

[104] McGowan, 2021.

[105] Mika, 2021.

[106] Te Puni Kōkiri and The Treasury, 2019, p.i.

[107] McMeeking et al., 2019. This version is still to be further developed, and more work is needed to identify how this framework could be used to measure and analyse wellbeing.

Source: McMeeking et al., 2019

Figure 2.8: He Ara Waiora 2.0 framework. One of its key features is that it centres wellbeing on wairua and illustrates that te taiao is paramount and essential to human wellbeing.

Similar to the limitations of the LSF in attempting to encapsulate the complex nature of the environment into a simplistic framework, He Ara Waiora also has its limitations. One of those is the degree to which it can represent the multidimensional nature of Māori wellbeing when Māori wellbeing is very place based.[108]

He Ara Waiora is a new framework, whose intended use is broader than the budget process. However, it is intended that this framework will be increasingly used in parallel with the LSF in the context of budget processes to ensure that fiscal decisions are aligned with how wellbeing is understood from a te ao Māori perspective.

[108] Representation of this multidimensionality ultimately requires the development of indicators and measures. Indicators are currently being developed by Te Puni Kōkiri, Ministry for the Environment (MfE) and Stats NZ to align with He Ara Waiora but may cross over into the LSF Dashboard. Others that have more intangible properties like some elements of mauri may only be relevant to He Ara Waiora. Those indicators are likely to be difficult to develop.

Although the use of these frameworks in parallel seems plausible, it seems likely that the fundamental differences between the advice that they are bound to generate will be difficult to synthesise in a decision-making context. The LSF is built on a mechanistic metaphor where stocks generate flows that produce wellbeing. Wellbeing in te ao Māori comes from the quality of the relationship between people and between people and the environment.[109]

It remains to be seen whether the advice derived from the LSF and He Ara Waiora converges or can otherwise be synthesised, or whether the two frameworks generate parallel advice streams that are appealed to as a source of justification depending on the nature of the priorities under consideration.

Fiscal policy, wellbeing and the environment: The New Zealand context

Wellbeing budgets

Budget 2019 was simply titled *The Wellbeing Budget 2019*. It claimed political, national and global priority for the use of a wellbeing approach.[110] This claim to priority was echoed in national and international commentary.[111] However, the *concept* of a wellbeing budget is not novel.[112]

According to the Government, wellbeing budgets represent a "new approach" to "formulating policy and measuring success – an approach that puts the wellbeing of New Zealanders at the heart of what we do."[113] In this new approach, wellbeing supposedly replaces economic growth as the heart of the budget process.

But it is not clear that economic growth has ever been the all-consuming heart of the budget process, even if governments have from time to time communicated their goals in those terms.[114] Considerations beyond economic growth have always been a central component of the budget process and part of the deliberations of decision makers. What may have changed, however, is the explicitness of these considerations throughout the budget process. What may also have changed is the diversity of non-economic information and non-economic considerations. While it is clear that wellbeing budgets are committed to moving 'beyond GDP', the precise contours of their positive vision are less clear.

Whatever their originality, wellbeing budgets appear to be here for the foreseeable future. The Government has recently amended the Public Finance Act to require future governments "to set out how its wellbeing objectives, together with its fiscal objectives, will guide its Budget and fiscal policy."[115] While future governments will have flexibility to formulate wellbeing objectives, they will nonetheless be required to explain how a given budget will contribute to wellbeing.

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[109] Reid, 2021.
[110] New Zealand Government, 2019b, pp.2, 3, 5.
[111] See, for example, Sunstein (2019).
[112] Anderson and Mossialos, 2019, p.320.
[113] New Zealand Government, 2018, p.19.
[114] Grimes, 2020, p.113.
[115] New Zealand Government, 2018, p.5. See, also, Public Finance Act 1980, ss 26KB and 26M.

However, it may be premature to assume their continuation in their current form. A feature of recent budget processes has been their continued evolution and the willingness of the Minister of Finance to experiment with different processes. This willingness to experiment is consistent with the Government's recognition that "deep reform" of the budget process will take time.[116]

The 'wellbeing approach'

This 'new' approach to the budget process is known as the 'wellbeing approach'. It has been primarily supported by the LSF,[117] and more recently also by He Ara Waiora.[118]

In part, a wellbeing approach is about making measures of wellbeing the measures of success. Economic measures (such as GDP) are understood to be partial measures of what New Zealanders value.[119] While economic measures are not abandoned, a broader range of indicators is needed, for example, measures related to the strength of communities and how well the environment is protected.

In part, a wellbeing approach is about making explicit trade-offs between current and future wellbeing.

It is not about *either* wellbeing now *or* wellbeing in the future. Instead, it is about intergenerational wellbeing. While wellbeing means "enabling people to have the capabilities they need to live lives of purpose, balance, and meaning for them," a wellbeing approach is also about ensuring that wellbeing is sustainable over the long term.[120] As a result, it involves addressing long-term challenges.[121]

From the standpoint of the budget process, three key ideas appear to lie at the heart of this new approach. The first is that those areas where improvements will contribute the most to wellbeing should be the preferred target of public spending.[122] The second is that policies should be selected on the basis of what might drive improvements in wellbeing at the least fiscal cost.[123] The third is that the extent to which policies actually deliver measurable improvement should be rigorously assessed following their implementation.[124]

[116] New Zealand Government, 2018, p.4.
[117] New Zealand Government, 2019a, p.3.
[118] O'Connell et al., 2018.
[119] New Zealand Government, 2018, p.3.
[120] New Zealand Government, 2018, p.3.
[121] New Zealand Government, 2019a, p.3; 2021, p.4.
[122] New Zealand Government, 2018, p.1.
[123] New Zealand Government, 2018, p.4.
[124] New Zealand Government, 2018, p.4.

The promise of wellbeing budgets

In official government documents, wellbeing budgets are presented in ambitious terms. The promise of wellbeing budgets is summarised in the 2019 Budget Policy Statement.[125]

Wellbeing budgets are supposed to ensure that expenditure focuses on those areas that offer the *greatest* opportunities to improve the wellbeing of New Zealanders.[126] These opportunities are supposed to align with the wellbeing outcomes that New Zealanders value most highly.[127] Wellbeing budgets are supposed to take a long-term view and ensure that intergenerational outcomes are kept in sight.[128]

Achieving this would be no small feat if it were to be realised. It would result in a budget process that addressed long-term challenges (including those related to sustainability) and enhanced the long-term, intergenerational wellbeing of New Zealanders. More prosaically, wellbeing budgets are intended to ensure that "expenditure is phased, controlled and directed to maximise its benefits."[129]

To accomplish these promises, wellbeing budgets are supposed to draw upon extensive evidence and analysis.[130] Ministers are then supposed to draw on this analysis to inform their decisions concerning new expenditure.[131] Ultimately, the impacts of decisions on intergenerational wellbeing are supposed to be demonstrated through wellbeing indicators.[132]

How do wellbeing budgets deliver against these ambitions as far as the environment is concerned?

This is the topic of the following chapter. There it will be seen that wellbeing budgets are not currently capable of delivering upon their promise, at least in the context of environmental considerations. This is, in part, on account of the limitations of existing environmental information and analytic tools. It is also because of a lack of clarity about *how* to implement a wellbeing approach.

This review does not set out to ascertain whether the wellbeing budgets delivered so far are realising, through improved decision making, improvements in intergenerational wellbeing. Rather, it asks whether the advice that decision makers receive would enable them to make such decisions. While the focus of the next chapter is on the extent to which environmental considerations are or are not integrated into that advice, its findings are likely to be of relevance beyond the environmental sector.

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[125] New Zealand Government, 2018, pp.4–5.

[126] New Zealand Government, 2018, p.1; 2019a, p.4; 2021, p.14.

[127] New Zealand Government, 2018, p.1.

[128] A focus on outcomes is contrasted with a focus on inputs ("the amount of money being sought") or outputs ("a particular numerical result of the funding") (New Zealand Government, 2018, p.5).

[129] New Zealand Government, 2017, pp.10, 11.

[130] New Zealand Government, 2018, p.4.

[131] New Zealand Government, 2018, p.4.

[132] New Zealand Government, 2018, p.5.

3

Arthropteris tenella

Budget process and the environment

This chapter examines the integration of environmental considerations into wellbeing budgets, from the formation of strategic considerations through to the review of existing spending, the development and assessment of bids for new spending, and final decision making. While these stages of the budget process are not new, the explicit addition of the 'wellbeing approach' is. Drawing upon an extensive analysis of the budget process (including formal advice produced by officials, budget documents, and engagement with officials involved in budget process), three core conclusions are reached.

- Firstly, available environmental information is not fit for purpose; indeed, where environmental information is present it is often deficient in terms of its links to wellbeing.
- Secondly, for all the talk of intergenerational wellbeing as central to the wellbeing approach, the advice received by decision makers is insufficient to make informed trade-offs between investing in wellbeing now and investing in wellbeing for the future. This is particularly damaging for environmental expenditure that is often a response to long-term, enduring challenges.
- Thirdly, the advice that is generated in the budget process is insufficient to facilitate investment in environmental expenditure that is orientated towards intergenerational wellbeing.

The promise of wellbeing budgets is a challenge when good information and the right analytic tools are to hand; in their absence, it is beyond reach.

Why budgets are a process

Finance ministers are faced with virtually limitless claims and only finite resources to meet them. The budget process is a mechanism to manage these claims in a context where technical and political considerations collide. It is a context where there is a political tendency towards the short term (rather than the long term), the certain (rather than the risky), and the headline grabbing (rather than the necessary but mundane).

Budgets used to be a mysterious affair out of which finance ministers conjured fiscal rabbits from hats for an expectant New Zealand audience. Over the last three decades they have become more predictable. While they remain irreducibly political, they have been woven with processes to provide rigour and better accountability for how taxpayers' dollars are spent.

The New Zealand Government has budgeted a total of $147 billion for 2021/22.[1] That represents, for the time being, the fiscal footprint of its ambitions. That footprint changes in response to changes in the world (e.g. Covid-19, *Mycoplasma bovis*) and as governments change (different social spending or defence priorities). In an important, democratic sense, every cent is contingent on an ongoing political decision to support that expenditure. In reality, there is significant continuity from year to year and government to government. Many areas of expenditure command a consensus that has lasted decades. And even areas that are contested are likely to change at the margin rather than in their totality.

The result is that it is realistic to talk about *baselines* of expenditure that have a degree of permanence. They can be reviewed, increased, reduced or even eliminated at any time. But the government is a super tanker. It is difficult to rapidly change staffing levels or the operational requirements that government agencies need to deliver services. As a result, even quite significant changes tend to be at the margin. In addition, there is a practical reason for this. The process of cabinet government, limited by a three-yearly election cycle, can only contemplate so many upheavals at a time. And the Government has to come back to Parliament each year to renew its authority to levy taxes and spend the proceeds.

In a technical sense, the budget process is not ruled by political considerations but rather provides a structure against which political considerations play out. Some requirements of the budget process flow from the Public Finance Act 1989. More broadly, the budget process is conducted in conformity with a number of rules and norms, including what is known as the Fiscal Management Approach (FMA). The FMA elaborates the "rules of the game" that ensure government decisions are consistent with its previously determined fiscal strategy.[2] The fundamentals of the FMA have remained largely consistent since 2003. With some exceptions, the FMA generally prescribes the use of fixed nominal baselines.[3] Any new expenditure or proposals to augment baselines are limited by budget allowances, which effectively cap any increase in government expenditure.[4]

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[1] The Treasury, 2021b.

[2] The Treasury, 2020d.

[3] In simple terms, fixed nominal baselines entail that agency baselines are not adjusted for inflation. For a discussion of exceptions to the use of fixed nominal baselines, see Warren (2021, p.12). As Warren notes, the view that the funding model of the New Zealand public sector can be characterised in terms of fixed nominal baselines is overly simplistic.

[4] The budget allowance is composed of an operating allowance and a multi-year capital allowance.

The use of budget allowances accounts, in part, for the emphasis placed on prioritisation and, in particular, new spending. In principle, fixed nominal baselines mean that existing expenditure is subject to the same high level of scrutiny that is applied to new spending because any adjustment for inflation has to be justified. The practice is quite different.

The budget process allows governments to formulate or refresh policy priorities, allocate resources in line with those priorities, and reallocate spending that is considered to be underdelivering.[5] In simple terms, the budget process allows a government to scrutinise current spending, forecast its future trajectory and scrutinise proposals for new spending.

The result is a budgetary system that enables the bulk of expenditure to continue with relatively little scrutiny. Budgets are not assembled from scratch each year. Rather, they represent iterations in an ongoing process. Some outlays, such as social transfers like New Zealand Superannuation, cannot be switched on or off. That does not make them open-ended – levels of entitlement may be fixed – but overall outlays will be driven by demography and the economic cycle. The operating grants for a range of social services such as schools are similarly adjusted for changes in the size of the school age population.

For other ongoing services delivered by government agencies, there is an expectation that they will be able to continue to operate into the future within a fixed nominal baseline. This means that the amount of funding that an agency receives (its baseline) is not automatically increased each year to adjust for inflation. While ministers will reprioritise expenditure within that baseline, the level of scrutiny applied to much of this expenditure is likely to be minimal unless economic turmoil significantly disrupts the Government's ability to raise tax revenue (or borrow) or a decision is taken to undertake a formal baseline review. Stable nominal baselines still present challenges. In some areas, cost increases will place the continued delivery of services at risk – either in terms of quality or quantity.

To the extent that much spending is set to continue, the annual budget process is largely about adjustments at the margin. Ministers may request additional funding through what are technically termed 'budget initiatives'. A budget initiative is a 'bid' for funding above and beyond baseline expenditure. There are bids that seek to compensate for the 'cost pressures' that have the potential to erode the quantity or quality of services available, and there are 'new spending initiatives' that do not relate to any existing policy or programme.[6]

Claims to compensate for cost pressures are likely to be subject to more scrutiny than baselines. Such claims need to demonstrate that they are responding to external pressures that would, in the absence of additional funding, risk the ability of an existing policy to secure its outcomes. Beyond this, what qualifies as a legitimate cost pressure is somewhat ambiguously defined. It includes pressures related to wages, prices of inputs and volume, as well as "other pressures".[7]

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[5] The Treasury, 2011, p.22.

[6] To some extent, the distinction between cost pressures and new spending is not entirely clear-cut. This is discussed further below.

[7] The Treasury, 2020a, p.8.

For example, increases in the cost of building supplies for the construction and maintenance of Great Walks are explicitly covered by the strict definition of a cost pressure; meanwhile, ecological pressures related to the maintenance of and investment in biodiversity are not explicitly covered. Initiatives to address such ecologically induced pressures have to run the gauntlet of being accepted as 'new spending' initiatives. This may not necessarily be a bad thing because a rising level of pressure may in any case recommend a more thorough appraisal of the problem.

New spending initiatives represent bids to secure new funding for new policies. It is always easier to spend more money than reprioritise existing resources, so processes have been developed to triage and limit bids to spend 'new' money. New spending bids are typically split into two subtypes: those that align with broad strategic priorities for a budget (priority initiatives) and those that are not explicitly aligned with these strategic priorities (other initiatives or non-priority initiatives).

These strategic priorities are broad policy areas that have been identified as areas in need of substantial additional investment. They include what are technically termed 'wellbeing objectives'. While the process by which wellbeing objectives are formed involves technical considerations, they are not the result of a technocratic process; in a pluralistic society there is reasonable disagreement about what broad policy areas are in 'need' of additional investment. In practice, it is highly likely that wellbeing objectives will at least be consistent with government priorities as agreed by Cabinet.

The amount of funding that is typically allocated to new spending initiatives is dwarfed by the ongoing commitments represented by baseline expenditure and by the need to compensate for cost pressures. Each annual budget is an iteration in a process that devotes large amounts of ministerial and official energy to a relatively small percentage of total expenditure.

How is this process harnessed to the goal of wellbeing?

The budget process outlined above pre-dates wellbeing budgets. It is a process that has evolved over decades and multiple governments of different persuasions to deliver the discipline and transparency required by the Public Finance Act 1989.

Since Budget 2019, the budget process has been conducted with the explicit aim of promoting wellbeing. From the standpoint of new spending, three key ideas appear to lie at the heart of the wellbeing approach. The first is that those areas where improvements will contribute the most to wellbeing should be the preferred target of public spending.[8] The second is that policies should be selected on the basis of what might drive improvements in wellbeing at the least cost.[9] The third is that the success of policies should be rigorously assessed following their implementation.[10]

Inevitably, new spending initiatives have been the focus of the wellbeing approach to date. But the Government has begun the process of applying the wellbeing approach to cost-pressure initiatives. In addition, the Government has announced its intention to extend the wellbeing approach progressively to the much larger existing increments of expenditure that are currently dealt with as baseline spending.

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[8] New Zealand Government, 2018, p.1.

[9] New Zealand Government, 2018, p.4.

[10] New Zealand Government, 2018, p.4.

Reviews of baseline expenditure pre-date wellbeing budgets. In the context of wellbeing budgets, formal reviews of baseline expenditure are intended to produce an understanding of the relationship between baseline spending and wellbeing outcomes.[11] A baseline review is about prioritisation at the level of outcomes: where expenditure is not producing outcomes effectively or efficiently, it is a candidate to be reduced or eliminated; where expenditure is producing effective outcomes, the question may be more about how its efficiency can be improved further. In the context of wellbeing budgets, it is anticipated that baseline reviews will become an important input into the budget process.

Rather than a focus on cost cutting, the stated focus is intended to be on efficiency and effectiveness. If conducted well, such a review has the potential to yield significant improvements in the environmental outcomes that current outlays seek to purchase. Baseline reviews have been commenced in respect of two clusters, including, significantly in view of this review, a Natural Resources Cluster.[12]

However, no cluster-level review of baseline expenditure to assess its alignment with wellbeing has been completed. For that reason, this review focuses on the way in which a wellbeing lens has been applied to new spending initiatives. For this we have the evidence of three budgets.[13]

New spending initiatives represent best practice insofar as attempts to integrate a wellbeing approach into consideration of environmental expenditure are concerned. In this sense, any limitations of implementing a wellbeing approach that apply to new spending initiatives are likely to be more pronounced with respect to cost-pressure initiatives and baseline spending because these processes are less developed.

Overview of the current budget process

This report necessarily focuses on the intersection of the budget, wellbeing and environmental considerations. Of course, a full consideration of wellbeing budgets (and wellbeing) would require attention to a wider range of considerations. Points and issues raised in the report, while elaborated in terms of the environment, are likely to also apply to other sectors, such as health, education and social policy.

Budget processes are ultimately a political process. The current government's focus on wellbeing does, however, represent an attempt to make the budget process less political. To the extent that it is possible, this report is focused on the discrete procedural steps that provide coherence and discipline to the process through which political debate occurs. In practice, the budget process does not neatly distil technocratic and political moments into neat elements.

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[11] Robertson, 2020, 2021.

[12] The Natural Resources Cluster will cover approximately $3 billion of expenditure. Note, however, that not all expenditure will be examined by the baseline review (including expenditure relating to the New Zealand Emissions Trading Scheme). The other cluster is the Justice Cluster.

[13] Our analysis of budget practices is most in-depth with respect to Budget 2019 and Budget 2020 (where it includes the full chain of advice and assessment across all stages of the budget process) and less in-depth with respect to Budget 2021. Our analysis of baselines reviews is with respect to Budget 2022.

A detailed description of the development of the budget process in the context of wellbeing budgets can be found in Appendix 1.[14] What follows is an evaluation of the way recent wellbeing budgets have handled environmental concerns. Though the process is represented as a series of discrete steps that proceed in a linear manner, the reality of the budget process is that it is always iterative and often messy. It proceeds at pace.

The general conclusions are based on an intensive analysis of dozens of budget documents totalling several hundred pages, and extensive engagement with officials from both the Treasury and agencies that submit budget initiatives with environmental considerations. Our analysis has focused on budget initiatives from two agencies from the natural resources sector and one agency from outside that sector that nonetheless routinely submits initiatives with substantial environmental implication. Though our analysis includes Budget 2020, its focus is on the budget process that was aborted in the face of the Covid-19 pandemic rather than the ad hoc budget process that was quickly assembled. Insights were also drawn from an assessment of budget initiatives commissioned from the New Zealand Institute of Economic Research (NZIER), which has previously assessed elements of the budget process.[15]

The aim throughout has been to understand the extent to which budget initiatives with substantial environmental considerations have been able to be advanced and assessed on the basis of their contribution to wellbeing.

As can be seen in Figure 3.1, the budget process for a typical wellbeing budget involves a number of steps, some of which, in practice, run in parallel and are iterative.

Source: PCE

Figure 3.1: Key moments in the development of a wellbeing budget, as it relates to budget initiatives. This representation is presented as a heuristic to help structure the subsequent discussion. In reality, the budget process is not broken into discrete stages.

A budget package is a collection of budget initiatives that are progressing towards a positive funding decision. While decision making concerning budget packages appears as the most immediately consequential moment of the budget process, it nonetheless rests on the preceding process. At the conclusion of the package formation phase, formal decisions are made concerning the funding or lack of funding of budget initiatives.

[14] Readers unfamiliar with budget process (or specific phases of the budget process) may benefit from the background information provided in Appendix 1. In addition, an overview of the information databases and analytic tools used in the budget process is found in Appendix 2. Readers unfamiliar with policy tools relevant to the analysis of wellbeing may benefit from the background information provided there.

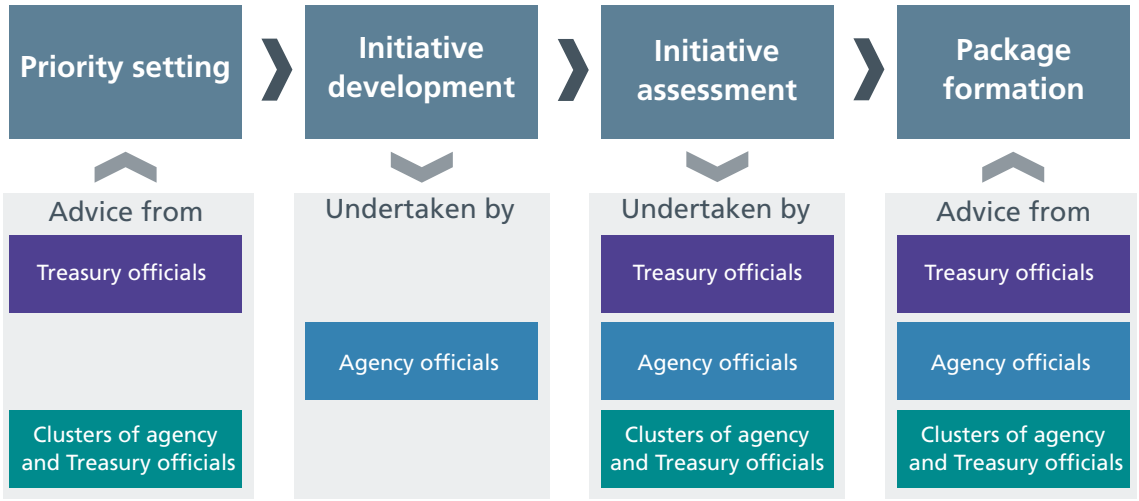
[15] A summary of NZIER's findings can be found in Appendix 3.

Nonetheless, these formal decisions constitute only the final moment of a process that extends backwards to at least the setting of strategic priorities for the budget, and, informally, prior to that (potentially for years). Consequential decisions are made throughout the budget process, and though earlier decisions do not have the same finality as formal funding decisions, they nonetheless structure later phases of the budget process and, indeed, the formation of budget packages.

At the beginning of a budget cycle, several strategic issues are considered – for example, budget priorities and wellbeing objectives, the level of the operating allowance and the features of the remainder of the budget process.[16] The consideration of these issues is led by the Minister of Finance with the Treasury providing advice and support. Decisions on these issues are communicated in a Cabinet paper (the budget strategy paper), budget guidance and, to some extent, the Budget Policy Statement.

In addition, spending is scrutinised within the parameters established by strategic considerations.[17]

Scrutiny of new spending takes place at a number of stages: agencies develop budget initiatives and submit them for consideration, officials assess them, and ministers form them into packages.[18] As noted above, a budget package is a collection of budget initiatives that are progressing towards a positive funding decision. The budget process as it relates to new spending budget initiatives is outlined in Figure 3.2. The budget process as it relates to cost-pressure initiatives is structurally similar (it is not as dependent on the outcomes of the priority-setting process) but abbreviated.



Source: PCE

Figure 3.2: The budget process as it relates to budget initiatives. This representation is presented as a heuristic to help structure the subsequent discussion. In reality, the budget process is not broken into discrete stages.

[16] The Treasury, 2020e.

[17] The Treasury, 2020e.

[18] As will be seen, the formation of budget packages involves, in turn, a number of steps: officials prepare advice surrounding individual budget initiatives and budget packages; Budget Ministers consider the advice and put forward a budget package; and Cabinet approves the budget package.

Setting strategic priorities for the budget, including wellbeing objectives[19]

In the context of wellbeing budgets, the budget process has included a consistent emphasis on setting and resetting strategic priorities, including wellbeing objectives.[20] Wellbeing budgets are not the first budgets to have placed a similar emphasis on priority setting. In simple terms, strategic priorities are the general policy objectives that the subsequent budget will focus on.

Wellbeing objectives function as attractors that, while not pre-emptively eliminating investment orientated to other objectives, focus the attention of the budget process. To date, wellbeing objectives have been particularly orientated to new spending initiatives as opposed to cost-pressure initiatives or baseline expenditure. While not strictly fatal, it is intended that new spending that does not correspond to a wellbeing objective will be required to meet a higher threshold than if it was in scope. In addition, wellbeing objectives may influence the number of new spending initiatives that are submitted and the amount of funding that is sought by initiatives.

Integrating the environment into the priority-setting process

The Living Standards Framework (LSF) Dashboard has been used to inform the development of wellbeing objectives (see Box 3.1) in company with specialist advice from experts, including the Prime Minister's Chief Science Advisor and chief departmental science advisors.[21] The LSF Dashboard has been a particularly important information database in the early stages of the priority-setting process. The LSF Dashboard includes environmental indicators relevant to both current wellbeing (including the environment domain) and future wellbeing (including natural capital). Additional information compiled from the General Social Survey was also used for the initial analysis of current wellbeing (including the environment domain). However, the General Social Survey, as the name indicates, does not contain environmental variables.

In terms of the environment, the primary analysis of current wellbeing has not included information on the environment domain.[22] The rationale for excluding the environment domain of current wellbeing from the initial analysis was the lack of environmental information available from the General Social Survey. It is unclear why this would preclude drawing on other data sources. It is also unclear why General Social Survey data were not linked to environmental outcomes in the Integrated Data Infrastructure database. Data availability and – more practically – decisions as to what data are included appear to structure the priority-setting process.

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[19] In addition to budget documents, this section draws upon the Treasury (pers. comm., 19 November 2020, 28 October 2021, 13 September 2021).

[20] In the language of the recent (July 2020) amendment to the Public Finance Act, the priority-setting process produces three kinds of broad strategic priorities: "overarching policy goals", "wellbeing objectives", and "policy areas" (see s 26M(2) of the Public Finance Act 1989). For ease of communication, we refer to the wider process that generates these different strategic priorities as 'priority setting'; similarly, we refer to the focus of our analysis as 'wellbeing objectives' whether or not that term was used in a particular budget process.

[21] For a summary of the LSF Dashboard, see Appendix 2.

[22] Indeed, the analysis of current wellbeing did not include information on 4 of the 12 domains of wellbeing.

Box 3.1: Wellbeing objectives and the environment[23]

Budget 2019, Budget 2020 and Budget 2021 have each contained five wellbeing objectives and one objective that has focused on the environment. While the framing and scope of this objective has been iterative, there has also been substantial continuity. The primary analysis that generated wellbeing objectives was undertaken in preparation for Budget 2019.

For Budget 2019, the environment was represented by an objective that concerned the transition to a sustainable and low-emissions economy.

For Budget 2020, a slightly modified environmental objective was supplemented by two sub-objectives. In these two aspects, this objective mirrored changes to the entire suite of wellbeing objectives. The environment objective now related to a *just transition* to a *climate-resilient*, sustainable and low-emissions economy. The supplementary sub-objectives focused on land use and energy.

For Budget 2021, a slightly modified environment objective had its two sub-objectives discarded. The apparent purpose of the modifications was to make the objectives relevant to Covid-19.

In terms of the environment, the initial analysis of future wellbeing included both narrative discussion and graphical representations of environmental information across five aspects of the environment. While it was noted that the analysis of future wellbeing in general suffered from a lack of data, environmental information relevant to natural capital was identified as possessing a "lack of structure".[24]

The analysis of future wellbeing was, in general, identified as being "more tentative" than the analysis of current wellbeing and in need of "further development".[25] The environmental information included in the analysis of future wellbeing fell markedly short of what would be needed to provide a systematic picture of the state of natural capital and its variation through time – or to underpin the inclusion of future wellbeing in wellbeing objectives.

Though it was not used in the priority-setting process, Stats NZ maintains a repository of environment indicators as part of their wellbeing indicator dashboard Ngā Tūtohu Aotearoa – Indicators Aotearoa New Zealand (IANZ). IANZ indicators were selected based on their importance and relevance without consideration given to data availability. Some indicators are populated with robust and comprehensive data, including greenhouse gas emissions and energy intensity and consumption. By contrast, data for several indicators relating to current wellbeing and natural capital do not sufficiently capture the environment–wellbeing linkage, and some indicators suffer from a complete absence of any data source.[26]

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[23] Source: Budget Policy Statements from Budget 2019 (New Zealand Government, 2018), Budget 2020 (New Zealand Government, 2019a) and Budget 2021 (New Zealand Government, 2021).

[24] The Treasury, 2018g, p.4. The analysis of human capital, social capital, and physical and financial capital fits on the same page.

[25] The Treasury, 2018g, p.4.

[26] For a more detailed overview of the indicators included in IANZ and key data gaps, refer to Appendix 2.

The lack or otherwise insufficiency of environmental information – and the variation in the quality of information between domains of current wellbeing and capital stocks – should raise caveats in the context of priority setting. Notwithstanding these deficiencies, no implications of the "more tentative" quality of the analysis of natural capital were made explicit to decision makers. It is difficult enough to take into account 'known unknowns' but quite another thing to take into account 'unknown unknowns', and it is not clear how this difficulty was accommodated by the priority-setting process.

With respect to environmental information, key data gaps identified by Stats NZ's wellbeing indicator dashboard provide an indication of these 'known unknowns'. IANZ reveals that these data gaps relate primarily to various ecosystem services (i.e. provisioning, regulating, cultural), ecological integrity, land and soil resources, and waste and recycling. Furthermore, New Zealand's environmental reporting programme hints at some of these 'unknown unknowns'. For example, there are significant knowledge gaps relating to the impact of emerging contaminants on water bodies, including pesticides, nanoparticles and pharmaceuticals.[27]

What appear to be lacking in the priority-setting process are environmental data of sufficient breadth and depth to prioritise and refine any environment-related wellbeing objectives. This is indicated by how often an analysis of an environmental indicator was simply left blank or the corresponding analysis was incomplete. Where information was not entirely absent, it was often insufficient to provide a sense of the state or trend of environmental quality or provide a breakdown by geographic location or demographic profile.

Tellingly, analysis of the environment was most complete in terms of international comparisons, possibly reflecting those instances where New Zealand has undertaken reporting because of international agreements. International benchmarking may be useful to identify areas of strength and weakness and to consider where New Zealand might need to improve its performance. However, it is unclear why this is a particularly illuminating form of benchmarking. What, for example, is the utility of comparing New Zealand's forests with an OECD average?

It would be more relevant to compare aspects of our environment to specific environmental benchmarks, or examine aspects of our environment in terms of their proximity to limits, thresholds, tipping points or irreversible damage.[28] Greater attention to environmental tipping points is essential. Proximity to tipping points will only be apparent when granular environmental information is integrated into the priority-setting process. That in turn requires an understanding of the non-linearities and irreversible 'points of no return' that characterise many important aspects of the natural environment.

[27] MfE and Stats NZ, 2019, p.62.

[28] As suggested by Stiglitz et al. On thresholds, see Stiglitz et al. (2009, pp.17, 78). On tipping points, see Stiglitz et al. (2009), pp.81, 268. On irreversibility, see Stiglitz et al. (2009, pp.78, 236, 254–255).

Does priority setting meet its promise?

The setting of strategic priorities, including wellbeing objectives, is supposed to ensure that expenditure focuses on those areas that offer the *greatest* opportunities to improve the wellbeing of New Zealanders.[29] These are supposed to align with the wellbeing outcomes that New Zealanders value.[30] This requires wellbeing objectives to be determined on the basis of extensive evidence and analysis.[31]

Material prepared by the Office of the Minister of Finance consistently highlights that the priority-setting process should emphasise evidence and intergenerational wellbeing.[32] While it is clear that the process for producing environment-related wellbeing objectives is informed by some evidence, the environmental information relied upon is meagre. The analysis of environmental opportunities and objectives through the LSF Dashboard is seriously constrained by the limitations of New Zealand's environmental reporting system. It is also constrained by the direction in which the LSF is itself evolving. Recent changes mean that capital stocks will no longer be explicitly treated as indicators of future wellbeing. This is likely to limit the extent to which an updated LSF Dashboard will be able to prioritise intergenerational wellbeing.

At present, the environmental reporting system adopts a passive approach with data availability playing a key role in determining what indicators get reported. This issue is further compounded by broader deficiencies in New Zealand's environmental monitoring regime that have resulted in significant data gaps in key areas. As a result, New Zealand's environmental reporting system falls short of being able to provide decision makers with the necessary evidence base to make informed decisions regarding which environmental objectives are in need of substantial additional investment. Accordingly, attempts to improve these deficiencies would require a more active approach to data collection, progressively addressing these issues.[33]

As the Treasury noted in its advice to the Minister of Finance,

> "improved data on New Zealand natural capital, and research into the relationships in the natural environment is also essential to help New Zealand make better decisions. … Improved information and data on natural capital can also inform decision-making by providing more quantitative information on the environmental costs and benefits of public policies, trade-offs and areas that should be prioritised. It can also give us an indication of whether we are moving away from or moving closer to a sustainable development path, given our focus on intergenerational wellbeing."[34]

Wellbeing objectives are driven by political considerations and available data. If wellbeing budgets are to remain on the political agenda, environmental information must be recognised as a wellbeing issue.

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[29] New Zealand Government, 2021, p.14. See also New Zealand Government (2019a, p.4). The 2019 Budget Policy Statement promises only that wellbeing objectives are areas where evidence shows there are meaningful opportunities (see New Zealand Government, 2018, p.19).

[30] New Zealand Government, 2018, p.1.

[31] New Zealand Government, 2018, p.4.; 2021, p.14.

[32] Office of the Minister of Finance, 2018, p.5.

[33] For a more comprehensive discussion of these issues, refer to PCE (2019).

[34] The Treasury, 2018b, p.8.

While the opportunities and wellbeing objectives identified appear to be evidence-driven, it is important to note that the *absence* of evidence may signal much bigger opportunities or objectives. This is implicit in the caveats made by the Treasury surrounding the potential for "missed" opportunities and objectives.[35] While the current process for identifying wellbeing objectives may be orientated towards identifying opportunities and wellbeing objectives that are 'known knowns', it is important for the priority-setting process to start from a more systematic mapping of what known unknowns exist and where unknown unknowns may lie in wait.

In this respect, starting from the LSF Dashboard may be more limiting than illuminating. Areas where there is detailed information on specific aspects of the environment – such as emissions – often correspond to areas that are already widely recognised as strategic priorities – government or otherwise. What the Treasury described as "detailed sector evidence and information" seems to be important to integrate more systematically into the priority-setting process.[36] This would appear to be even more relevant in the context of the environmental sector, where limited indicators are included in the LSF Dashboard. The Treasury recognises these data limitations and advises that it looks at other evidence to inform the development of wellbeing objectives, including seeking evidence and advice from other agencies and their science advisors.

Source: VirtualWolf, Flickr

Figure 3.3: Huntly power station, Waikato. Budget 2019, Budget 2020, and Budget 2021 have contained a wellbeing objective concerned with the transition to a sustainable and low-emissions economy.

[35] The Treasury, 2018h, p.3.

[36] The Treasury, 2018h, p.2.

As well as accessing additional environmental information, tools such as forecasting and scenario analysis should be used. Such tools should not need to be deployed specifically for the priority-setting process. Rather, they should inform a range of other processes, including periodic analysis that the Treasury undertakes for its investment statements and wellbeing reports, reporting that government agencies will undertake as part of their long-term insights briefings, and analysis that the Climate Change Commission undertakes in the context of its carbon budgets.

While the LSF is central to the wellbeing approach that structures wellbeing budgets, it is relatively distant from the process of priority setting. While the LSF Dashboard was a part of the process, the underlying conceptual framework (the LSF itself) was not. The primary role of the LSF appears to be in organising indicators that are used to undertake a comparative analysis of current and future wellbeing. In documents received from the Treasury on the priority-setting process (composing close to 200 pages), the term 'natural capital' appears just 12 times. On seven of these occasions, its role is to organise indicators (and on four occasions, where there is no data to organise, the reference is to an absence).

While Treasury officials have stated that the LSF was used conceptually to think about trade-offs between domains of current wellbeing and between current and future wellbeing in the process of priority setting, it is unclear what this has meant in practice.[37] In any case, this has not been indicated by the documents made available to the Parliamentary Commissioner for the Environment. This conclusion is consistent with the results of consultation on draft wellbeing objectives undertaken by the Treasury. Key messages from this consultation included the need for potential environmental objectives to have a long-term perspective. Other key messages included the need for objectives focused on risk and resilience, and objectives that incentivise initiatives that provide some of the prerequisites for the achievement of wellbeing outcomes.[38]

If the LSF had been sufficiently integrated into advice, it would be a reasonable assumption that draft wellbeing objectives had already included a long-term perspective. It is worrying that feedback identified a need for the inclusion of such a perspective. However, the potential for the LSF to facilitate analysis of trade-offs between current wellbeing and future wellbeing is a space that is ripe for exploration. In particular, the framing provided by the 2018 LSF for domains of current wellbeing and capital stocks provides the conceptual basis to classify opportunities and wellbeing objectives. In addition, the analytic lenses of risk and resilience (2018 LSF) and resilience, sustainability, productivity and distribution (2021 LSF) provide a further way to understand and prioritise risks to intergenerational wellbeing.

While New Zealanders can be confident that the environmental objective concerning emissions was informed by evidence, and even that it is focused on a wellbeing outcome that New Zealanders value, this is much less than the full promise of a wellbeing budget. It is not at all clear that there is sufficient environmental information to establish those environmental areas where the *greatest* opportunities exist to improve the wellbeing of New Zealanders – either within the environmental sector or compared with other sectors.

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[37] Making trade-offs across time is inherently political and value-laden. The same can be said for trade-offs across different sectors, different population groups and regions. The point here is not that the Treasury should have made these intertemporal trade-offs but that its advice should have better enabled those trade-offs to be explicitly made.

[38] The Treasury, 2018i, p.5. These include system level and capability initiatives – for example, initiatives concerned with ensuring that there is sufficient information for government decision making.

Developing and submitting budget initiatives[39]

Budget initiatives are the formal mechanism through which agencies communicate policy proposals that require the expenditure of government money. They represent an important point where fiscal considerations are made explicit and contested.

Integrating information about the environment into budget initiatives

Environmental information is integrated into budget initiatives in two forms. Firstly, in biophysical or natural units (e.g. carbon emissions). Secondly, in terms of monetised environmental values (e.g. a shadow price for carbon).

Biophysical forms of environmental information appear in several analytic tools used in the budget process, including wellbeing analysis templates, intervention logic maps (ILMs) and climate impact policy assessments.[40] In terms of analysis of links between the environment and wellbeing, the most sustained integration of environmental information takes place in the context of wellbeing analysis templates.

Monetised forms of environmental information appear in the form of environmental values in several analytic tools used in the budget process, including wellbeing analysis templates, ILMs and cost–benefit analysis (CBA; including CBAx).[41] In terms of analysis of the links between the environment and wellbeing, the most sustained integration of environmental values appears in the context of CBAs (including CBAx).

The development of budget initiatives with environmental considerations takes place in a context characterised by limited environmental information. Officials from agencies consistently reported that they have insufficient understanding about likely environmental outcomes of environmental initiatives. Underpinning this, officials also consistently reported that they had insufficient ready access to the kind of information required to quantify outcomes in monetary terms.

[39] In addition to budget documents, this section draws upon Department of Conservation (pers. comm., 3 March 2021, 11 September 2021), Ministry for the Environment (pers. comm., 17 and 23 February 2021, 29 March 2021), Ministry of Transport (pers. comm., 14 and 22 April 2021) and the Treasury (pers. comm., 23 September 2020, 16 November 2020, 17 March 2021).

[40] For a summary of these analytic tools see Appendix 2. Wellbeing analysis refers to the Treasury's specific form of structured analysis that draws upon the LSF.

[41] For a summary of these analytic tools, see Appendix 2.

As NZIER notes, environmental information is often included in initiatives concerning the general character of an environmental problem. What is often lacking is the environmental information that is relevant to the "impact the initiative is likely to have at the margin".[42] Such environmental information is limited in terms of both biophysical units as well as monetised environmental values. This has implications for the relevance of the analysis that is ultimately supplied to decision makers. As will be seen below, it also has implications for the assessment of environmental initiatives, beyond their fiscal impact.

Limited environmental information is not the full picture. Initiatives with environmental considerations will not always make sufficient use of existing environmental information and monetised environmental values. It may also be appropriate to draw upon qualitative environmental information to supplement quantitative metrics. As NZIER also notes, agencies that include environmental considerations in their initiatives are "not making the most use of the available value-relevant information, leaving decision-makers with little idea of the scale of what the initiative is trying to achieve."[43]

What is clear, is that agencies can include more and better environmental information in budget initiatives together with monetised values where appropriate. Doing so would enable decision makers to make better informed decisions concerning whether or not to invest in environmental initiatives.

The availability and use of environmental information has implications for the extent to which analytic tools can be operationalised. In addition to analytic tools routinely used in the budget process (including wellbeing analysis templates, ILMs and CBA), a climate impact policy assessment became mandatory for qualifying initiatives from Budget 2021.

Agencies also use other analytic tools, including variations of the foregoing. For example, the Ministry of Transport has used a policy appraisal tool in the course of producing budget initiatives for Budget 2021.[44] Waka Kotahi NZ Transport Agency has developed standardised guidance for the economic appraisal of land transport initiatives. The *Monetised benefits and costs manual* outlines a consistent approach to the application of CBA and includes a range of values. These monetary values relate to the impact of air emissions and noise and vibration on health and greenhouse gas emissions.[45]

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[42] NZIER, 2021, p.8. Chapter four discusses the difficulties of plausibly commenting on the marginal impacts of environmental initiatives in the face of complex ecosystems.

[43] NZIER, 2021, p.8.

[44] For a summary of the policy appraisal tool (PAT) see Appendix 2.

[45] Waka Kotahi NZ Transport Agency, 2021. Note that the *Monetised benefits and costs manual has superseded the Economic evaluation manual*, which had provided the standard for economic evaluation of land transport activities between 2013 to 2020.

Source: russellstreet, Flickr

Figure 3.4: Auckland Motorway, Auckland. Budget 2021 initiatives (*Implementing a Clean Car Standard* and *Incentivising Uptake of Low-Emission Vehicles*) allocated $318 million for decreasing the emissions profile of vehicles. $302 million of this consists of a tagged contingency.

As part of the process of producing initiatives, agencies make decisions concerning what analytic tools they will use to support their initiatives. These decisions are influenced by the quality of available environmental information, as well as other factors (e.g. the strategic importance of the initiative, time constraints and internal capacity). The choice of analytic tools has consequences for the assessment of initiatives. The wider use of a broader range of tools – such as cost-effectiveness analysis, scenario analysis, risk–opportunity analysis, and sustainability assessments – would be helpful.

For an agency to be able to outline the expected outcomes of a budget initiative with environmental considerations, it must have an understanding of:

- the problem that the initiative responds to
- the environmental and social system that the initiative will intervene in
- the marginal impact of the initiative on wellbeing outcomes.

Each of these three tasks is difficult when relevant, accurate and timely information is available, and impossible when it is not. Some of these tasks – such as an understanding of the marginal impacts of an intervention – may not be possible given the biophysical features of the environment and its relationship to sustainable, intergenerational wellbeing. Other tasks may simply be more complicated than familiar social and economic analysis. It may also be the case that identifying negative environmental outcomes is not sufficiently incentivised by the budget process.

While the focus of the budget process on outcomes (as opposed to inputs or outputs)[46] is consistent with a wellbeing approach, two points are worth highlighting. Firstly, for environmental outcomes, a focus on making the link with wellbeing is informationally and conceptually intense. What is needed is an understanding of not only the impact of an initiative on the environment but also the impact of that impact on wellbeing (and ideally, its marginal impact).[47] The requirements placed on environmental information in this context are not limited to generic biophysical information. Making the link between the environment and wellbeing and measuring its impacts is an enormously demanding task that is potentially beyond the capacity of officials in a context where everything happens at pace.

Secondly, care needs to be taken in communicating advice on wellbeing to decision makers. Just as there is no singular wellbeing but rather a plurality of wellbeings, there is no monolithic wellbeing outcome. Rather, there are a plurality of wellbeing outcomes depending on location, timing and particular dimensions of wellbeing. Having clear and coherent definitions of what is actually encapsulated by the concept of wellbeing is essential for agencies to understand the connections with the environment and, from there, develop analysis based on those connections. Placing desired environmental, social and economic outcomes alongside one another does not make them necessarily consistent or compatible with one another and does not resolve the fact that they are realised over different time frames.

The same point is relevant with respect to different environmental outcomes. There are inevitably trade-offs to be made. A focus on wellbeing outcomes is not necessarily a focus on 'intergenerational outcomes' and is not necessarily consistent with a 'long-term view'. This is something that is often more pressing in the context of the environment domain than in other domains.[48]

Do budget initiatives meet their promise?

In the initiative development and submission stage, a long-term view incorporating intergenerational outcomes is supposed to be integrated into the budget process.[49] This long-term, intergenerational perspective is supposed to be supported by an analysis of wellbeing outcomes across current wellbeing, future wellbeing, risk and resilience. Budget initiatives are also supposed to focus on the wellbeing outcomes that respond to wellbeing objectives.

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[46] A focus on "outcomes" is contrasted with a focus on "inputs (the amount of money being sought)" or "outputs (a particular numerical result of the funding)" (New Zealand Government, 2018, p.5).

[47] The coherence of asserting that marginal changes in the environment result in marginal changes in wellbeing is discussed further in chapter four.

[48] The long-term and enduring nature of many environmental impacts, and the complications that this raises, are discussed further in chapter four.

[49] New Zealand Government, 2018, pp.4–5.

Both the initiative templates produced by the Treasury and mandatory or semi-mandatory analytic tools privilege the environment as a domain of current wellbeing (environment) over the environment as it relates to future wellbeing (natural capital, risk and resilience). Natural capital is not integrated into the Treasury's intervention logic template, which is constructed around domains of current wellbeing. Neither is natural capital integrated into the Treasury's cost–benefit analysis tool, CBAx.[50] And while natural capital was originally integrated into the Treasury's wellbeing analysis templates, this is no longer the case. In more recent wellbeing budgets, no explicit analysis of capital stocks or risk and resilience was required as part of wellbeing analysis templates.[51]

As will be seen when the assessment of initiatives and formation of budget packages is discussed, it is not clear how it is possible to make trade-offs between current wellbeing (related to the environment or otherwise) and future wellbeing (related to natural capital, including risk and resilience, or otherwise) in the absence of this analysis.

Given that trade-offs between current and future wellbeing are often fundamental to environmental considerations, there is a need to better integrate the environment into the development of budget initiatives. And that means using a better array of analytic tools. It is vital that the development of environmental initiatives takes account not just of trade-offs between domains of current wellbeing, but also between current and future wellbeing. In the context of wellbeing analysis templates, this would require agencies to comment on the desired outcomes of initiatives in terms of their impacts on capital stocks, risk and resilience, and, ultimately, on whether they contribute to the sustainability of wellbeing through time. While agencies may submit initiatives with this kind of analysis even in the absence of requirements, initiative templates act as an important prompt.

In principle, some of the suite of available tools that the Treasury commends in initiative preparation (in particular, wellbeing analysis templates and ILMs) are capable of ensuring that a focus on intergenerational outcomes is maintained, that a long-term view is integrated, and that some of the challenging features of the environment are acknowledged or even integrated. In practice, the restricted availability of appropriate tools makes the inclusion of a long-term view of intergenerational environment outcomes in the budget process unlikely.[52]

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[50] Insofar as CBA assesses the annual flow of costs and benefits in each successive period, it does not directly provide a quantitative assessment for the magnitude or quality of natural capital. The CBA calculation procedure merely provides an estimate for the future flow of wellbeing outcomes that are derived from the existence of natural capital in each specific period.

[51] Even when such analysis was required, it was not symmetrical with the analysis required for domains of current wellbeing.

[52] This is discussed further in chapter four.

Assessing budget initiatives[53]

Following their development and submission, budget initiatives are assessed by officials and, depending on the decision-making process, may become part of a draft budget package. A draft budget package is a collection of initiatives that are progressing towards a positive funding decision and inclusion in the final budget package. Nonetheless, the relationship between initiative development, initiative assessment and package formation is not strictly linear. After they are submitted, initiatives may continue to evolve through subsequent stages.

The assessment of an initiative results in a technical consensus of its strengths and weaknesses in isolation from other initiatives. The assessment delivers a verdict on whether the initiative represents value for money. The understanding of value for money embedded in the assessment may well differ from that advanced by the initiative's sponsors. The formal assessment of an initiative is also the basis on which comparative assessments of individual initiatives are made. In principle, this involves considering how the core features of an initiative compare with every other initiative and interact with other initiatives in draft budget packages.

Integrating the environment into the assessment of budget initiatives

The process of assessment is undertaken by officials other than those who submitted it. As a result, the understanding of the official interpreting an initiative could differ in substance from the initiative as originally submitted. This may be no bad thing if fresh eyes provide new insights and understand the initiative in its complexity and in its context.

While the assessment templates used by the Treasury to assess budget initiatives varied in the extent to which they integrated environmental considerations, those we reviewed were relatively shallow. In Budget 2019, the assessment criteria for wellbeing analysis served only to nominally integrate the full conceptual breadth of the LSF into assessment templates through prompts related to the assessment of the impacts of budget initiatives on current wellbeing, capital stocks and risk and resilience.[54] From Budget 2020, the assessment templates prompted only a generic assessment of the wellbeing outcomes of initiatives.[55]

Instead of resembling an assessment framework tailored to a wellbeing budget or inclusive of environmental considerations, these templates were largely indistinguishable from a generic appraisal framework applicable to any budget process.

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[53] In addition to budget documents, this section draws upon the Treasury (pers. comm., 16 November 2020, 24 February 2021, 17 March 2021, 28 October 2021, 13 September 2021) and Just Transition Secretariat (pers. comm., 23 October 2020, 29 March 2021).

[54] The Treasury, 2018c, p.52.

[55] The Parliamentary Commissioner for the Environment sighted only completed assessment templates from Budget 2020, not the underlying templates.

The assessment of budget initiatives by the Treasury takes place under extreme time pressure. A very large number of claims are competing for inclusion within a very limited operating allowance. Because of this, there is a risk that attributes of initiatives that can be easily measured will be overly influential.

Furthermore, from the standpoint of an external observer with access to a broad selection of Treasury assessments, it appears that unsuccessful initiatives ran up against a selection of generic, off-the-shelf 'doubts' designed to shield against fiscal risk. Box 3.2 gathers together some of them.

Box 3.2: A snapshot of the Treasury's list of doubts to shield against fiscal risk[56]

- "Do not support due to insufficient evidence that funding will deliver intended outcomes."
- "Do not support due to … possible alternative funding sources."
- "Do not support as insufficient information provided on value for money."
- "Do not support as insufficient information provided on … investment readiness."
- "We do not have sufficient confidence that … [the agency] has fully explored other policy options that may deliver the intended outcomes more cost effectively."
- "There is a poor intervention logic, and limited information on costings including what the Crown is buying, how [the agency] will increase activity over time, and value for money risks."
- "The need for a business case is particularly relevant, given [the agency's] low investor confidence rating, and lack of asset management plan for [the policy area]."
- "The Treasury does not support increased funding [because] the scale of wellbeing impacts is unclear."
- "Inadequate business case."
- "Small, non-essential programme."
- "Insufficient information on implementation, risks and mitigation."

The Treasury has a responsibility to raise these flags. They are all valid reasons to question the worth of any spending proposal. But there are no signs to date that wellbeing (much less intergenerational wellbeing) is at the heart of reasons to recommend against spending proposals. One might have expected initiatives to be declined on the basis that they made no or little contribution to future wellbeing or that they entailed unintended environmental consequences. Instead, negative assessments seemed to rely on standard misgivings of general relevance to wellbeing budgets and traditional budgets alike.

[56] Source: Extracts from completed assessment templates and advice provided to the Minister of Finance, for Budget 2019 and Budget 2020.

While this review did not extend to any economic or social initiatives, one would hope that any unintended environmental impacts of such initiatives with consequences for current or future wellbeing would have been flagged. The absence of such reasoning in respect of environmental initiatives does not provide confidence that this is happening.

By contrast, the assessment templates used by the Just Transition Secretariat to assess new spending initiatives prompted a more precise assessment of the wellbeing outcomes of environmental budget initiatives, relative to equivalent assessments undertaken by the Treasury in the same budget cycle.[57] The Just Transition Secretariat template prompts contained two aspects relevant to wellbeing: a generic prompt related to the assessment of the impacts of an initiative on wellbeing, and a more precise prompt related to the assessment of the initiative on risk and resilience.

In fact, the assessment template pulled out aspects of the LSF that agencies had not been required to supply advice on in their underlying budget initiatives. This may indicate that an assessment template tailored to a specific wellbeing objective provides a finer-grained framework for assessing links between a budget initiative, the environment and wellbeing. However, the assessment prompts only pulled out a narrow assessment of the impact of the initiative on carbon emissions rather than the environment more generally.

Does initiative assessment meet its promise?

At the initiative assessment stage, budget initiatives are supposed to be assessed using the LSF to ensure that intergenerational wellbeing (current wellbeing, future wellbeing, and risk and resilience) is at the heart of the budget process.[58] As discussed below, this assessment does not appear to be undertaken in a systematic manner. It is significant that this intention appears to have been dropped from more recent wellbeing budgets. It may signal a tacit recognition that wellbeing budgets have over-promised relative to what they have delivered.

While the actual assessments undertaken by the Treasury varied in their attempts to integrate a wellbeing approach with environmental considerations, they were relatively shallow. Treasury assessment of the wellbeing outcomes of budget initiatives was narrow, especially when compared to the underlying analysis supplied by agencies or what would be implied by the LSF. Neither the LSF nor its underlying focus on intergenerational wellbeing were routinely used to structure assessment.

Instead of considering impacts on wellbeing domains, capital stocks, or risk and resilience as discrete types of wellbeing outcomes with their own important implications and inflections, assessments often spoke more indiscriminately of wellbeing impacts or wellbeing outcomes. In those instances where the assessments of budget initiatives distinguished between the different components of the LSF, a relatively similar emphasis was placed on wellbeing domains and capital stocks, and a reduced emphasis was placed on risk and resilience.

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[57] Secretariats were cross-agency clusters of officials responsible for the assessment of initiatives and formation of budget packages. For each of the five wellbeing objectives, a secretariat was constituted in the Budget 2020 cycle and orientated towards their respective wellbeing objective. The Just Transition Secretariat coordinated the assessment of priority new spending initiatives that contributed to the Just Transition wellbeing objective concerning emissions. The Just Transition Secretariat involved a number of agencies from the natural resources, energy and transport sectors. More information on the role of the Just Transition Secretariat is in Appendix 1.

[58] New Zealand Government, 2018, p.4.

Correspondence with the Treasury appears to confirm this interpretation of the assessment of budget initiatives – namely, that a wellbeing approach played a limited role in initiative assessment.[59] In correspondence with officials concerning Budget 2020, the Treasury noted that it was expected that an analysis of natural capital and risk and resilience was to be considered by vote analysts in their assessment. That this did not happen and was intended to happen appears to confirm that the Treasury was aware of a gap in the wellbeing analysis undertaken by agencies, and the importance of filling this gap.

Consequently, the assessment of initiatives remained focused on domains of wellbeing, and neither natural capital nor risk and resilience was made explicit. This is particularly surprising given that the domains of wellbeing are a more recent addition to the LSF than the capital stocks. As the Treasury noted, this focus has consequences for the advice that was ultimately supplied to ministers. An assessment of wellbeing impacts that is not structured by the distinction between current wellbeing (environment), capital stocks (natural capital) and risk and resilience loses the analytic leverage provided by the LSF concerning sustainability. This limits the integration of the environment into the assessment of budget initiatives.

The actual assessments of new spending initiatives undertaken by the Just Transition Secretariat showed more meaningful traces of a wellbeing approach, relative to equivalent assessments undertaken by the Treasury. While the full breadth of the LSF was not present in initiative assessment, the vividness of the LSF with respect to capital stocks (via risk and resilience) appears comparatively more pronounced.

Mirroring the assessment templates, assessments placed an emphasis on risk and (especially) resilience. One assessment understood resilience in an intergenerational context; another assessment highlighted the prevention of irreversible environmental impacts; another assessment again highlighted the importance of avoiding tipping points. This attention to the biophysical features of the environment in initiative assessment may reflect the more specialist expertise of officials in the Just Transition Secretariat relative to officials in the Treasury; it may also reflect the limited number of assessments that officials in the Just Transition Secretariat undertook relative to officials in the Treasury.

This level of environmentally specific assessment of the dimensions of initiatives relevant to risk and resilience unpacks the biophysical characters of natural capital even in the absence of an explicit discussion of natural capital. The effect of coupling an objective-specific assessment template (designed for the 'just transition' wellbeing objective) with sector-specific expertise (in this case officials from the natural resources sector and adjacent agencies) was to extend the focus on current wellbeing apparent in the Treasury's assessments of budget initiatives to intergenerational wellbeing as well.

Indeed, initiative assessment undertaken by the Just Transition Secretariat focused on long-term wellbeing, especially insofar as it impacted on the environment domain through natural capital. However, the integration of a wellbeing approach into the initiative assessments undertaken by the Just Transition Secretariat should not be overstated. In terms of environmental outcomes, the focus of initiative assessment was confined to the impact on carbon emissions.

[59] The Treasury, pers. comm., 30 March 2021.

Making decisions and forming initiatives into budget packages[60]

A budget package is a collection of budget initiatives that is progressing towards a positive funding decision.[61] In the package formation process, it is even more difficult than previously to separate technical dimensions from political dimensions. The formation of budgets packages is arguably the most immediately political moment of the budget process. This review has focused on the extent to which environmental considerations were properly integrated into the advice and assessment supplied to ministers.[62]

Integrating the environment into the formation of budget packages

The environment is not well integrated into the formation of budget packages. Few explicit considerations of environmental outcomes were able to be identified at this stage of the budget process. This contrasts with the frequency with which narrow fiscal considerations explicitly appear. If environmental wellbeing outcomes play a role in the process by which packages are formed, it is a largely implicit one.

Extended commentary on biophysical considerations is largely replaced by statements concerning value for money (or otherwise). While statements concerning value for money would be consistent with a non-wellbeing orientated budget, it is the potential for wellbeing considerations to inform such statements that is at stake. As noted in previous sections, the potential for environmental considerations to be integrated into such statements in a biophysically grounded manner is limited.

The relative absence of environmental information concerning outcomes and the partial inclusion of wellbeing can be seen from the general form of the 'line-by-line' analysis of budget initiatives that is communicated to the Minister of Finance and Budget Ministers.

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[60] In addition to budget documents, this section draws upon the Treasury (pers. comm., 23 September 2020, 16 November 2020, 1 December 2020, 17 March 2021) and Just Transition Secretariat (pers. comm., 23 October 2020, 23 February 2021, 29 March 2021).

[61] At the conclusion of the budget process, it becomes possible to talk about the budget as a single package. Until this point, there are multiple iterations of multiple budget packages. It is these budget packages – in particular, packages of new spending initiatives – that are the main focus of this section.

[62] Though this integration necessarily involves normative considerations, it does not concern the range of political considerations that may or may not enter into the deliberations of Budget Ministers. These political considerations represent a further input into the decision-making process, which are in turn informed by the advice and assessment that is received.

An example of this line-by-line analysis can be seen from a spreadsheet supplied to members of the Cabinet Economic Development Committee (DEV) in the context of Budget 2019.[63] This spreadsheet contained the following information:

- initiative title
- initiative portfolio
- agency description of the submitted initiative
- the expected time frame over which impacts will be felt – short term (within the next five years), medium term (within five to ten years), and long term (more than ten years in the future)
- three wellbeing domains impacted (listed in order of impact)
- fiscal expenditure.

It is important to emphasise that this line-by-line analysis appears to be typical of the format in which information is supplied to the Minister of Finance and Budget Ministers.

No specific environmental outcomes are included; rather, it is the generic 'environment' domain that is included. Moreover, it is always the positive (and not negative) environmental outcomes that are identified. This is not illuminating. Importantly, there is no intermediate product between the formal budget assessment and the line-by-line analysis that is contained in this and similar spreadsheets.[64] In other words, instead of seeing detailed information surrounding a budget initiative or even an initiative assessment, it is the line-by-line analysis that is the focus of advice.

Compared to the advice and assessment provided by the Treasury, the advice and assessment provided by the Just Transition Secretariat appeared to better integrate the environment. It showed a better balance between the need to efficiently communicate an assessment of budget initiatives and clearly communicate relevant environmental information. This may, in part, reflect the appetite of ministers working with the Just Transition Secretariat for detailed sector-specific advice, including their familiarity with the issues canvassed.

Compared to the Minister of Finance or Budget Ministers, secretariat ministers appear to have had more time to get involved with the detail and particular features of the environment that would otherwise have been filtered out of material. The formal involvement of secretariat ministers in detail and early in the decision-making process seems especially productive for complex issues, such as those canvassed by the Just Transition Secretariat.

In addition to line-by-line analysis, narrative advice provided by the Just Transition Secretariat was substantial, and focused on identifying risks, opportunities, problems and impacts in biophysical terms.[65] Meanwhile, line-by-line analysis of budget initiatives mirrored *and* extended the form of line-by-line analysis provided by the Treasury. Along with information communicated by the Treasury, additional information included the scale of the impact (high, medium, low, narrative), the impact of proposed funding levels (narrative), investment readiness (low, medium, high, narrative), the risks associated with the proposed funding levels (narrative), and the risks of not investing (narrative).[66] This is a promising approach and could be improved further by incorporating an assessment of the effects of expenditure decisions on intergenerational wellbeing.

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[63] For discussion of the DEV Draft Package, see The Treasury (2019g). For discussion of the DEV Near Final Package see Treasury (2019h).

[64] The Treasury, pers. comm., 9 April 2021.

[65] Just Transition Secretariat, 2019.

[66] Just Transition Secretariat, 2019, 2020b.

At the package formation stage, decision makers are required to grapple with outcomes across different economic, social and environmental dimensions of wellbeing and the trade-offs between them. For example, in allocating scarce resources, decision makers need to know something about the relative contribution to wellbeing of an improvement in air quality compared to an equivalent improvement in biodiversity. In addition, it could be useful for information on distance from thresholds and tipping points to be communicated.

Source: Phillip Capper, Flickr

Figure 3.5: Erosion, Gisborne. A Budget 2021 initiative (*Establishing an Enduring Environmental Monitoring and Reporting System*) allocates $25 million to support the creation of national biophysical limits, for example, sedimentation and water quality.

However, the fact that air quality and biodiversity outcomes are not directly comparable poses a challenge for decision makers. How do they allocate resources between competing wellbeing priorities? Many of the measurement frameworks currently in use struggle to handle these difficulties, and there is no evidence that ministers are being assisted to grapple with them.

At the package formation stage, decision makers are likewise required to grapple with wellbeing outcomes across different timescales and the trade-offs between them. In the most informal sense, these timescales include the short, medium and long term. It is in these terms that advice is orientated, where the long term is understood as more than 10 years.

For many environmental problems and much environmental expenditure, such a categorisation does not usefully capture the timescales on which they are evolving. Decision makers are insufficiently supported to deal with trade-offs between the intragenerational and the intergenerational. While the phrase intergenerational wellbeing draws attention to these trade-offs, decision makers require meaningful advice on how initiatives affect wellbeing across fundamentally different kinds of timescales and the intragenerational and intergenerational consequences of funding decisions.

Does package formation meet its promise?

In the package formation stage, ministers are supposed to have access to information about the expected intergenerational outcomes of an initiative (across current wellbeing, future wellbeing, and risk and resilience) to inform their decision making.[67] This is necessarily stylised given the complexity of what is being attempted.

To the extent that the environment features at this stage, it almost always pertains to current wellbeing when it is selected as one of the three wellbeing domains affected, listed in order of impact. While there is an attempt to disaggregate the temporal impact of initiatives, there is no attempt to provide an overview of initiatives in terms of their impact on capital stocks. Like the line-by-line analysis of budget initiatives, the graphical representation of wellbeing domains focuses on domains of current wellbeing.[68] It would be relatively easy to produce a similar representation of capital stocks targeted by a budget package.

In correspondence with the Treasury, there appears to be an acceptance that the advice and assessment they have provided to decision makers has focused on current wellbeing, as opposed to capital stocks or risk and resilience.[69] According to the Treasury, the reason for this focus was the "quite limited and varied" identification of wellbeing impacts across the LSF.

In its correspondence with this review, the Treasury has agreed that its "analytical focus remained on the LSF wellbeing domains" and that "analysis with respect to LSF capital stocks and risk and resilience was not explicitly pulled out in advice to Ministers."[70] This is unfortunate because the requests for information that the Treasury makes during the budget process are a potentially powerful lever with the potential to incentivise agencies to undertake bespoke analysis.

By contrast, the advice and assessment provided by the Just Transition Secretariat appeared to more completely integrate a wellbeing approach that extends to future wellbeing. It appeared to find a better balance between the need to efficiently communicate an assessment of budget initiatives as well as some of the intergenerational environmental consequences. While a focus on current wellbeing dominated advice, some advice produced by the Just Transition Secretariat attempted to integrate an analysis of the impacts of budget packages on intergenerational wellbeing.[71] Nevertheless, the gap between the Treasury and the Just Transition Secretariat should not be overemphasised.

The process of forming budget packages is less about analysis than communicating, among other things, how expected outcomes contribute to wellbeing. But it is impossible to communicate the likely outcomes of a budget initiative on future wellbeing and risk and resilience when this information has not been produced at any earlier stage of the budget process. And even if it is produced, it is impossible for ministers to take it into account if it has never been communicated to *them*.

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[67] New Zealand Government, 2018, p.4.

[68] The Treasury, 2019b, p.9.

[69] The Treasury, pers. comm., 30 March 2021.

[70] The Treasury, pers. comm., 30 March 2021.

[71] Just Transition Secretariat, 2020a.

By the time decision makers get to assemble final budget packages, the evidence base that should have been assembled to meet the particular challenges of environmental initiatives has been reduced to a description of impacts that are largely predictable, marginal and experienced in the short term. In other words, decision makers receive advice that might be useful for considering short-term outcomes involved with responding to demand at immigration offices or employment bureaux, rather than advice useful for complex long-term environmental problems that are evolving relatively independently of the electoral or business cycles. While this problem is probably not unique to environmental initiatives, it may be more pronounced given the nature of uncertainties and long time frames that afflict many environmental considerations.

Ministers need to be warned about the limitations of the analysis used to structure advice and, ultimately, to receive a fit-for-purpose understanding of the environmental impacts of initiatives *across* current wellbeing, future wellbeing, and risk and resilience. In the context of environmental considerations, ministers also require advice on the extent to which budget packages move us towards or away from thresholds and tipping points beyond which certain consequences become irreversible. Such advice would require an assessment of the likely aggregate environmental impact of draft packages. While there are signals that the budget process will increasingly consider aggregate effects at the level of packages, more remains to be done as a matter of urgency.

Without the communication of this sort of advice, it is not possible for a wellbeing budget to retain a focus on intergenerational wellbeing.

Reviewing baseline expenditure[72]

Outside the budget process, ministers and agencies review baseline expenditure, at least on an ad hoc and sporadic basis. In the context of formal budget processes, wholesale reviews of baseline expenditure across entire sectors are comparatively rare. Formal budget processes have tended to focus the bulk of their attention on claims for new expenditure – a neglect that has been lamented by the current Minister of Finance.[73]

This is set to change. Formal baseline reviews are set to become a "regular feature" of the future budget process, and a first review of expenditure by agencies that are labelled the 'Natural Resources Cluster' is under way.[74] It is too early to know how the environment will be integrated into this process, and the use of 'clusters' is still evolving.

The following comments reflect our provisional understanding of how baseline reviews are conceived. But there are reasons to believe that applying the wellbeing approach rigorously may be better suited to the timelines associated with a structured baseline expenditure review than the pressure-cooker process of assessing new initiatives.

Reviews of baseline expenditure are intended to produce an understanding of the relationship between baseline spending and wellbeing outcomes.[75] A baseline review is about prioritisation at the level of outcomes: the efficiency and effectiveness of expenditure. If conducted well, such a review has the potential to yield significant improvements in the efficiency by which existing expenditure purchases environmental outcomes.

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[72] This section draws on observations by officials involved in the baseline review of the Natural Resources Cluster, pers. comm., 16 June 2021, 11 September 2021; the Treasury, pers. comm., 1 July 2021, 28 October 2021, 13 September 2021.

[73] Robertson, 2020, 2021.

[74] Robertson, 2021.

[75] Robertson, 2020, 2021.

An understanding of how changes in expenditure will affect wellbeing outcomes requires at least some explicit focus on outcomes (effectiveness) and efficiency. It is promising that the baseline review will draw upon financial and non-financial data: inputs (including fiscal information), outputs and outcomes. It is with respect to non-financial data (biophysical data and environmental values) that the greatest potential exists to better integrate the environment into the review.

There are, however, large information gaps, and, beyond that, there is currently very little evaluation of expenditure in terms of environmental outputs, let alone in terms of wellbeing outcomes. The absence of an ongoing programme of evaluation limits the ability of a baseline review to readily understand and assess the relationship between existing expenditure and wellbeing outcomes, let alone what effect marginal changes in expenditure may have on those outcomes.

It is important to note that a baseline review of the Natural Resources Cluster does not cover *all* environmentally relevant expenditure. It will not, therefore, consider whether baseline expenditure made outside of the three agencies that compose the cluster is placing future wellbeing at risk through degrading natural capital to extract income, increase consumption or invest in economic capital. Nor will it provide a sense of the overall environmental consequences of the total government baseline – for example, its contribution to advancing or not advancing New Zealand's climate goals.

To achieve this on a comprehensive basis would mean extending the environmental component of wellbeing analysis to all agencies with potentially significant (positive or negative) environmental impacts. This approach is more closely associated with 'green budgeting' practices.[76]

Outside of the Natural Resources Cluster, there is very limited information regarding the magnitude of central government baseline expenditure on the environment. While some estimates of environmental spending are available, they capture only a small subset from across the public sector and fall far short of being comprehensive.

One set of estimates of environmental expenditure can be derived from the environmental-economic accounts produced by Stats NZ using the System of Environmental-Economic Accounting (SEEA) framework.[77] These accounts are intended to provide an estimate of economic activities with the primary function of reducing, mitigating and preventing pollution and other forms of environmental degradation. The accounts provide estimates of final consumption expenditure for agencies that are engaged primarily in the production of environmental quality.[78]

[76] For a useful recent account of green budgeting, see Petrie (2021).

[77] For a summary of SEEA, see Appendix 2.

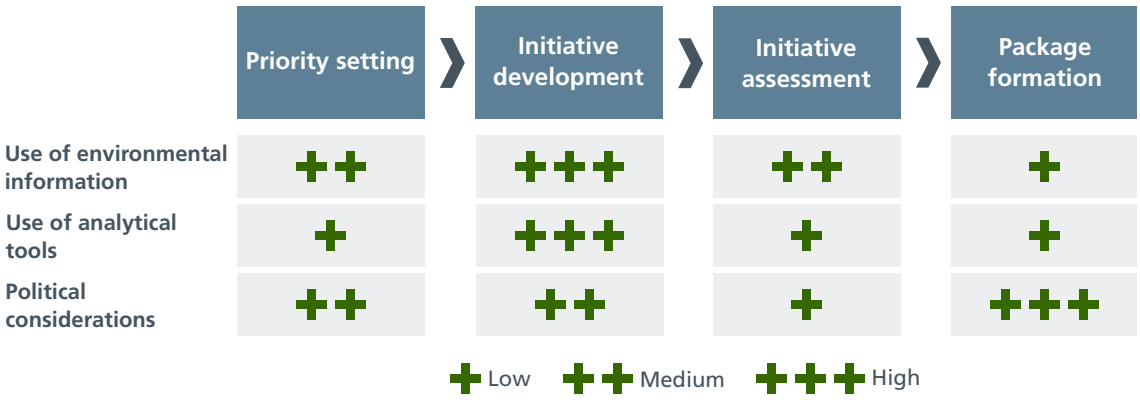
[78] Final consumption expenditure is defined as "the sum of intermediate consumption, compensation of employees (including salaries and wages, [ACC] levies, employer superannuation contributions, and fringe benefits), indirect taxes and accounting depreciation" (Stats NZ, 2020a, p.30). As the production of public sector goods and services is generally not subject to a market price, consumption expenditure is valued as the sum of costs (Stats NZ, 2020a).

According to Stats NZ accounts, central government environmental protection expenditure was estimated at $542 million for the year ending March 2018.[79] This was equivalent to 1.2 per cent of total central government final consumption expenditure.[80] It is important to note that this estimate provides a very coarse indication of the scale of environmental baseline spending that cannot be further disaggregated by environmental function. While figures relating to central government spending are undoubtedly underestimates, they provide an indication of the magnitude of baseline environmental spending.[81] It also has to be remembered that almost all Crown expenditure and transfers will have environmental impacts through their influence on consumption patterns. These impacts could dwarf the impact on wellbeing of outlays specifically defined as 'environmental' expenditure.

Summary: Integrating the environment into a wellbeing budget

As has been seen, the budget process is complex. With the addition of outputs from formal reviews of baseline expenditure into the budget process, the informational requirements of the budget process are set to become even more demanding.

Figure 3.6 summarises three key dimensions of the budget process as it relates to new spending: the use of environment information, the use of analytic tools, and the role of political considerations.



Source: PCE

Figure 3.6: Key moments in the development of a wellbeing budget, as it relates to budget initiatives. Distinctions between 'low', 'medium' and 'high' are intended to communicate a relative ranking, rather than absolute judgements.

[79] As discussed above, the Natural Resources Cluster will cover approximately $3 billion of expenditure. However, these figures are not directly comparable because of differences in time periods and accounting methods.

[80] Stats NZ, 2020b.

[81] Estimates relating to central government environmental protection expenditure are derived from government finance statistics for those agencies that are primarily engaged in environmental protection activities. Expenditure included in government finance statistics is classified based on the Classification of the Functions of Government framework. These estimates exclude expenditure by agencies that are not engaged in environmental protection as their primary role but may have some environmental management functions. For additional information regarding methodological compilation, refer to Stats NZ (2020a).

A budget process – wellbeing orientated or otherwise – will necessarily involve a complex interplay between technical, normative and political considerations. It is nonetheless desirable that it displays a logic that is, in principle, transparent. That underlying logic should be visible through its reliance on relevant information (including environmental information), through the use of analytic tools that are properly adapted to the task at hand and through a consistent approach to delivering advice that can make a coherent link with wellbeing.

If the wellbeing approach had successfully internalised the links between the environment and wellbeing in the budget process, it would be reasonable to expect that evidence for that would be more visible than it is. To the extent that it is visible, it is most pronounced in the development of budget initiatives. This is sensible – it is here that the results of policy analysis are synthesised, refined and communicated to officials who assess the robustness of that policy work. Nonetheless, the constraints of limited environmental information restrict the ability of the analysis of wellbeing – and the broader wellbeing approach – to support environmental initiatives.

From initiative assessment onwards, the availability of environmental information and tools that can mobilise it become more distant. In simple terms, the specifically environmental contribution to wellbeing is less visible in the later stages of the budget process as they relate to new spending initiatives. Given the lack of maturity of wellbeing reviews of environmental baseline expenditure, it is difficult to offer a companion comment.

Broadening out beyond the concerns of wellbeing budgets, it is worth considering the extent to which advice and assessment provided in the course of the budget process grapples explicitly with a fundamental question of any budget process: In terms of securing ongoing access to natural capital and managing the risks environmental change poses to ecological resilience, are we under (or over) investing? For a number of reasons, we have no way of knowing.

At present, limited environmental information does not permit an assessment of the level or quality of environmental investment needed to maintain existing environmental quality and existing flows of ecosystem services – let alone what level or quality of environmental investment is needed to maintain current or future wellbeing. Perhaps more fundamentally, what appears to be lacking is scrutiny of environmental expenditure in terms of its contribution to intergenerational wellbeing. No defensible judgement about the adequacy of our level of investment in the environment is possible without examining the consequences for future generations.

It seems possible to contend that existing budget processes appear to be more useful for allocating investments to short-term, social and economic outcomes than they are for allocating investments to environmental outcomes. It is plausible that other sectors may face similar challenges. At this stage, a wellbeing approach to budget processes could result in environmental investments being discriminated against in favour of investments that are better understood (because they are more richly described) and more readily demonstrate improvements to current wellbeing (because they are more certain).

Of course, the question of whether or not we are underinvesting (or overinvesting) in the environment is not a purely technical question. Ultimately, it is a normative question that is adjudicated through political considerations. But, in a democracy at least, political decisions should have to be supported by plausible evidence. At the moment, there are insufficient environmental data and insufficiently adapted analytic tools to deliver that evidence or even illuminate the nature of the linkage between that investment and wellbeing.

Nonetheless, it is important to recognise that a wellbeing approach to budget processes is still in its early days. Two commentators have gone so far as to note that "it is important that the effectiveness of New Zealand's budget approach is only judged while taking a long-term perspective as, like many public health interventions, it will take many years for benefits to be fully realised."[82]

It is difficult to disagree. It is also important to ensure that limitations are identified early so that a long-term perspective on wellbeing can be fully integrated into the budget process.

[82] Anderson and Mossialos, 2019, p.321.

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Asplenium trichomanes ssp. *quadrivalens*

Environmental challenges to wellbeing budgets

A number of features about environmental problems pose specific challenges for their integration into the framework of wellbeing budgets. This chapter focuses on the following seven features.

1. The relationship between the environment and human wellbeing is complex.
2. Environmental impacts are often long-term and enduring.
3. The environment is geographically and spatially diverse.
4. The environment is not homogenous, and some of its dimensions are non-renewable.
5. Many environmental benefits are not traded in markets.
6. Aspects of the environment are characterised by thresholds and tipping points.
7. Aspects of the environment are critical or life-supporting.

The analytic tools and approaches that have traditionally formed a core part of the budget process are often ill-suited to dealing with the complications created by these features. The result is that environmental considerations and their links to human wellbeing are not well represented. This represents a significant barrier to achieving the fundamental goal of a wellbeing budget that involves the allocation of budgetary resources based on their contribution to wellbeing.

Introduction

The natural environment is the biophysical world of which we are inextricably a part and without which we cannot function. For New Zealanders, the connection with place is strong. New Zealanders do not live in a sterile vacuum. It is hard to avoid the immediacy and physicality of Aotearoa's land and life forms.

There is nothing simple about the natural environment. So trying to integrate it into something as artificial and reductionist as a process for managing fiscal outlays was always going to be extremely challenging. A large gap between the aspirations of the wellbeing approach and their integration into wellbeing budgets is only to be expected.

This chapter explores some of the features of the natural environment that represent challenges to its integration into budget processes.[1] For example, many ecosystems and natural resources are not traded in markets and, as a result, are not explicitly valued in monetary terms. Insofar as the budget process must prioritise efficiency, this makes it difficult to examine the value for money represented by much environmental expenditure.

Though many of these features of the natural environment have a biophysical foundation, they are not necessarily unique to the environment. Indeed, some of these features are characteristics of other things that matter to New Zealanders. For example, the social connections that enrich our lives are not traded (or are largely not traded) in markets. Nonetheless, many of the challenging features of the natural environment would seem to be at least more pronounced than they are in most other policy domains. This goes some way to explaining why the natural environment is less well integrated into budget processes than other things that matter to New Zealanders.

While this chapter largely focuses on features of the environment from a biophysical point of view, a te ao Māori lens represents those features very differently. Māori understand themselves to be related to all other living things, with trees, plants and animals forming part of the extended family. Te ao Māori therefore focuses on this familial relationship between people and between people and the environment, which can be explained through important concepts like whakapapa and mauri.[2]

For example, the environment is divided into subcomponents where different atua represent different human and environmental domains, and the underpinning alliances and tensions are known through stories or pūrākau, whereas a scientific lens may break the environment down into processes, systems, and inputs and outputs.

The next chapter proposes some practical steps that could be taken to ensure that those giving advice and those making budget decisions are aware of the nature of the environment and the environmental consequences of some of their choices. But before doing that, this chapter explains why the environment cannot simply be taken care of with a few deft, feel-good references to sustainability and resilience.

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[1] The first sentence of this chapter provides a definition of the natural environment. However defining the natural environment (and its boundary) is challenging, and is a challenge for the budget process. For example, the demarcation between the natural environment and infrastructure is shot through by a tension reflected in the distinction between the natural environment and the built environment.

[2] He Ara Waiora is the Treasury's attempt at doing just that but, as noted, is still in its developmental stage as it relates to the budget process.

Features of the environment that pose challenges for the budget process

A number of environmental features represent challenges for the budget process. We identified seven features as particularly important. However, the list is by no means comprehensive.

1. The relationship between the environment and human wellbeing is complex

The links between the environment and human wellbeing operate through a diverse set of channels that connect the natural environment to the benefits valued by people. These links are mediated through the myriad complexities of biophysical systems. We have created great complexity in financial or health management systems, but these pale alongside the interdependencies that exist in natural systems. For Māori, the complexities are different again because they see themselves as part of that natural system, through whakapapa. Environmental impacts can be extraordinarily diverse, with the potential for effects that cascade well beyond where they were initiated.

One of the key challenges arises from the complex way changing environmental conditions can impact on human wellbeing. The nexus between the environment and human wellbeing can be conceptualised as a complex web linking the health of ecosystems to the benefits provided to people and the impacts that people have on ecosystems. Even in the simplest of cases, the filaments of this causal web will involve multiple intermediate stages of ecosystem functioning whereby ecosystem services are produced that benefit people and ultimately contribute to human wellbeing.[3]

For example, a forested area provides ecological functions in the form of water infiltration that reduces run-off. This ecological function yields flood protection services that generate benefits such as a reduction in property damage and the economic losses from flood events that contribute to the different dimensions of wellbeing. Ecosystems and associated processes can provide multiple functions. The same forested area, for example, can also improve water quality by trapping and filtering pollutants and enhance the flow of benefits provided by water bodies (e.g. recreation and consumption).

[3] For a description of these intermediate stages, refer to the conceptual model developed by Potschin and Haines-Young (2011, p.577).

Source: Andrea Schaffer, Flickr

Figure 4.1: Haast River, Mount Aspiring National Park. Forested areas provide a multitude of ecosystem services, including water purification and flood protection benefits. The multiple benefits provided by an ecosystem demonstrate the complex relationship between the environment and human wellbeing.

Furthermore, the loss of ecosystems can have profound impacts on the psychological wellbeing of communities. For example, Ngāi Tahu see the loss of rivers, wetlands and forests in Te Waipounamu as a direct impact on their spiritual wellbeing,[4] similar in nature to the loss felt by many residents of Christchurch through the destruction of the Christchurch Cathedral and other significant buildings during the 2011 earthquake. Losses of this kind are not easily measured or understood in a budgetary process.[5]

While the above description presents a simplified model of the interactions between the environment and human wellbeing, this causal chain cannot be modelled as a one-to-one linear relationship. Rather, a single policy intervention or stressor may impact on ecological functioning through multiple pathways. Subsequent changes in ecological functioning can affect the provision of various ecosystem services which, in turn, can have multiple impacts on wellbeing.[6]

[4] Reid et al., 2014, 2017.

[5] John Reid, pers. comm., 16 September 2021.

[6] Potschin and Haines-Young, 2016, p.28; Olander et al., 2018, p.1266.

These issues are further compounded by the complexity of the environment, which can mean that simple interventions result in numerous unintended outcomes. This complexity manifests through feedback loops, delays and non-linearities that can result in unintended outcomes that may only become apparent when they are difficult and costly to address.

There can be significant variability in the channels through which a change in environmental conditions affect human wellbeing and how that is felt. For example, water pollution can take the form of a point source (e.g. from wastewater treatment plants) or as a diffuse source (e.g. nutrient loss from agricultural land). Furthermore, these impacts can become apparent over short or long periods of time. Pollution can have both temporary, acute impacts on human health and chronic impacts resulting from ongoing exposure.

The existence of feedback loops creates an additional layer of complexity. They can act to amplify or dampen the effect of an initial perturbation. In the case of positive feedback loops, the impact of human-induced stressors can trigger a self-accelerating dynamic. For example, declining ice cover due to warming temperatures has resulted in a decrease in the reflectivity of the earth's surface (the albedo). This, in turn, results in more of the sun's energy being absorbed, leading to additional warming.[7] Such feedback loops can exacerbate the effect of an initial disruption and intensify the impact on human wellbeing.

A different sort of complication arises from cascading impacts. A cascading impact results from an initial change in environmental conditions triggering a sequence of events, each having an impact that triggers further events. For example, climate change can lead to an increase in the frequency of extreme weather events, resulting in disruption and damage to infrastructure that can adversely affect local communities.[8]

Cumulative impacts refer to the compounding effect of multiple impacts generated independently, whether in sequence or simultaneously. For example, the quality of water in a river will reflect a range of factors, some of which may be completely unrelated, including different types of pollution, water abstraction and modified hydrological flows.[9] The interactions between these factors and the total aggregate effect can have a myriad impacts on the benefits provided by water bodies, including various in-stream and extractive benefits.

All of this complexity creates challenges for the budget process. The difficulty of establishing causal links between a policy intervention and its impact on the environment and human wellbeing is particularly problematic from the perspective of a wellbeing budget. While such issues are also present in economic and social policy issues, they are particularly pronounced with respect to the environment. Fundamentally, a wellbeing budget requires fiscal resources to be allocated to initiatives based on their contribution to wellbeing. To describe that contribution properly requires a prior understanding of the complexity of ecosystems.

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[7] Wolff, 2015.

[8] Lawrence et al., 2018, p.4.

[9] MfE and Stats NZ, 2020, p.7.

In formal terms, this throws up a problem for people trying to establish the intervention logic that is supposed to underpin policy proposals. Intervention logic maps (ILMs) are a structured way of making a case that the Treasury requires to support budget initiatives.[10]

The quality of an ILM is in part determined by the precision with which the causal link between the problem that a budget initiative seeks to address, the measures it proposes and its impact on wellbeing can be described. Given the complexity of the natural environment, the quality of ILMs with environmental considerations can sometimes be weak on account of information gaps in the causal chain between a particular stressor, intermediate outcomes and their implications for human wellbeing. That weakness can be exacerbated where the risks to wellbeing are far in the future.

Furthermore, ILMs that represent a specific frame of wellbeing may not be easily transferrable to other frames. If wellbeing in te ao Māori is defined not by the 12 domains of wellbeing in the LSF, but by the familial relationship between all things, then ILMs that rely on the 12 domains will not be a reliable guide to impact on Māori wellbeing.

The difficulties associated with establishing a robust intervention logic have implications for understanding the efficiency and effectiveness of existing and potential expenditure. The potential effectiveness of proposed expenditure is often assessed using the Treasury's wellbeing analysis template.[11] Wellbeing analysis is aimed at prompting consideration of wider wellbeing implications, including the synergies, trade-offs and co-benefits of policy initiatives. In the case of the environment, the diffuse nature of many of these impacts complicates the process of pronouncing on the likely effectiveness of any expenditure.

Issues relating to complexity are further exacerbated by the incomplete and fragmented nature of New Zealand's environmental information base. Indifferent and uneven monitoring bedevils our understanding of biophysical processes, making it difficult for policymakers to identify key links in this causal chain and understand drivers and influencing factors.[12] While environmental information will always be lacking to some degree, the existence of gaps in critical datasets poses a particular challenge.

In addition, the complexity of the environment ensures there are significant knowledge gaps relating to the operation of biophysical and ecological processes. Even with significant investments in environmental research, such initiatives typically only yield small improvements in scientific understanding due to the inherent complexity of these systems. Furthermore, 'knowledge gaps' can be a function not of the lack of underlying information but the difficulties associated with communicating complex information between scientists and policymakers.

Together, a lack of environmental data and knowledge impedes attempts to develop a robust intervention logic for environmental expenditure that relates inputs to outcomes.

Finally it should be noted that information gaps also exist within te ao Māori due to the loss of mātauranga. However, many whānau, hapū and iwi are attempting to address this issue to enable them to make good multigenerational investment decisions. For example, Te Arawa Lakes Trust has developed a framework supported by mātauranga – Te Tūāpapa o ngā Wai o Te Arawa – which is used to help board members make investment decisions while also considering te taiao.[13]

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[10] For more information on ILMs, see Appendix 2.

[11] For more information on wellbeing analysis templates, see Appendix 2.

[12] MfE and Stats NZ, 2019, p.107; PCE, 2019, p.30.

[13] For more information regarding Te Tūāpapa o Ngā Wai o Te Arawa, see Appendix 4.

2. Environmental impacts are often long-term and enduring

Many environmental impacts play out over time. They require a dynamic perspective if their impacts on wellbeing are to be usefully analysed. While some environmental impacts can occur in a very immediate and tangible manner, others are likely to emerge only decades or centuries later, with enduring consequences.

As a biophysical system, the environment is characterised by long-term dynamics with biophysical and ecological processes operating over extended time horizons. In addition, natural systems may also exhibit a degree of inertia in their response to a particular stressor or management intervention. This means that environmental impacts can go unnoticed for a time but then start to raise significant and wide-reaching implications for human wellbeing on an intergenerational timescale.

An example of a long-term environmental impact of particular relevance to New Zealand relates to the flow of contaminants between soils, surface water and groundwater. In some cases, hydrological processes responsible for cycling pollutants through a catchment can operate over decades or even centuries.[14] Accordingly, environmental degradation occurring in the present can be the result of legacy impacts arising from land uses and management practices many years in the past. Such legacy effects can combine with existing pressures to compromise the provision of both instream and extractive benefits provided by waterbodies. For example, many estuaries are being affected by legacy contamination and current pressures that restrict their use as mahinga kai sites.[15]

Similarly, greenhouse gas emissions accumulate as a stock in the atmosphere and persist for centuries. These emissions continue to have an adverse impact on the stability of the climate system despite the cessation of the original polluting activity. Accordingly, any management action undertaken in the present can have a significant time lag before results become apparent.

[14] MfE and Stats NZ, 2019, p.58.

[15] See https://www.pce.parliament.nz/publications/managing-our-estuaries.

Source: Seamoor, Flickr

Figure 4.2: Franz Josef Glacier, Franz Josef/Waiau. A changing climate caused by the accumulation and persistence of greenhouse gases in the atmosphere and associated long-term impacts will have significant implications for these landforms.

Long-term environmental impacts are also relevant from a resource management perspective, as the consumption of resources in the present can occur at the expense of future consumption. In particular, depletion of non-renewable resources can restrict the range of development opportunities available to future generations. Long-term impacts raise issues of uncertainty, the existence of tipping points, sustainability and irreversibility.

When attempting to understand the unique challenges that extended time horizons pose for the budget process, it is important to consider the wider political context of the budget process. The budget cycle responds, in part, to politically determined priorities that have been developed over the relatively short time frame of the political cycle. In contrast, environmental issues that have multi-decadal or multi-century impacts may not be adequately accommodated by an institutional process designed with a more immediate focus. To put it more bluntly, the demands of the electoral cycle and environmental sustainability are not aligned.

One of the key challenges associated with the extended temporal horizons of many environmental impacts is uncertainty.[16] Attempting to produce ILMs that knit together expected outputs and wellbeing outcomes over protracted periods is subject to multiple unknowns. For example, there is likely to be considerable uncertainty regarding the causal links between a land management policy introduced in the present and the expected impact on water pollution decades in the future. Extending those links further to describe their implications for human wellbeing becomes even more complicated as uncertainty about the state of the world and societal preferences increases with distance from the present.[17]

There are, however, tools and approaches that can assist decision makers. One approach, referred to as 'real options analysis', accounts for uncertainty by recognising the value of flexibility in terms of pursuing alternatives or deferring a decision to gather additional information. Whereas tools such as cost–benefit analysis (CBA) assume a deterministic future, real options analysis can mitigate the potential for losses associated with uncertainty.[18]

From a wellbeing perspective, the skewed nature of environmental cost–benefit profiles creates a complex set of challenges. Policymakers often have a relatively clear idea about steps that can be taken to maximise wellbeing in the present while imposing uncertain costs in the future. These initiatives must be weighed against competing propositions that impose clear costs in the short run but promise less well-defined benefits in the future. Many environmental initiatives typically involve significant immediate costs, which can be the legacy of decisions deferred by previous generations. These upfront costs are often followed by a stream of benefits accruing over the long term, but describing or even quantifying those benefits may be challenging. In many cases, this pattern may disadvantage environmental budgetary initiatives relative to policy domains that are able to demonstrate more immediate benefits.

For example, the management of invasive species and habitat restoration activities would typically involve significant cost outlays in the immediate and medium term. However, the benefits will only manifest over time as ecological integrity is restored and the ecosystem is able to deliver a wider range of services.[19] The value of those services to future wellbeing is hard to quantify.

There is significant irony that the failure to make investments in information in the past is itself a legacy that denies us time series data that could help assess future wellbeing. An element of uncertainty about the future evolution of environmental problems is unavoidable. But it is made worse by the frequent absence of data that describe the evolution of the problem to date. In a sense, both environmental problems and the lack of information to understand them are legacies of chronic, institutional short-termism.

For example, in 2012 the National Institute of Water and Atmospheric Research (NIWA) set up an Urban Runoff Quality Information System (URQIS), a database with stormwater and urban stream quality data from across the country.[20] The system was designed to collate data acquired around New Zealand to improve understanding of water contamination patterns resulting from different land uses. The information was also used in modelling for stormwater treatment systems. Despite being a useful and accessible tool, the failure to obtain additional funding to secure the ongoing collection of data has led to the database becoming outdated.

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[16] Underdal, 2010, p.387.

[17] Jacobs, 2016, p.440.

[18] Buurman and Babovic, 2016, p.143; Wesseler and Zhao, 2019.

[19] Hanley and Roberts, 2019, p.125.

[20] See https://urqis.niwa.co.nz/#/report.

This issue is further exacerbated by the current set of tools – including CBA – that policymakers use to incorporate the temporal dimension into economic appraisal and evaluation. Discount rates reflect preferences regarding current versus future consumption and assign greater weight to costs and benefits accruing in the immediate term.

CBAx is a CBA model that is used by the Treasury to appraise some budget initiatives.[21] While CBAx allows analysis using a standard discount rate of five per cent and an alternative rate of two per cent, the official Treasury rate is five per cent. The use of a constant discount rate potentially distorts the appraisal of environmental initiatives whose benefits frequently accrue over longer time frames. Accordingly, applying standard discount rates to proposals that address growing environmental concerns over many years becomes problematic from the standpoint of allocating fiscal resources.

Applying CBAx and CBA more generally to issues with long time horizons raises the problem of how variables like future prices can be ascertained. Monetised environmental values reflect the value of ecosystem services in the present. It is difficult to reflect the future price of ecosystem services that may exhibit increasing scarcity in the face of rising future demand or environmental degradation. CBAx also highlights several additional challenges to the long-term nature of environmental impacts. Though it is structured by the Living Standards Framework (LSF) domains of current wellbeing, it does not directly link to capital stocks or resilience.[22] Instead, its assessment of the future impacts of a policy intervention are made wholly on the basis of the prevailing societal preferences of the current generation and assumptions around the expected future flows of wellbeing generated from an uncertain stock of natural capital.

Failing to consider wellbeing from the perspective of future generations likely to be impacted is a serious deficiency of CBA. Such an approach is inconsistent with the notion of intergenerational equity and other cultural and ethical perspectives relating to the guardianship of the environment for future generations. It is also inconsistent with the theory of intergenerational wellbeing that underpins the capital stocks model on which the Treasury explicitly bases the LSF.

That the preferences of future generations are not known with any degree of certainty is an inherent limitation of any future-orientated assessment process. In the absence of such information, a precautionary approach would suggest ensuring that any future biophysical impacts still leave sufficient regenerative capacity to keep options open.

3. The environment is geographically and spatially diverse

The environment exists in space. Natural landscapes are distributed through space. Aoraki/Mount Cook National Park surrounds Aoraki/Mount Cook. It would not be the *same* national park if it did not surround its namesake maunga. In one sense, then, the natural environment is immobile and fixed in space at a given point in time.

Simultaneously, the natural environment – for example, the oceans and atmosphere – can be fluid and flexible. Even the natural landscape is not entirely fixed in space. In 1991, a 12 million cubic metre rockslide on Aoraki/Mount Cook reduced the height of the peak by 10 metres. Further erosion of the exposed peak reduced the height of the summit by an additional 20 metres.[23]

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[21] For more information on CBAx, see Appendix 2.

[22] Insofar as CBA assesses the annual flow of costs and benefits in each successive period, it does not directly provide a quantitative assessment for the magnitude or quality of natural capital. The CBA calculation procedure merely provides an estimate for the future flow of wellbeing outcomes that are derived from the existence of natural capital in each specific period.

[23] Purdie and Kerr, 2018, p.371.

Source: VML ID 4596, Lloyd Homer, GNS Science

Figure 4.3: Aoraki/Mount Cook, Aoraki/Mount Cook National Park. The aftermath of a rock avalanche that reduced the height of the peak in 1991.

Many environmental issues are tied inextricably to geographic space. This may be because of the biophysical properties of a particular landscape or ecosystem, or it may be because of the particularly intense values that are invested in that geographic space. For example, the provision of urban green space might be a neighbourhood issue; impacts on freshwater quality might be a catchment issue; the crisis of native biodiversity might be a national issue; and climate mitigation might be an international issue. Furthermore, many of these issues exhibit a significant degree of variability at the local scale. For example, water quality will vary across catchments, and while issues like climate change are global in nature, the impacts can differ markedly at the local scale.

The cultural, normative or spiritual values that we invest in the environment are also often tied to specific geographic places.[24] Place-based values are particularly pronounced in te ao Māori, as evidenced by whakapapa or genealogical connections between people and place. The connection to specific mountains, rivers, lakes and seas, for example, provides the foundation for all other place-based values both spiritually and non-spiritually.[25] It is here that whakapapa can be an important element in localised solutions. For example, Te Arawa Lakes Trust (see Appendix 4) makes budgetary decisions based on its connections with the 14 lakes in the rohe and consider not only social issues like employment but also environmental issues like water pollution from agriculture. Similar place-based values can be found in a vast array of spiritual and cultural frameworks held by other New Zealanders. But place-based affinities are not easily reflected in centrally conceived processes.

The spatial specificity of many environmental problems and interventions is not typical of most policy domains – or not typical with the same consistency and relevance. Many policy domains concern the distribution of policy problems or interventions in *social space* rather than *geographic space*.[26] For example, it is typical for social policy to orientate itself towards the socio-economic categories of individuals, such as age, ethnicity, gender or income. This contrasts with a concern for the *geographic* variation and uniqueness of ecosystems.

The spatial specificity of significant portions of the environment adds another challenge to the budget process. While many of New Zealand's prominent environmental issues are recognised as national problems, solutions can only be adopted at a more localised scale. It is here that the whakapapa can be an important element in localised solutions.

With regard to the scrutiny of expenditure, it is difficult enough to provide an analysis of the outcomes of an environmental intervention let alone how they may be geographically distributed. These informational requirements are intense and require data that can be broken down to sub-national levels.[27] To understand whether or not investment in water quality should be prioritised, it is important to understand not only some uniform, average measurement of water quality, but also the quality of water on the Canterbury plains (where nitrate levels may be relevant) or in Fiordland National Park (where subjective assessments of water quality may be relevant in addition to biophysical measures).

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[24] Norton and Steinemann, 2001.

[25] Cunningham, 2018.

[26] On the distinction between social space and geographic space see, for example, Bourdieu (2000).

[27] HM Treasury, 2020, p.91.

Our current system of environmental reporting is insufficient to respond to this challenge across the breadth of the natural environment. Some national datasets lack sufficient coverage, which makes it difficult to link human-induced pressures and activities to the conditions experienced at the local level.[28] Decision makers are left without information that can say anything meaningful about either local environmental conditions or their impact on wellbeing.

4. The environment is not homogenous, and some of its dimensions are non-renewable

As a biophysical entity, the natural environment provides a wide range of ecosystem services and natural resources. These resources are diverse and consist of non-renewable resources, such as fossil fuels, and resources such as forestry and fish stocks that are renewable as long as they are managed appropriately.

More broadly, these resources are underpinned by ecosystems that consist of interactions between different aspects of the environment and the operation of biogeochemical cycles and other processes. Talking about 'the environment' as though it were an undifferentiated, homogenous entity is not just unhelpful, it also risks oversimplifying the communication of environmental considerations in the budget process.

The natural world's diversity defies the simple classifications we have developed and complicates the process of developing indicators that encompass its totality. The environment can, at best, be divided into multiple subcomponents with different biophysical properties, processes and associated dynamics. However, failing to appropriately account for its multidimensionality can lead to environmental problems being underdefined, undermining their ability to command serious investments ahead of 'simpler' problems.

At one level, the heterogeneity of what gets bundled into the environment 'basket' is a result of it embracing both abiotic (non-living) and biotic (living) aspects of the environment. Abiotic resources include those that are not produced by ecological processes but are essential for ecosystem functioning. They can be classed as either depletable (e.g. mineral deposits) or non-depletable (e.g. solar energy). By contrast, biological resources or those living aspects of the environment include ecosystems (e.g. forests) and the flow of ecosystem services they generate.[29]

These ecosystem services include provisioning services relating to material benefits (e.g. wood and fibre), cultural services covering non-material benefits (e.g. recreation) and regulating services (e.g. flood protection).[30] Both biological resources and associated ecosystem services can be depleted through overuse or degradation.

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[28] PCE, 2019, p.28.

[29] Smith, 2018, p.30.

[30] Millennium Ecosystem Assessment, 2005, p.40.

Source: Robin Capper, Flickr

Figure 4.4: Martha Mine, Waihi. The multidimensionality of the environment, including the existence of non-renewable resources, creates an additional layer of complexity regarding the treatment of the environment in wellbeing budgets.

This differentiated nature of what we term 'the environment' makes it very difficult to directly compare vastly different resources such as mineral and energy resources with biological resources such as native flora and fauna.

Further complexity arises when natural environments are defined within different ontologies, including what is a part of the environment and how it functions to benefit human wellbeing.[31]

For policymaking – and wellbeing budgets – there are two particular challenges:

- integrating different dimensions of the environment into information databases
- making defensible trade-offs both between different dimensions of the environment and across different dimensions of the environment and other things that matter to New Zealanders.

In the first case, the multidimensional character of the environment challenges the adequacy of information databases and their associated measurement frameworks, wellbeing orientated or otherwise. Macro-level information databases such as the LSF Dashboard and Ngā Tūtohu Aotearoa – Indicators Aotearoa New Zealand (IANZ) can be used to assist in priority formation; other measurement frameworks such as the System of Environmental-Economic Accounting (SEEA) can, to the extent that they are populated with data, be used to assess trends in the stocks and flows of natural capital and ultimately the sustainability of natural capital. Meanwhile, micro-level information databases such as the CBAx impacts database can be used to assist in valuing environmental outcomes.[32]

[31] Mika, 2021.

[32] For more information on these databases, see Appendix 2.

The multidimensionality of the environment challenges attempts to form parsimonious but illuminating information databases, including dashboards of wellbeing indicators.[33] Too sparing a set of wellbeing indicators, estimates of natural capital or environmental values means that important dimensions of the environment are excluded. But including multiple wellbeing indicators for each dimension of the environment raises its own problems. Too much statistical information can be a potential barrier to interpretation and overwhelm the provision of a coherent message about the overall state of the environment and its implications for wellbeing. Such concerns can be mitigated by focusing wellbeing dashboards on key themes and restricting the overall number of indicators in the dashboard to those deemed most relevant.[34]

Secondly, this multidimensionality makes defensible trade-offs between different dimensions of the environment – or between the environment and other things – very difficult.[35] It is relatively easy to make a decision between two proposals for expenditure that produce a single outcome via a similar process. But when decision makers are confronted with a diversity of positive and negative environmental outcomes, the choice is much more challenging. Which environmental outcomes are to be privileged?

This is even more challenging when there are diverse positive and negative economic, environmental and social outcomes occurring across different time horizons. It is at this level that the ambition of making wellbeing the test of public policy falters in the face of individual and political plurality. Such adversity is the insurmountable challenge faced by any understanding of public policy that is orientated to multiple outcomes.

The idea of trade-offs may itself be a part of the problem. Although impacts are inevitable, Māori deploy the concept of tauutuutu to require any decisions to be balanced in the sense that solutions should be symbiotic or mauri-enhancing between the different domains rather than accepting that one domain will be advanced at the expense of another.[36]

Typically, the assessment of policy alternatives responds to the multidimensionality of the environment and outcomes either by embracing multidimensionality (as in the Treasury's wellbeing analysis template) or by seeking to avoid it through the use of a common measure (as in CBA, such as the Treasury's CBAx tool). CBA reduces the multidimensionality of the environment and wellbeing outcomes to a single unit, typically money. While it is possible for some degree of disaggregation of CBA metrics across wellbeing domains, ultimately metrics such as net present value elide the multidimensionality of the environment and wellbeing. Integrating biophysical units into analytical approaches that can embrace multidimensionality – such as multicriteria analysis – is one way to address these limitations. However, multicriteria analysis struggles to provide an assessment of the overall efficiency of environmental policies.

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[33] Dashboards of wellbeing indicators have been commonly adopted by most national statistical offices and intergovernmental organisations, including in the LSF Dashboard and IANZ. Indicator dashboards consist of a set of indicators structured by domains that delineate the key thematic areas of the underlying framework (e.g. environment or economy; see United Nations Economic Commission for Europe, 2014). The presentation of a dashboard allows for a more detailed assessment of outcomes at different hierarchical levels, including a specific focus on individual indicators, broader thematic areas or across the entire set of indicators.

[34] Eurostat, 2017.

[35] Trade-offs across time are discussed in the context of the long-term nature of environmental impacts.

[36] Reid, 2021.

5. Many environmental benefits are not traded in markets

Another problem confronting the incorporation of the environment into the budget process involves the lack of monetary values for many ecosystem services and elements of the natural environment. Some of the benefits provided by the environment *are* subject to market transactions and can be easily valued according to the prevailing prices. For example, some provisioning services relating to minerals and timber typically have well-functioning markets with prices indicating the economic value of these commodities. However, even where economic values are available, they do not reflect all the social costs and benefits associated with the existence of the provisioning services.

But many of the benefits provided by the environment are not exchanged in markets and therefore not subject to valuation through market-based price mechanisms. In some instances, it may even be considered inappropriate to value certain types of benefits because of particular spiritual beliefs or ethical concerns. For other benefits, the lack of economic values often leads to ecosystems, ecosystem services and natural resources being assigned an implicit zero economic value, with subsequent exclusion or underweighting of these benefits in the decision-making process.[37]

Source: Tomas Sobek, Flickr

Figure 4.5: Tramper, Mount Aspiring National Park. Many of the benefits provided by the environment are not valued by the market, resulting in their exclusion from the decision making process. This is despite their tangible and often significant contribution to human wellbeing.

[37] Clough et al., 2017.

For those aspects of the environment for which economic values are unavailable, policymakers are generally restricted to assessing the impact on human wellbeing using environmental indicators. Environmental indicators express changes in a particular environmental variable in terms of various physical, chemical or biological units. Measuring changes in environmental quality (e.g. concentrations of ambient air pollution) using biophysical units provides important information for establishing the link between changes in the physical state of the environment and human wellbeing.

However, environmental indicators only provide an intermediate assessment of these wellbeing impacts and limited insight into the specific wellbeing outcomes or benefits valued by people. For example, environmental indicators will not provide a measure of all the different benefits that an ecosystem provides like recreation. This creates a challenge for the budgetary process that must not only choose between environmental initiatives but weigh their benefits against those contributed by other dimensions of wellbeing.

It is this challenge that lies behind the pressure to find monetary valuations of the impact that changing environmental conditions may have on wellbeing, and the strength of societal preferences regarding environmental quality.[38] Expressing environmental benefits in monetary terms enables the comparison of vastly different policy interventions and associated outcomes using a standard metric. It is one way to bridge the gap between changes in biophysical conditions and implications for wellbeing in the form of the services important to beneficiaries.

Through its CBAx impacts database, the Treasury has provided a database of economic values that can be applied to provide a forward-looking assessment of the value of likely impacts resulting from a policy. Currently, limited aspects of natural resources, ecosystems and associated ecosystem services are explicitly monetised in the budget process using the CBAx impacts database. Monetised values relating to several important environmental benefits are missing, and other values have been derived from proxy valuation methods that are not explicitly based on people's preferences for an environmental amenity.

However, these deficiencies must be seen in the context of the wider difficulties associated with deriving credible estimates of non-market values. The range of non-market values available to evaluate New Zealand-specific initiatives is constrained in terms of quality, quantity and relevance. While a raft of environmental valuation techniques can be used to estimate the welfare impacts of a particular change in environmental quality, the application of these techniques and the resulting output can be controversial due to a host of conceptual, methodological and ethical issues.[39] Guidance for the inclusion of additional monetary values in CBAx would need to be developed if such techniques to gauge environmental benefits were to be credible and win widespread acceptance.

Monetising the environment may be useful in some instances, but within te ao Māori there is a common metric that could also be used – mauri. Mauri has tangible and intangible properties. The compromised mauri of a polluted river can be measured using indicators of contaminants or the monetary cost of purifying water for drinking. However, intangible elements can also be measured such as an absence of bird song on the river.[40]

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[38] Although these preferences will be informed by whatever information is available and where that information is limited, as it often is with respect to the environment, the same short-termism that has failed to support investment in understanding the state of the environment will tend to support short-termism on the part of societal preferences.

[39] Baker and Ruting, 2014.

[40] Reid, 2021.

6. Aspects of the environment are characterised by thresholds and tipping points

The myriad ecosystems that make up life on this planet are complex, dynamic and interconnected. Each of these ecosystems is shaped by multiple interacting abiotic and biotic processes. Key processes usually operate in relatively predicable ways within an expected or normal range. For example, the rise and fall of the tide in an estuary is predictable and has a very strong influence on the intertidal ecosystems living in it.

Ecosystems respond to these processes in predictable and typically gradual ways too. But sometimes one or more abiotic or biotic processes might change enough to cross a threshold that results in an abrupt change to an ecosystem. For example, over many years, the use of fertiliser on farming land surrounding a lagoon may gradually lead to a build-up of excess nutrients in the water (known as eutrophication). Nutrient levels in the water can eventually reach levels where the lagoon rapidly 'flips' from a comparatively stable ecosystem characterised by sea grass and fish to one where large amounts of algae smother the water surface – forming what is known as an algal bloom. These algal blooms often kill many of the fish and other aquatic creatures in the water by ultimately starving them of oxygen.

With time, the original ecosystem may re-emerge, but sometimes there is no return from these dramatic and abrupt changes or tipping points – irreversible changes to the ecosystem have occurred and the ecosystem can be said to have entered a new state. For example, the eutrophication of a lake might significantly and irrevocably alter the structural composition of the aquatic ecosystems in it.[41] Or an entirely new ecosystem might form to replace what was there before. For example, debris from a storm-induced slip might create a new lake in a valley floor, killing the forest and creating a new aquatic ecosystem in its place.

Human-induced pressures have already led to many large, systemic changes in ecosystem state and functioning. More changes are certain, but a major challenge is that it is not always possible to know when an ecological threshold or tipping point is about to be reached, or if any abrupt change that occurs will be irreversible.

[41] LEARNZ, no date.

Source: Phillip Capper, Flickr

Figure 4.6: Lake Ellesmere/ Te Waihora. Intensive farming in the catchment has resulted in high concentrations of sediment, nitrogen and phosphorus tipping the lake into a nutrient enriched state that triggers algal blooms.

Breaching thresholds can cause significant disruption, which can adversely impact the provision of ecosystem services that support wellbeing. In some instances, they can disrupt the life-supporting capacity of ecosystems or even the global biosphere. Tipping points that produce undesirable ecological states will also have social implications or create social-ecological tipping points, especially when human wellbeing is reliant on the health of the environment.[42] For example, a resource used for subsistence may be lost, along with a loss of mātauranga of traditional practices, and even language related to that resource.[43]

Tipping points may also be understood through the use of the concept of mauri because if the mauri of something is diminished it is no longer able to keep the relationship with those that rely on it. Many iwi are experimenting and developing their own assessment systems, algorithms, and statistical methods for approaching the use of mauri as a standard that offers both a 'metric' while attempting to express unquantifiable elements.[44]

[42] Serrao-Neumann et al., 2016.

[43] Rotarangi and Russell, 2009.

[44] For example, Kēpa Morgan's Mauri Model, used by some iwi, including Te Arawa and Tainui, is fundamentally built around mauri tipping points (Morgan, 2006).

Understanding how close we may be to tipping points can require very significant investments in both monitoring and research – investments that are not related to an immediate problem. The challenge for budgetary processes is to incorporate the value of this knowledge alongside the costs of passing beyond a tipping point.

The existence of ecological and biophysical thresholds and resulting non-marginal changes in the functioning of ecosystems is particularly problematic from a policy and decision-making perspective. In many cases, the exact nature of these thresholds and the consequences of passing them are not known with any certainty. This sort of uncertainty is not easily accommodated by a budget process that is generally accustomed to addressing issues that respond in a more marginal or incremental manner.

Thresholds and tipping points raise issues for analytic tools such as CBA that attempt to provide insights into the efficiency of environmental interventions.[45] Costs and benefits only remain marginal *until* a threshold or tipping point is breached, at which point, benefits and costs are dramatically reconfigured. This makes the potential benefits of environmental interventions difficult to quantify and value. It also makes the potential costs of not intervening difficult to quantify. Needless to say, when there is radical uncertainty concerning proximity to thresholds, most analytic tools will struggle even more.

Because of their complexity and dynamism, ecosystem thresholds and tipping points are difficult to understand.[46] This has consequences for the amount of information that is required to scrutinise expenditure and adds an additional layer of uncertainty to policy appraisal. It is often extremely difficult for scientists and policymakers to meaningfully appraise the costs, benefits and, more generally, the outcomes a policy is seeking to advance. When tipping points are physically or economically irreversible, the consequences of an approach that is insufficiently precautionary can be high.

7. Aspects of the environment are critical or life-supporting

Critical dimensions of the natural environment are foundational to intergenerational wellbeing. Rather than merely adding to our current enjoyment, they are *necessary* for human health and life. For example, the ozone layer, global atmosphere and stocks of biodiversity are critical aspects of the natural environment.[47] We require air and water of sufficient quality to maintain our vital functions and avoid ill health. These aspects of the environment are foundational for the wellbeing of current generations and crucial to support the lives of future generations.

Critical aspects of the natural environment contrast with other dimensions of the natural environment. For instance, some aspects matter in terms of the contribution they make to our subjective wellbeing, happiness or life satisfaction. For example, access to green space is widely recognised as contributing to life satisfaction.[48] But that does not make it critical.

[45] Rose-Ackerman, 2016.

[46] Lenton, 2013.

[47] Pearce, 1997.

[48] For example, refer to Ambrey and Fleming (2012).

Source: Bernard Spragg, Flickr

Figure 4.7: Kea, Mount Hutt. While the mere existence of a native species can have a positive impact on human wellbeing, genetic diversity is a critical element of natural capital that underpins the operation of ecosystems and resulting benefits.

The existence of critical aspects of natural capital is challenging from the standpoint of existing analytic tools – such as CBA – which assume that things that matter can be traded off against one another, as long as net present value is maximised. This criticality implies that there are limits to the extent to which biodiversity, source and sink functions, and unique environments, among other things, can be substituted by other things that matter to New Zealanders. While it may be acceptable to trade off some aspects of the natural environment with other aspects of wealth, decision makers who nominate intergenerational wellbeing as their stated goal need to be very clear about what elements of the environment are critical and how they relate to intergenerational wellbeing.

By including a focus on capital stocks and future wellbeing, it is relatively easy for a wellbeing framework – such as the 2018 LSF – to capture the general relationship between the environment and intergenerational wellbeing. However, reducing the natural environment to a stock of capital or wealth blurs the distinctive, foundational role of the natural environment in generating both current and future wellbeing.

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Adiantum hispidulum

Improving budget decision making

All budgetary decisions require trade-offs to ensure that limited resources are put to their best use. But before reaching those judgements, there are many methods and tools that can help decision makers untangle different policy objectives and their associated trade-offs between current and future wellbeing. This chapter proposes a number of recommendations that cover:

- improvements to the wellbeing analysis template and other tools
- updating the Living Standards Framework (LSF) Dashboard and developing new tools to provide a better understanding of the environment over the long-term
- modifying the social discount rate used to evaluate initiatives and replace it with one that better reflects the longer-term, intergenerational costs and benefits that pertain to the environment
- improving the presentation and communication of critical environmental information throughout the budget process, including to ministers.

Trying to refit a moving 'super tanker'

Budgets are drawn up under stern deadlines – they are one of the few things a government cannot park. Every year, budget preparation must follow its course like clockwork: priorities are established by ministers, initiatives are developed by agencies, assessments are completed by officials and initiatives are formed into budget packages. At the same time, forays into baseline expenditure are dispatched with the hope of bringing savings back to base camp to quench the endless demands for more spending. This is the unvarnished truth of the political spending cycle that churns tens of billions of dollars.

It is inevitable that only limited time is available for each phase of this process and that decisions will be made with incomplete information to hand. Environmental data are often poor or absent. But even where data are available, they are likely to be fragmented – both spatially and through time – making them difficult to synthesise, much less in a way that can be easily digested by decision makers. Furthermore, the methods used to assess budget initiatives from an environmental perspective do not adequately capture the links between the environment and wellbeing through time and across multiple generations. As a result, the Government is in many ways flying blind as to the full long-term impacts that budget decisions may have on the environment.

Yet the need to link the overall health of the environment with current and, most particularly, future wellbeing has never been so urgent. Improvements to existing methods or the adoption of alternative ones are possible and form the substance of this chapter. But one thing is certain: simply proclaiming the adoption of a *wellbeing budget* does not make it one. The budget process needs to change so that the environment is not only considered but embedded at each phase of the process. This requires better measurement and synthesis of environmental information, improved interrogation of expenditure proposals using purpose-built tools, and better synthesis and communication of impacts throughout the budget process.

Making budget decisions from a te ao Māori perspective could help us to connect the dots here. Examples of how this may work are provided throughout the chapter. A case study informing this review can be found in Appendix 4.

All budgetary decisions require trade-offs to ensure that limited resources are put to their best use. Those trade-offs will ultimately be informed by normative – or, less elegantly – political judgements. But before reaching those judgements, there are many methods and tools that can help decision makers untangle different policy objectives and their associated trade-offs to meet current and future wellbeing objectives. Drawing on impressive literature, there are a wide range of tools that could significantly improve the environment's visibility in wellbeing budgets as they are presently construed. The successful application of these tools is a key component of budget assessments and can have an important influence on final decisions.[1] But this is a vessel that has not only left port but, in one sense, never arrives. The Treasury does not have the luxury of missing a year and undertaking a deep reflection on what it is trying to achieve. The next budget always beckons.

For that reason, four primary recommendations are offered that could improve the way wellbeing budget processes take account of the contribution the environment makes to wellbeing. They have been chosen on the basis that they can be progressed without delay and provide the most immediate opportunities to improve the quality of budget making.

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[1] Durand, 2018.

Each is designed to address some of the challenges identified in the previous chapters where the environment has posed specific problems within the budget process in the name of wellbeing. Proposals to respond to these challenges are as follows.

1. Improving the way the environment is handled in the budget's wellbeing analysis templates and other tools.
2. Improving the quality of information available in the budget process to reflect what is known about future risks, uncertainty and tipping points.
3. Reviewing the way cost–benefit analysis (CBA) is applied to budget initiatives to ensure that budget proposals with enduring benefits to future generations are not effectively discounted away to nothing.
4. Improving the presentation of critical environmental information in the budget process.

Beyond these four primary recommendations, there are five 'secondary' recommendations that are no less important but can be tackled over a longer time-horizon.

The recommended actions are in no way comprehensive. They should be viewed, rather, as points of leverage to improve a process that is still relatively new and evolving.

Ensuring that investment decisions accurately reflect the value derived from the environment

The natural environment possesses multiple attributes that contribute to a wide range of outcomes that are valued – such as the provision of life-supporting ecosystem services. The lack of commensurability or comparability between different attributes – especially when some of these dimensions are depletable and others are not – represents a tension for a budget process that needs to make trade-offs between fiscal expenditure within the domain of the environment, across other domains of wellbeing, and through time.

While some aspects of the environment are traded in markets, many aspects of the environment are not. Moreover, even when aspects of the environment *are* traded in markets, only some of the costs and benefits of the environment are valued. This represents a challenge for a budget process that assumes that very different (incommensurable) criteria can be reduced to a single dimension. This is particularly apparent where the analytic tools used to judge proposals seek to provide an estimate of costs and benefits even when these are only partially available.

One approach to dealing with better valuation of the environment is to allow impacts to exist across multiple dimensions. In this approach, multiple attributes are not reduced to a single attribute using a single unit like money. Rather, it is accepted that different policies will have strengths and weaknesses across multiple attributes. This can be achieved using methods such as multiple criteria analysis or, where a single quantifiable outcome is concerned (e.g. carbon dioxide emissions), cost-effectiveness analysis can be used.

A second approach is to improve the way that environmental value is represented before it is reduced to a single dimension. Better measurement and estimation of underlying value would go some way to improving the quantification of input values. Improved representation of underlying value thus improves estimates of the costs and benefits of a particular intervention. This approach is compatible with monetisation and traditional CBA.

The first two recommendations suggest alternative approaches to CBA. The final recommendation suggests improvements to updating environmental values that are used in CBA.

Update wellbeing analysis templates used for the assessment of budget initiatives

The analysis of wellbeing is at the heart of producing budget initiatives for wellbeing budgets.[2] It requires agencies to consider a broader range of outcomes to understand progress and impacts across society and into the future.

The tendency for budget processes to privilege short-term outcomes – a tendency that a wellbeing approach was designed to counter – has become embedded into wellbeing analysis. While wellbeing analysis does not strictly limit what environmental information agencies can supply, the extent to which existing templates embed environmental considerations (including intertemporal trade-offs) seems to have had practical implications for the information that agencies submit. It has also had implications for the analysis they use in the production of budget initiatives – in particular, the extent to which long-term and intergenerational concerns are included.

Insofar as the information contained in budget initiatives is provided to the Treasury, it also has implications for the information that is communicated to decision makers. If analysis of the impact of an initiative on capital stocks, resilience or sustainability is not completed by agencies, this cannot be communicated to ministers.

Environmental considerations framed in terms of the domains of current wellbeing are currently integrated into the Treasury's wellbeing analysis templates. While the budget initiative template does request information on the long-term impacts of initiatives relative to domains, this could be extended to include natural capital and environmental thresholds so that intergenerational impacts can also be understood.[3]

Better orientation towards intergenerational wellbeing (capital stocks) is probably the area where environmental considerations could most be improved. While the LSF would ideally provide structure for this integration, it currently has an under-conceptualised understanding of the environment as wealth (2021 LSF) or natural capital (2018 LSF).[4] However, some guidance can be taken from the extensive international literature on natural capital and Table 5.1 provides an example of what a natural capital approach to wellbeing analysis might look like, where blue areas represent suggested additions to the wellbeing analysis framework.

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[2] For more information on wellbeing analysis templates, see Appendix 2.

[3] These capital stock considerations were included in Budget 2019 templates but were removed from subsequent budgets. The development of budget initiatives is discussed further in chapter three.

[4] Limits to the LSF from the standpoint of the environment are discussed further in chapter two.

The introduction of sustainability within the 2021 LSF offers a new analytic lens for considering environmental impacts and opportunities within the wellbeing analysis templates.[5] While the capital stocks model is an explicit framing of the Brundtland declaration, relevant environmental considerations for the analysis of sustainability include impacts on critical aspects of natural capital, which may not be valued appropriately even when best practice valuation methods are used. Other considerations are impacts on elements of the natural environment that are characterised by thresholds and tipping points, in which case officials undertaking initiative assessment (and decision makers) should be aware that these initiatives deal with non-marginal and potentially irreversible impacts. Explicit consideration of a biophysically grounded understanding of sustainability would help identify initiatives that deal with features of the environment that are challenging for budget processes, including traditional analytic tools such as CBA. Table 5.2 provides an example of what a biophysically grounded approach to sustainability might look like. Again, blue areas represent questions that are not currently asked.

Table 5.1: Recommended updates (in blue) to natural capital in the Treasury's wellbeing analysis templates.[6]

Capitals	Describe the impacts and its magnitude (Increase, decrease or maintain [comment])	Realised in < 5/5–10/10+ years
Financial/Physical Capital	(e.g. decrease). This initiative draws down financial capital to fund the cost of vaccinations.	e.g. < 5 years' cost is immediate
Human Capital		
Natural Capital	Impact on the extent, structure and condition of depletable ecosystems (e.g. forests, woodlands, rivers, lakes, oceans, coasts, wetlands, grasslands, croplands and urban parks).	
	Impact on depletable ecosystem service flows: provisioning services (e.g. food, fibre and energy); regulation and maintenance (e.g. of climate, river, flow and pollination); cultural services (e.g. recreational and spiritual use of nature).	
	Impact on depletable abiotic assets (e.g. minerals, fossil fuels, ozone layer, gravel).	
	Impact on depletable abiotic flows (e.g. phosphate fertiliser, radiation protection).	
Social Capital		

[5] A biophysically grounded analysis of sustainability would act as a valuable addition to a reintroduced analysis of resilience, another analytic lens included in the draft 2021 LSF.

[6] Developed from Haines-Young and Potschin (2018) via Common International Classification of Ecosystem Services (CICES) and Budget 2019 wellbeing analysis templates and based on 2018 LSF.

Table 5.2: Recommended implementation (in blue) of the sustainability analytic lens into the Treasury's wellbeing analysis templates.[7]

Analytic lens	Describe the impacts and its magnitude	Realised in < 5/5–10/10+ years
Distribution	How is our aggregate wealth and wellbeing distributed across time, place and groups of people? How does the distribution of our wealth and wellbeing across institutional spheres and individuals align with alternative theories or perceptions of fairness or equity?	
Resilience	Do individuals, collectives, institutions, organisations and the environment have an ability to adapt to or absorb stresses and shocks?	
Productivity	How effectively is our wealth used to generate wellbeing and things of economic value?	
Sustainability	How well are we safeguarding our national wealth for the benefit of future generations?	
	Impact on non-renewable dimensions of wealth.	
	Impact on renewable and biophysical wealth (beyond rate of renewability).	
	Impact on wealth characterised by biophysical thresholds and tipping points.	
	Impacts on critical aspects of wealth (i.e. aspects of natural capital that are life-supporting and lack substitutes).	

Wellbeing analysis must be more than an exercise in compliance. It should be integrated early in the process and continue throughout the development of budget initiatives. The process should integrate information from other tools and methods (e.g. forecasting, CBA, intergenerational analysis, risk–opportunity analysis, sustainability assessments) to provide a more holistic view of each initiative and foreground the environmental challenges to the budget process (for an example of how a holistic approach is used by a Māori business, see Box 5.1). New guidance, training and other support systems should be made available across government so that agencies are able to make full use of wellbeing analysis in the preparation of budget initiatives. This includes better information and guidance on the LSF.

[7] Developed from Budget 2019 wellbeing analysis templates and based on 2021 LSF.

Box 5.1: Te Arawa Lakes Trust

Similar to wellbeing analysis, Te Arawa Lakes Trust (TALT) uses frameworks like Te Tūāpapa o Ngā Wai o Te Arawa and tools such as an investment matrix to make business and budgeting decisions that will have impacts now and in the future (see Appendix 4).[8]

The Trust also uses other, non-quantitative sources of information to assist with budgeting decisions and look at all of their priorities, taking a whole-of-system view. Discussions focus on how to balance risks and opportunities, and in particular how that will impact on the environment.

> "TAML assess and manage financial and nonfinancial returns in a nuanced way, including for example, balancing considerations such as employing whānau, improving the lakes, and the longevity and sustainability of taonga and legacy assets against financial considerations."[9]

Decisions by both the Trust and TAML are only made after considering their guiding principles, including hunga tiaki (sustainable protection of taonga), where the relationship with a resource is beneficial to the resource and then to people. Eight other principles exist, of which five are related to the environment.

Key recommendation 1.1: Update the wellbeing analysis template to better reflect the importance of the environment.

The Treasury should be responsible for the implementation of this recommendation. **Agencies** should be responsible for undertaking the analysis required for these templates.

Update budget guidance documentation to include information on the use of cost-effectiveness analysis

Cost-effectiveness analysis, like CBA, aims to assess the cost of a project in monetary terms, while benefits are measured in a different unit. Cost-effectiveness analysis compares the relative costs of different courses of action to achieve a common outcome (e.g. reduction in carbon dioxide) against a common criterion. The unit of measurement chosen for the benefit should be appropriate to the problem and consistent with the outcomes that are being sought within a wellbeing framework. Cost-effectiveness analysis is most useful when alternative options are being considered that aim to achieve the same quantifiable outcome. For example, cost-effectiveness analysis is used extensively in the health sector to assess the impacts of interventions on the number of life-years saved, while cost–utility analysis assesses quality-adjusted life years.[10]

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[8] See https://tearawa.io/te-arawa-cultural-values-framework/ [accessed 24 September 2021]. An investment matrix is a table for comparing different investment options against different criteria.

[9] Mika, 2021, p.63.

[10] Cost-utility analysis is a type of cost-effectiveness analysis that compares different procedures and outcomes relative to a person's quality of life.

When applying cost-effectiveness analysis, it is assumed that options are directed to outcomes with an identical numeraire. The effectiveness measures can then be combined with costs to provide a cost-effectiveness evaluation of the different alternatives. For example, a policy goal may wish to reduce greenhouse gas emissions. Under this scenario, the costs for each of the different options alongside the expected reduction in carbon dioxide emissions are estimated. The option that achieves the most 'cost-effective' reduction in carbon dioxide emissions per dollar spent would then be the preferred option, all else being equal. Assessing the climate impacts of a policy – for example, in the context of the climate implications of policy assessment (CIPA) requirement administered by the Ministry for the Environment – could be supplemented by a cost-effectiveness analysis where carbon dioxide emissions reductions is the outcome.[11]

A weakness of cost-effectiveness analysis is that it is restricted to circumstances in which the alternatives being considered are aimed at accomplishing the same measurable end goal. It cannot compare alternatives with different goals.[12] This is problematic from an environmental perspective where multiple trade-offs exist within and outside environmental concerns.

In addition, it is not a useful tool for the assessment of co-benefits. Rather than taking into account the full spectrum of outcomes associated with an initiative, it is only able to capture a single outcome. A further weakness of this approach is that it cannot make an overall determination of whether an intervention is worthwhile from a societal perspective or whether monetised benefits exceed monetised costs. It can, however, assess whether an intervention represents value for money relative to previous interventions, or other interventions that target the same goal (e.g. a reduction in carbon dioxide emissions).

Recommendation 1.2: Update budget guidance to include information on the circumstances in which cost-effectiveness analysis could assist in value-for-money assessments.

The Treasury should be responsible for implementing this recommendation. **Agencies** should be responsible for operationalising this recommendation in the budget process.

Add new environmental values for use in cost–benefit analysis

Although the environment contributes to wellbeing through multiple channels, many of the benefits provided by the environment are not bought or sold in markets and are therefore not subject to valuation through market-based prices. This creates a challenge for analysts undertaking a CBA and for decision makers attempting to prioritise budgetary allocations using metrics derived from CBA.

[11] For more information on the Ministry for the Environment's climate implications of policy assessment (CIPA) tool, see Appendix 2.

[12] Levin and McEwan, 2007.

An alternative to market prices is to generate monetary values from non-market valuation studies. The values database within CBAx currently includes 252 values, of which 22 relate to the environment, including freshwater quality, landfill waste, wetland ecosystem services and a series of values relating to urban development, including traffic congestion and loss of access to open space.[13] The Ministry for the Environment is currently exploring the addition of other environmental values. This is an initiative that should be encouraged. While there are multiple methods and approaches for estimating environmental values, this diversity of approaches should not be used as an excuse for inaction but embraced so that the context from which values were derived can be applied in different circumstances.

Budget initiatives often represent interventions at the frontier of public policy, where little is known about the size and value of potential impacts.[14] Where impacts can be identified, quantifying and monetising them is challenging even under ideal circumstances. For many impacts, there is a lack of directly relevant values.[15] The inclusion of additional non-market values relating to biodiversity and critical ecosystems is necessary not only because of New Zealand's unique flora and fauna but also to ensure the value of the environment is appropriately considered during initiative assessments. Such values are also capable of playing an important role in the context of formal baseline reviews.

Because New Zealand's economy is largely biologically based, policymakers are often confronted with decisions involving trade-offs at the margin between competing land uses, which can have a detrimental impact on ecosystems and biodiversity. Values relating to biodiversity and ecosystems, such as those contributing to agricultural output and other provisioning services, may allow a more informed assessment of land use decisions along with the costs and benefits of potential trade-offs. Even so, it must be acknowledged that such estimates still fail to represent the total value of the ecosystem and the utility derived from this ecosystem by society.

Recommendation 1.3: Add new environmental values to CABx for use within cost–benefit analysis.

The **Ministry for the Environment** should be responsible for investigating and advising on new environmental values. **The Treasury** should be responsible for providing guidance to agencies on how values should be used. **Agencies** should be responsible for implementing environmental values appropriately during cost–benefit analysis calculations and in other analytic tools.

[13] The Treasury, 2021a. Previous versions of the database had fewer values. See, for example, The Treasury, 2020b. For more information on the CBAx impacts database, see Appendix 2.

[14] NZIER, 2021, p.4.

[15] NZIER, 2021, p.4.

Mitigating risks, uncertainty and tipping points

Without thriving natural ecosystems, the environment's ability to support life and wellbeing declines. A healthy and thriving environment also supports economic activity and output, securing the welfare and living standards of New Zealanders. When that activity starts to degrade the life-supporting role of natural and biophysical processes, wellbeing across its many dimensions is placed at risk.

There are many risks that threaten the ability of the environment to continue providing for the wellbeing of people in Aotearoa. Climate change is just one example where future risks and tipping points may lead to precipitous declines in our natural ecosystems and agricultural output. There are many others. The risks posed by a proliferation of invasive species, a decline in biodiversity and the extinction of native species are well appreciated by many New Zealanders. But the speed and severity with which these risks may develop and impact on the wellbeing of New Zealanders are not well understood.

In order to address risks, uncertainty and tipping points, three recommendations are offered. The first is to update the LSF Dashboard with better environmental information so that uncertainty and risks relating to critical natural capital can be systematically incorporated into the budget development process. The second is to develop forecasts from environmental trends so the rate of change to critical natural ecosystem conditions can be identified alongside the expected timing of future impacts to environmental thresholds. The third is to develop new scenarios for the assessment of risks, uncertainty and tipping points.

Improve the collection of data used within the Living Standards Framework Dashboard

The LSF Dashboard provides a range of indicators about the contribution of natural capital to wellbeing.[16] This information can be used in the priority formation process and by agencies when developing budget initiatives.[17] This section suggests that better measurement of natural capital and improved understanding about the links between the environment and wellbeing can improve the budget process and the wellbeing of New Zealanders.

Following the Parliamentary Commissioner for the Environment's 2019 report *Focusing Aotearoa New Zealand's environmental reporting system*, the Ministry for the Environment and Manaaki Whenua – Landcare Research have proposed a new research programme to develop a set of core measures that aim to demonstrate the connection between pressure, state and impact and their corresponding effects on wellbeing using an 'ecosystem services' or 'nature's contributions to people' approach.[18] As part of this programme, the Ministry for the Environment proposes the development of a set of new indicators that are consistently measured and maintained along with a framework to synthesise data and link pressures from human and natural factors to the state of natural capital stocks.

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[16] For more information on the LSF Dashboard, see Appendix 2 or see Smith (2018).

[17] The LSF Dashboard is not intended to provide the level of indicator granularity needed for agency or sector policy analysis. Agencies, local government and non-governmental interest groups will want to develop their own wellbeing datasets, with a range of wellbeing data and evidence to suit their own needs.

[18] Ausseil et al., 2021.

The proposed framework represents a good starting point for collecting information on impacts and changes to the condition of the natural environment. More work in this regard needs to occur on the state of the environment from which a baseline can be determined. As the collection and synthesis of information matures, it could be incorporated within the Living Standards Framework Dashboard. The collection, synthesis and presentation of environmental data is crucial if environmental management in Aotearoa is to be taken seriously. It is essential that all environmental information is also publicly accessible to achieve maximum benefit.

This work highlights the importance of better measurement and recording of both stocks of natural capital and flows in the LSF Dashboard. Going further, environmental benchmarks (future targets for the agreeable operating conditions for the environment) and limits (thresholds beyond which negative environmental pressures cannot be increased) across different environmental domains and ecosystem services need to be developed and formally adopted. It is particularly important for limits to be framed around environmental thresholds and future tipping points, where relevant.

Once limits are established, these can be compared with information on the present state of the environment and provide decision makers with a more up-to-date understanding of when environmental limits might be breached, prompting action. Through further research and analysis, the relationship between environmental indicators, benchmarks and limits could be correlated with long-term wellbeing objectives, thereby formalising the link between environmental consequences and wellbeing.

For example, the statutorily mandated environmental limits in the proposed Natural and Built Environments Bill could benefit from being constructed in this way. This would allow for the development of a natural environment early warning system whereby environmental limits that were close to being breached would prompt action for better alignment with wellbeing outcomes and guide the prioritisation of future government expenditure on the environment. In addition, the establishment of environmental limits and benchmarks could also motivate incremental but long-term improvements across different environmental domains.

Key recommendation 2.1: Update the Living Standards Framework Dashboard to include an improved set of longitudinal environmental indicators representing the condition of natural capital.

The Treasury should be responsible for implementing this recommendation. **The Treasury**, **budget clusters**, and **agencies** should be responsible for operationalising this recommendation in the budget process.

Develop the tools needed to generate baseline forecasting on the state of natural environment conditions

In addition to understanding the current state of the environment, it is equally important to be able to assess its likely future given trends to date. Forecasting future environmental conditions under business as usual is essential if changes to the trajectory are to receive serious consideration in budget decision-making processes. It is worth noting that the underlying relationships that govern natural processes for the environment are more stable and may very well be easier to model than many of the economic variables which the Treasury routinely produces.

That said, forecasting the future state of our water, soils and biodiversity is not a straightforward or easy task. Attempting such an exercise immediately confronts two challenges. Firstly, to do it properly requires access to accurate historical records that capture changing conditions across different environmental domains and locations through time. As *A review of the funding and prioritisation of environmental research in New Zealand* noted,[19] those records are frequently lacking. Secondly, even if we had those records, forecasting is made more difficult by the fact that climatic disruption is likely to render historical relationships and interdependencies less valuable.

Yet the development of tools to provide a forward-looking picture of what the future may hold is of critical importance to protecting both built physical assets and natural capital. Not only does the development of historical datasets require regular collection and analysis of scientifically robust information, including mātauranga Māori, but also investment is needed now in developing and applying these new techniques. The task is vast and pressing. Priority areas will need to be identified. This review has had neither the time nor resources to recommend available techniques or prioritise critical-state aspects of the environment across domains and geographies.

This is exactly the sort of investment in information that is unlikely to win attention in a budget round. Its future value is uncertain – but costs are immediate. Launching a project immediately with the goal of beginning to provide guidance to decision makers within five years would be a reasonable way to signal that the impacts of ongoing environmental change to wellbeing are being taken seriously today.

Recommendation 2.2: Develop baseline forecasts or outlooks that provide an indication of how future environmental conditions across different domains of the environment are expected to change over time.

The **Ministry for the Environment** should be responsible for producing future outlooks on environmental conditions. **The Treasury, budget clusters**, and **agencies** should be responsible for ensuring this information feeds into various stages of the budget process.

[19] PCE, 2020a. A copy of the report is available on the PCE website (https://www.pce.parliament.nz/publications/environmental-research-funding-review).

Develop new scenarios to assess future risks and opportunities

A family of methods under the general umbrella of 'futures thinking' can provide analysis to assist with the identification of priorities. This suite of tools has been identified by the Department of the Prime Minister and Cabinet as a useful way to explore the drivers of change and future possibilities under different conditions and assumptions.[20] In short, futures thinking offers tools and frameworks for thinking about the implications of making (or not making) decisions.

For any policy domain where there are long-term, risky or uncertain outcomes, futures thinking provides an approach where issues can be appropriately considered and impacts assessed. It encompasses tools and techniques for addressing 'wicked' or complex problems, and is usually described as a creative and exploratory process. Futures thinking uses divergent thinking to assess risks and uncertainty, rather than convergent thinking that aims to find the most precise answers under stable conditions.[20] The application of such methods across the budget process would be extremely valuable in assessing the consequences that different strategic choices may have on wellbeing outcomes under a range of alternative futures.

The Public Service Act 2020 has introduced a new requirement for departmental chief executives to publish long-term insights briefings at least once every three years.[21] These briefings are designed to provide general information and impartial analysis on the medium- and long-term trends, risks and opportunities that may affect New Zealand. There are clear links and synergies between these long-term insights briefings and the priority-setting phase of the budget process. To the extent that budget priority setting establishes the strategic direction of the budget, it would benefit from an assessment of the medium- and long-term risks and opportunities that may arise from long-term insights briefings.

Scenario analysis is a robust, well-established method for informing strategic thinking through the assessment and comparison of alternative futures. It serves as a valuable decision-support tool by enabling decision makers to strengthen their awareness of alternative future outcomes through the development of narratives around current trajectories, assumptions, drivers, uncertainties and risks through time.[22]

In futures thinking, scenarios are more often used exploratively. Scenarios can be orientated over short time horizons (e.g. the Task Force on Climate-related Financial Disclosures transition risk scenarios) but can also be applied over the medium to long term. Within a climate change context, scenarios are increasingly being used to assess the short- and long-term implications of both physical and transition risks from climate change. The process of undertaking scenario analysis allows decision makers to think about future outcomes by adopting a *whole systems view* for how events may unfold under different assumptions and conditions.

While there is no consensus on the features of what constitutes a scenario, they are often described as a way to explore what is possible, probable or preferable.[23] Using this heuristic, it is possible to define three scenario typologies, thereby helping users to build scenarios that are consistent with the objectives of their analysis (Figure 5.1).[24] Importantly, scenarios offer a way to incorporate complex interdependent factors into present decision making.

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[20] See Department of the Prime Minister and Cabinet (2021).

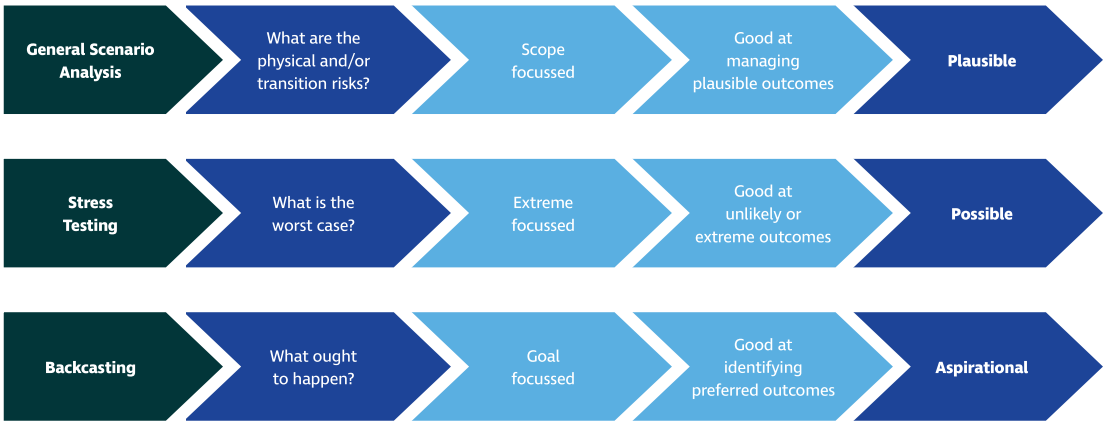
[21] Schedule 6, cl 8 and cl 9.

[22] Kelly et al., 2020.

[23] Rubin and Kaivo-Oja, 1999.

[24] Kelly et al., 2020.

Figure 5.1 shows the different forms of scenario analysis that are increasingly being used by the public and private sectors to assess the impacts of climate change. The same typologies can be used to understand plausible outcomes (general scenarios) to assess risks (e.g. stress testing) and achieve environmental outcomes (e.g. backcasting). All three types of scenarios could be useful for testing budget initiatives in situations that have a range of different environmental outcomes.[25]



Source: Kelly et al., 2020

Figure 5.1: Classes of different scenario techniques that are being used by the public and private sectors to assess the impacts of climate change.

In the first instance, the Treasury and budget clusters should incorporate the challenges and opportunities raised by the long-term insights briefings into their advice on the formation of budget priorities. Budget initiatives would be expected to summarise how they have considered the implications of long-term insights briefings, particularly for initiatives that have multi-year future benefits. These could then feed through to annual budget statements, making explicit how the budget has taken into account the findings of long-term insights briefings. This could feasibly be achieved after the first round of insight briefings has been published.

As a second step, the Treasury and other government agencies could be required to undertake their own bespoke scenario analyses as a way to anticipate and prepare for likely future outcomes and unforeseen risks and establish processes for the achievement of long-term wellbeing outcomes that are consistent under different scenarios. If Māori expectations of wellbeing are to be taken seriously, agencies will need to include expert input when any such scenarios are being developed.

The promoters of budget initiatives would be expected to explain how they have considered the implications of long-term scenarios, particularly for initiatives that have multi-year future benefits. As a starting point, physical and transition climate risk scenarios consistent with the Task Force on Climate-related Financial Disclosures could be developed. Next, other environment-related scenarios could be developed (e.g. the collapse of horticulture or grain and seed crops from exotic diseases, the potential decimation of honeybee populations or the rapid decline of natural habitat and biodiversity).

[25] For a more in-depth look at how scenarios have been used, please see Kelly et al. (2020) and Linneman and Klein (1985).

Recommendation 2.3: Develop new exploratory scenarios that describe alternative possible futures capable of identifying key environmental risks and potential mitigation strategies.

The **Ministry for the Environment** should lead this with respect to the environment, potentially as part of its long-term insights work programme. It should incorporate work from the Ngā Tohu Waiora project on the development of indicators directly linked to the He Ara Waiora framework.[26] **The Treasury**, in consultation with the **Ministry for the Environment** and other **agencies**, should be responsible for developing and providing guidance on the use of scenarios for budgetary purposes. **The Treasury**, **budget clusters**, and **agencies** should be responsible for operationalising the recommendation in the budget process.

Ensuring that the long-term nature of environmental costs and benefits is not ignored

Environmental impacts occur over extended time frames and are enduring. As a result, environment-related expenditure proposals are often difficult to compare with those that see costs and benefits accrue over much shorter durations. This represents a tension for a budget process that is focused on meeting short-term needs. Indeed, it is often the case that spending for the environment has benefits that may not be observable for many years, and where those benefits accumulate over very long time periods, potentially decades into the future. Under present Treasury settings, environmental costs and benefits that occur decades in the future are discounted to a small fraction of their actual value when converted to present-day costs.

There is a risk that officials are incentivised to prefer initiatives offering shorter-term benefits to avoid finding themselves at the back of the budget queue. Such behaviour could be at the expense of long-term sustainable benefits on which intergenerational wellbeing outcomes depend. The following section makes one recommendation designed to improve the basis on which long-term considerations can be advanced in the budgetary process, and that is the modification of the social discount rate for assessing budget initiatives.

Discounting for a better future

The use of discounting in economic analyses that aim to quantify costs and benefits into the future is a controversial topic. The underlying assumption for the application of a discount rate is that the price of a unit of consumption in the future is lower than the price of a unit of consumption today. The discount rate simply represents the rate of change given to the price of consumption across time.

The discount rate is particularly important for CBA. In CBA, a common metric is required to assess various costs and benefits (e.g. health impacts, new motorways, expansion of natural reserves). When costs and benefits occur over time, CBA also requires that costs and benefits are placed on a common temporal metric to account for changes in the price of consumption in the future. The most common approach is to convert all future costs and benefits into present-day values.[27]

[26] The Ngā Tohu Waiora project is a Māori-led project supported collaboratively by Te Puni Kōkiri and the Treasury to design indicators that measure the He Ara Waiora framework. Te Puni Kōkiri, pers. comm., November 2021.

[27] O'Mahony, 2021.

One consequence of using a positive discount rate is that at some future point all costs and benefits cease to matter as they are given an implicit present value of zero. A high discount rate has the effect of discounting costs and benefits in the future more, while a low discount rate places relatively higher emphasis on future costs and benefits. In situations when current activities impose a high burden on future generations, these costs appear insignificant when discounted back to present-day dollars. Similarly, actions taken now that offer a potentially large benefit to future generations may see those benefits significantly understated once those benefits have been discounted using standard assumptions.[28]

Using the Treasury's discount rate of five per cent, it can be shown that costs and benefits occurring in 50 years are worth just nine per cent of what they are worth in present-day dollars. This is particularly problematic for the environment, where impacts occur over very long time frames.

There are several important insights from behavioural economics that show many of the assumptions of the standard discount utility model do not correspond to how people naturally discount across time or capital. These include the following.[29]

- Discount rates are treated as constant through time, but experimental evidence suggests that discount rates decline as individuals look further into the future.[30]
- Discount rates are treated as independent of the size of costs and benefits, but experimental evidence suggest people have lower discount rates for larger payoffs than they do for smaller payoffs.[31]
- Costs and benefits are given the same discount rate, but experimental evidence suggests people place a higher discount rate on gains than losses (i.e. people place more importance on losing something than gaining something).[32]
- The standard discount utility model assumes people prefer positive payoffs sooner rather than later. Experimental evidence suggests that people may prefer positive sequencing (i.e. the anticipation of a future benefit has a positive utility).[33]
- Theoretical and experimental evidence suggests a lower discount rate should be used when faced with higher uncertainty in the future.[34]
- Discount rates can vary for different types of capital (e.g. natural capital is valued differently than manufactured capital).[35]

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[28] O'Mahony, 2021.
[29] See Streich and Levy (2007).
[30] Soman et al., 2005.
[31] Streich and Levy, 2007.
[32] Streich and Levy, 2007.
[33] Streich and Levy, 2007.
[34] Howarth, 2009.
[35] Kula and Evans, 2011.

For these reasons there is no completely objective way of determining a social discount rate. Ethical, political and economic considerations all play a part. Discounting requires normative judgements that are based on personal values and assumptions about present and future preferences. Because of this, different governments around the world have adopted a variety of different approaches and assumptions to estimating discount rates.[36] As shown in Table 5.3, many Organisation for Economic Co-operation and Development (OECD) countries have now issued guidance on undertaking analysis that requires the consideration of long-term impacts. There is now a clear trend for high-income countries to implement low and declining discount rates through time.

Table 5.3: A comparison of the social discount rates used by different OECD countries.[37]

Country	Risk-free discount rate (%)	Overall discount rate (%) (short to medium term)	Rationale	Long-term discount rate
United Kingdom	3.5%	For all projects and regulatory analysis: 3.5%	Simple Ramsey rule, SRTP[i] Growth risk not incorporated, project risk is minor	The forward rate (%) for time horizon in years (H) is respectively: H = 0–30 years = 3.5% 31–75 years = 3% 76–125 years = 2.5% 126–200 years = 2% 201–300 years = 1.5% 301+ years = 1%
United States	For CBA:[ii] 3%, with sensitivity up to 7%	Depending on source of funding, projects and regulatory analysis: 3%–7%	7% = average corporate returns (SOC)[iii]	OMB[iv] (2003) recommends lower rate for intergenerational projects, US EPA[v] (2010) recommends 2.5%
France	2.5%	For risky projects: 2.5% + β[38]× 2%	Risk-free rate of return Ramsey rule	Risk-free rate: declining to 1.5% after 2070 time horizon Risky premium: 2% for β = 1 rising to 3.5% after 2070 time horizon

[36] OECD, 2018, Section 8.1.

[37] OECD, 2018, Table 8.5.

[38] In the CAPM model, β (beta) of the project or investment represents the relationship between returns of the investment and the returns of the market. Investments with a similar relationship will report a beta of one, while investments that are riskier than the market will yield a value greater than one.

Norway	2%	Risky projects and regulatory analysis: 3%	CAPM[vi] approach, risk-free return to government bonds	Risk-free rate declining to 1% after 100 years
Netherlands	0%	All projects and regulatory analysis: 3%	CAPM, SOC	Accepts DDRs,[vii] but with real interest rates < 0% opted for fixed risk-free rate of 0%, and fixed systematic risk premium
Australia[39]	7% but recommendations vary by state	7% with sensitivity testing in the range 3%–11%	SOC	No guidance on long-term discount rate
New Zealand[40]	6% for telecommunications, media and technology, IT and equipment, knowledge economy (R&D) 5% for everything else	6% for IT and 5% for all other projects	CAPM, SOC	No guidance on long-term discount rate

Notes:

[i] Social rate of time preference

[ii] Cost–benefit analysis

[iii] Social opportunity cost of capital

[iv] Office of Management and Budget

[v] United States Environmental Protection Agency

[vi] Capital asset pricing model

[vii] Declining discount rates

There are several important and interrelated factors that shape the influence of discounting in cost-benefit analysis. The first relates to the assumptions which underpin the discount rate and determine its overall magnitude. The second is the time horizon over which costs and benefits are estimated. The third is how the discount rate is applied through time.

All three factors are interrelated to some extent. Selecting a long time horizon with a high discount rate is meaningless as long-term costs and benefits will be discounted to zero (see Figure 5.2). At the same time, having a low discount rate but a short time horizon will ignore long-term costs and benefits. Under any circumstances, a reasonable terminal value representing the full stream of future costs and benefits should be included within CBA.[41] In practice, this is not always the case.

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[39] See guidance note from the Australian Department of the Prime Minister & Cabinet (2016).

[40] See https://www.treasury.govt.nz/information-and-services/state-sector-leadership/guidance/financial-reporting-policies-and-guidance/discount-rates.

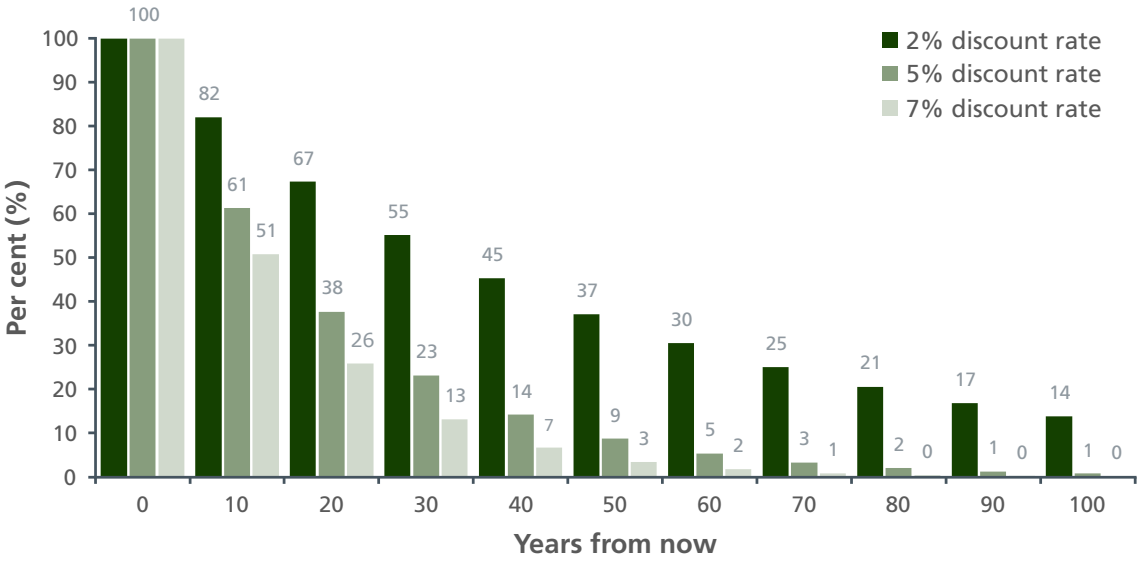
[41] A terminal value is the sum of all remaining (uncounted) estimates in the future time series. A terminal value therefore aims to capture the full-life costs and benefits until future values asymptotically reach zero.

Why the size of discount rate matters

In commercial applications, the discount rate is commonly defined as the opportunity cost of capital. Because social discounting is a normative, values-driven concept, it needs to reflect society's views on the importance of consumption through time. It is therefore a political decision, not a technocratic one. A survey of economic scholars found that three-quarters of those surveyed were comfortable with a discount rate of two per cent for long-term public projects.[42] Accounting for uncertainty over the longer term and adopting a precautionary approach to future risks requires that a greater weight is applied to worst-case scenarios, implying a smaller discount rate is used.[43]

The Treasury recommends that pre-tax discount rates of five per cent or six per cent be used,[44] unless a project-specific discount rate can be determined on objective grounds.[45] Table 5.3 shows that the social discount rates applied in New Zealand are higher than some comparable advanced economies.[46] Five per cent is not appropriate when considering costs and benefits that occur over long time horizons, particularly when assessing impacts to the environment.

As Figure 5.2 demonstrates, the discount rate can have a sizeable effect on the value placed on future costs and benefits. Even when a lowish discount rate of two per cent is applied, the weight placed on future costs and benefits in 100 years is only 14 per cent when converted to present-day dollars. What is clear from this assessment is that the present discount rate of five per cent is inconsistent with a wellbeing approach that aims to improve intergenerational equity. Unless cogent reasons can be advanced to support higher social discount rates in New Zealand than abroad, a much lower rate should be applied to proposals delivering intergenerational benefits.



Source: PCE

Figure 5.2: A comparison of different discount rates and the resulting discount factor using constant exponential discounting.

[42] Drupp et al., 2018.
[43] Weitzman, 2007; Dasgupta, 2021, p.282.
[44] See guidance note from the Australian Department of the Prime Minister and Cabinet (2016).
[45] The Treasury, 2020c.
[46] OECD, 2018, chapter eight.

Why the time horizon matters

Discounting in its present form confuses two quite separate aspects. The first is how individuals discount costs and benefits within their own lifetime (i.e. *intra*generational discounting). The second is how they may discount costs and benefits to future generations (i.e. *inter*generational discounting). There is no reason to conflate these two aspects as people place different values on costs and benefits that may occur in their own lifetime when compared to future unborn generations.

Including the full long-term impacts of a policy is particularly important for issues such as climate change that will continue to have impacts over many generations. The Stern Review famously used a discount rate of 1.4 per cent for assessing the long-term impacts of climate change, which was lower than any other discount rate being applied within climate change studies at the time.[47] Even this may be too high. Some scholars have even put forward arguments for using negative discount rates for long-term impacts such as climate change.[48]

Adopting a longer-term view of costs and benefits in relation to the natural environment is also more in line with a te ao Māori perspective, which adopts an intergenerational view looking out many generations into the future. For example, Te Arawa Lakes Trust is responsible for iwi assets and considers the impacts on their mokopuna and beyond when making budgeting decisions. The trust will forgo something today to ensure a better environment for the future (see Appendix 4). Even very low discount rates may not fully represent the connection between Māori and ecosystems, as Māori seek to ensure a balance between benefits received intergenerationally.[49] If Māori and other communities prioritise the wellbeing of future ecosystems because of their cultural beliefs, then a negative discount rate might better illustrate their positions.

Why the application of the discount rate matters

If the benefits of the natural environment are to be appropriately captured in decisions taken today, we need a discount rate methodology that adequately values benefits and accounts for costs over both the short *and* longer term. This requires reconsidering the assumptions on which discounting rests.

Historically, economists have used two dominant approaches to setting the social discount rate:

1. The social opportunity cost of capital (SOC) approach defines the discount rate as the rate of return that a decision-maker could earn on a hypothetical 'next best alternative' to a public investment with a similar risk.
2. The social rate of time preference (SRTP) approach is based on maximising utility of consumption to society through time. It therefore explicitly considers the value society places on the welfare of future generations.

The Treasury presently adopts the SOC approach to determine the social discount rate.[50] This approach is incompatible with a wellbeing approach because it does not explicitly consider the marginal rate of intertemporal consumption (i.e. changing preferences to wellbeing over time). Because the SRTP approach requires the value of future time preference to be made explicit, it is better aligned with a wellbeing approach than the current SOC approach.

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[47] Stern, 2008, p.8.

[48] Fleurbaey and Zuber, 2012.

[49] Reid, 2021.

[50] Creedy and Passi, 2017.

Dual discounting

An approach known as dual discounting may also be appropriate where there is a clear argument for considering the costs and benefits of environmental impacts as distinct from other costs and benefits using different discount rates.[51] It is based on the premise that natural capital should be treated differently from other forms of capital, such as financial or physical capital, because the other forms of capital can be more readily traded on markets and therefore compared with alternative competitive investments. Choosing a sustainable environmental discount rate requires a rate that will maximise utility for current and future generations whilst at least maintaining the present stock of natural capital.[52]

Hyperbolic discounting: A time-varying discount rate

Discount rates used by the Treasury use a constant proportionate rate, a method known as constant exponential discounting.[53] Under this method, discount rates emphasise short-term costs and benefits at the expense of costs and benefits in the medium term (20–50 years) and practically ignore the longer term (50–100 years), where rates often converge to zero (see Figure 5.3). In practical terms it means that long-term future costs and benefits stop being considered as relevant to decisions because they are so heavily discounted.

By contrast, a method known as hyperbolic discounting applies a progressively lower rate as the benefits and costs become more distant in time.[54] Under this method, discount rates still place greater emphasis on the short-term costs and benefits, but because the rate reduces over time, there are higher costs and benefits being placed on the medium to long term. Because future time periods are discounted less, the time horizon over which policy options can be considered can also be extended, allowing for the consideration of costs and benefits much further into the future.[55]

The use of hyperbolic discounting is now well established as a legitimate approach in both the academic literature and for use in public policy.[56] It is increasingly used for the evaluation of public projects in several OECD countries (United Kingdom, France, Norway and Denmark). Under guidance from the United Kingdom's *Green Book*, costs and benefits occurring in the first 30 years of a programme are discounted at 3.5 per cent, with a schedule of declining discount rates for longer time periods. There is also strong theoretical and empirical support for the approach when considering applications with risk-free discount rates or for publicly financed projects with costs and benefits over long time horizons.[57]

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[51] Kula and Evans, 2011.

[52] Famously, Stern used a pure rate of time preference of $\delta = 0.1\%$, recognising the need for a low discount on future welfare and intergenerational equity, particularly in the context of climate change.

[53] The Treasury, 2020c.

[54] Constant exponential discounting can be defined using the standard exponential discount curve, where the value of receiving something in the future at time t is a fixed fraction s(t) of its present value, and where λ is the constant discount rate.

$$s(t)=e^{-\lambda t}$$

Using an exponential discount rate, the value λ is always constant – that is, a person discounts the time between 50 and 51 years in the future the same as the time between 5 and 6 years from now. In contrast, hyperbolic discounting can be defined using the following equation, which accounts for a varying discount rate through time. In this equation, k represents the hyperbolic discount rate.

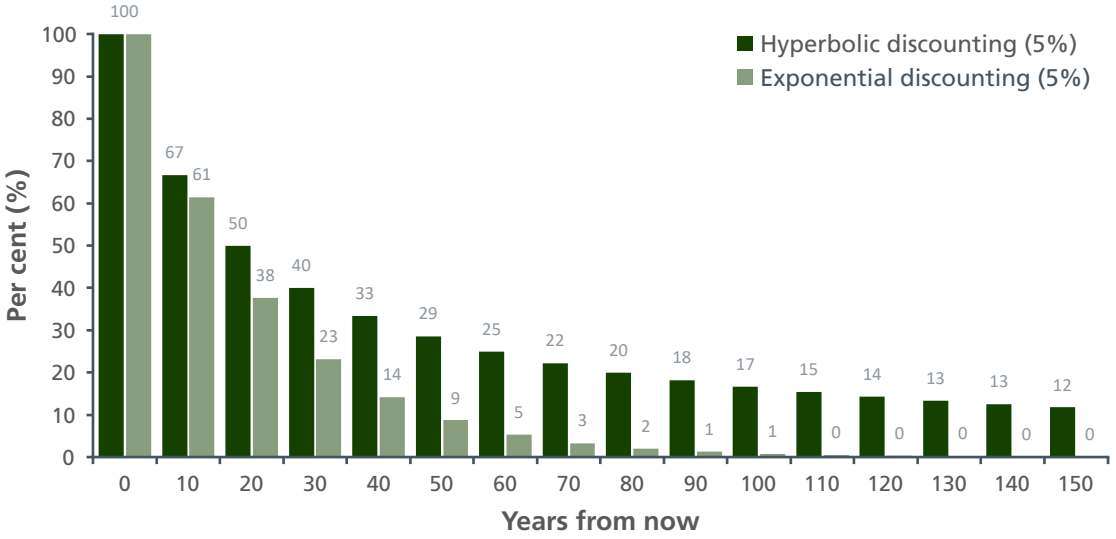
$$s(t) = \frac{1}{1+kt}$$

[55] New research suggests that time inconsistency with hyperbolic discounting can be overcome and its application can lead to the long-run social optimum solution with maximum sustainable yield (Strulik, 2021).

[56] Richards and Green, 2015.

[57] Hepburn et al., 2010; Exton and Shinwell, 2018.

Expert support for hyperbolic discounting is impressive.[58] There is a precautionary intuition that discount rates should be lowered to adjust for uncertain or riskier futures.[59] Figure 5.3 below demonstrates the effects of different discount rates applied to budget initiatives. It compares the resulting discount factor for constant exponential discounting and hyperbolic discounting using the Treasury's standard discount rate of five per cent.[60] When comparing the hyperbolic rate to the constant exponential rate in 100 years, the hyperbolic rate has a discount factor that is 17 times higher than the constant exponential rate. The difference is not trivial. Compared with constant exponential discounting, time-consistent hyperbolic discounting leads to more conservative resource use and therefore better environmental outcomes (see Box 5.2).[61]



Source: PCE

Figure 5.3: A comparison of constant exponential discounting and hyperbolic discounting and the resulting discount factor using a discount rate of five per cent.

[58] Weitzman showed through a survey of 2,160 economists that even if every economist believes in a constant discount rate, the distribution of opinion between economists implies the effective discount rate should decline over time. A panel of leading authors in the field of environmental economics also concluded that the discounting of costs and benefits of long-horizon projects should be undertaken using a hyperbolic rate (Weitzman, 2001).

[59] Dasgupta, 2021, p.282.

[60] The discount factor is the value of an asset in a particular period for a specified discount rate: net present value = discount factor × asset value. For example, from Figure 5.3, the discount factor in 40 years for constant exponential discounting at a 5% discount rate is 14%, so costs and benefits in this year would have a weight of 14% compared to a weight of 33% for hyperbolic discounting.

[61] Strulik, 2021.

Box 5.2: A hypothetical hydroelectricity project

The difference between hyperbolic discounting and constant exponential discounting can be illustrated using basic financial data for a hypothetical hydroelectricity project. On the basis that a well-constructed hydroelectricity dam can be expected to last for 100 years, the net present value of the project is estimated using both constant exponential and hyperbolic discounting using an analysis period of 50 years and 100 years. A range of discount rates is applied with an interval from 0.5 to 7.5 per cent. The expected cost of construction is assumed to be $4 billion.[62] Half of this cost is spent in year one, while the remaining $2 billion is spent on construction over the first five years. In year six the dam generates five terawatt hours of electricity annually, which is sold on the wholesale electricity market generating net revenue (benefits) of $300 million per year.[63]

As can be noted from Table 5.4, the difference between hyperbolic and constant exponential discounting is minimal for low discount rates, but these differences increase rapidly as the discount rate is increased. The project would not be viable using a discount rate of 7.5 per cent and constant exponential discounting. While this is a hypothetical example with constant annual net benefits, a similar calculation could be undertaken to represent annual net costs such as environmental deterioration over many decades. This analysis highlights how different discounting approaches can weigh on decision making, particularly if the benefits of a project had ended but environmental consequences continued. An example of this is the construction of nuclear power plants. The benefits only accrue while electricity is being produced but there are many longer-term costs to the environment and to people who have to deal with the nuclear waste over many centuries.

Table 5.4: Hypothetical net present value calculation for the hypothetical hydroelectricity project.

Discount rate	Net present value ($NZ billions)			
	Constant exponential discounting		Hyperbolic discounting	
	50 years	100 years	50 years	100 years
0.5%	$7.7	$17.9	$7.8	$18.7
1.0%	$6.2	$13.2	$6.6	$15.1
2.0%	$3.9	$7.25	$4.8	$10.8
3.0%	$2.3	$3.9	$3.7	$8.3
4.0%	$1.1	$1.9	$2.8	$6.6
5.0%	$0.2	$0.65	$2.2	$5.4
7.5%	**(–$1.1)**	**(–$1.0)**	$1.1	$3.4

[62] Operational and other costs are excluded for simplicity.

[63] Calculations are completed using real New Zealand dollars where electricity prices are assumed to stay constant.

Key recommendation 3.1: Modify the social discount rate currently used to evaluate initiatives and replace it with one that better reflects the longer-term, intergenerational costs and benefits that pertain to the environment.

The Treasury should be responsible for co-ordinating a public review on the use of social discount rates across government. This review should have Māori representation.

Improving decision making and communication in the face of environmental complexity

Ministers have the unenviable job of allocating finite tax revenues to a seemingly limitless number of funding requests. The task is generally undertaken under very tight time frames with limited information. These difficulties are compounded when budget initiatives attempt to address complex policy areas, as is often the case with initiatives involving environmental consequences. Improving decision making in the face of complexity requires better processes and better synthesis and communication of critical information.

Investment in training officials to use budget analysis tools and then be able to communicate their findings is very important. The Ministry for the Environment and the Treasury should work together to ensure that officials working on the assessment of environmental impacts possess the skills to use these tools and be able to provide adequate interpretation to ministers.

In the following section, a recommendation that can be implemented immediately is made relating to the communication and presentation of environmental information to the Minister of Finance and Cabinet. A second, longer-term recommendation is made on the development of a new multicriteria analysis tool for the analysis and communication of broader impacts of budget initiatives.

Ensure that complex environmental impacts of initiatives are effectively summarised and communicated across the budget process

The evaluation of environmental impacts is not a mandatory part of the budget process let alone their communication to decision makers. At times, agencies will evaluate environmental impacts as part of their own internal assessment process, though this information may not be included in formal budget initiatives. Moreover, there is no standard or formal process for assessing the environmental impacts of budget initiatives during initiative assessment. The evaluation and communication of environmental impacts should be considered mandatory throughout the budget process where there is potential for significant and direct environmental effects, either positive or negative.

At a summary level, each initiative that is presented to the Minister of Finance should include not just information on the financial costs, but also quantitative and qualitative information on the expected impacts of the initiative across different wellbeing domains, including the environment. This should include the anticipated impacts to intergenerational wellbeing through changes to natural capital and potential risks to the environment. Such information should ideally be quantitative and qualitative as needed to do justice to environmental problems that frequently involve complex attributes. The Minister needs more than generic information on value for money applied to a seemingly homogenous environmental domain.

A scale of anticipated impacts across different dimensions could also be provided to decision makers. When evidence is available, quantitative assessment of likely impacts should be included to understand the degree of change that is expected. In the first instance this could be as simple as a traffic light system, but over time could advance to more detailed assessment such as a ten-point scale, ranging from –5 to +5 signalling both the negative and positive impacts of an initiative for a particular criterion. Both budget packages and individual initiatives should include summary information on the expected environmental, intergenerational and current wellbeing impacts. When budgets are released, such information should be made available to the public for further scrutiny so that the trade-offs that have been made are transparent and readily identifiable.

Below is a representation of what a potential summary table going to the Minister of Finance might look like (see Table 5.5). In this example, budgetary implications are presented alongside CBA metrics and broader wellbeing and environmental impacts. Here, the impacts of an initiative are presented on a ten-point scale ranging from –5 to +5, where negative numbers mean the initiative is likely to have negative impacts.

In Table 5.5, financial information is communicated on the left, including the value sought and the net present value from any CBA that may have been undertaken. The remaining columns give an impact score across six relevant criteria. These criteria include impacts on:

- current wellbeing
- future wellbeing
- tangata whenua
- natural capital
- social and human capital
- environmental thresholds.

These criteria have been colour coded so that problematic initiatives (those with brown cells) and promising initiatives (those with blue cells) can be easily identified. Such a scoring system allows trade-offs between criteria to be made explicit. For such a summary approach to work, each score would need to be supported by detailed analysis that could be requested by decision makers. It would also be important for qualitative information on each initiative to be available alongside any high-level scoring metrics.

Table 5.5: Example set of information to be provided to cluster ministers and Budget Ministers (including the Minister of Finance).[64]

Initiative	Opex and capex total	Net present value	Impacts on					
			Current wellbeing	Future wellbeing	Tangata whenua	Natural capital	Social and human capital	Environ-mental thresholds
	$ million	> 0 Good	–5 to 5	–5 to 5	–5 to 5	–5 to 5	–5 to 5	Text
Example 1	21.0	1.5	2	3	0	3	3	[Text]
Example 2	8.0	4	5	2	3	–1	2	[Text]
Example 3	6.0	–1	4	–1	–2	2	–1	[Text]

The proposed summary table has a number of advantages in comparison with the form of the summary information currently communicated to ministers: it disaggregates current and future wellbeing, draws attention to both positive and negative impacts across domains of current and future wellbeing, and more readily allows for trade-offs between current and future wellbeing. This makes it easier to allow for considerations of resilience and sustainability to be fed into decision making.

Key recommendation 4.1: Improve the presentation and communication of critical environmental information throughout the budget process, including to ministers.

The Treasury should be responsible for developing the communication strategy and templates to be used.

Develop a new cross-agency multicriteria analysis tool

The policy appraisal tool (PAT) developed by the Ministry of Transport provides a useful quantitative assessment of impacts across multiple criteria.[65] One form of multicriteria analysis allows relevant criteria to be assigned weights where initiatives are then scored against how they meet each criteria. This is distinct from the wellbeing analysis templates where criteria are not explicitly weighted and scored. A multicriteria analysis tool that adopts a quantitative scoring and weighting system should be developed for use by multiple agencies for the in-house screening of initiatives across different criteria. The benefit of providing such a tool is that it allows rapid appraisals of the strengths and weaknesses of budget proposals and their associated non-financial impacts.

[64] An example of how to score for impacts on tangata whenua could be to use the Mauri Model by Morgan 2006. The Mauri Model is a scale that can be negative or positive providing an overall score for the mauri of a place. It has been used to score environmental issues based on how it does or does not degrade mauri, and can be used to score environmental interventions.

[65] For more information on PAT, see Appendix 2.

The word *rapid* is important here. The budget process is highly constrained and stops for no one. A tool that allows for rapid assessment is necessary if it is to be useful. The new tool could also incorporate data representing environmental limits, benchmarks and other quantitative impacts so that when initiatives are assessed it is clear whether environmental limits or benchmarks are being crossed. Such a tool would also benefit from the inclusion of intergenerational effects and impacts.

The benefits of PAT for undertaking a first-pass analysis of budget initiatives are compelling. It offers a high-level framework for assessing multiple criteria across different wellbeing domains, while dedicating an entire sheet to the impacts of a particular initiative to environmental objectives. It also goes some way to alleviating the challenges of incommensurability and can summarise information in a way that is transparent and easily communicated.

The outputs of this tool would be complementary to the existing wellbeing analysis framework and CBA. Outputs from this tool could be used in final initiative assessments and could form the basis for including likely environmental impacts to ministers. It would thus be an important tool to help officials assess complex trade-offs and communicate these trade-offs through the budget process.

Recommendation 4.2: Develop a new, structured, multicriteria analysis tool for scoring the impacts of budget initiatives.

The Treasury should be responsible for leading the development of new tools and templates to appraise budget initiatives across all stages of the budget process.

6

Lygodium articulatum

Summary of recommendations

An overarching conclusion

The basis on which long-run environmental issues are handled in the budget priority setting process needs to be examined. The Minister of Finance should receive reporting on how well existing policies and initiatives are addressing the environmental issues that are being identified by state of the environment reporting. This briefing should include how much expenditure is allocated to each of the environmental issues and what is known about the effectiveness of that expenditure. The Minister of Finance should then, each year at the time of the presentation of the budget, publish a report that outlines how new fiscal initiatives as well as any changes to baseline expenditure respond to the environmental issues identified.

Such a process should be provided for in statute and be linked to reporting under the Environmental Reporting Act 2015.

The Parliamentary Commissioner for the Environment has not formulated a recommendation on how environmental reporting and the budget system might be formally linked in this report. He will provide a formal recommendation as part of a short follow-up synthesis report next year that will draw together the threads of his two earlier reports – *Focusing Aotearoa New Zealand's environmental reporting system* and *A review of the funding and prioritisation of environmental research in New Zealand* – with this report.

Environmental data, research into our knowledge gaps and the use of both to make high quality, effective investments in protecting our environment are inextricably linked. Those linkages need to be better defined.

Immediate recommendations for improvements to the development of wellbeing budgets

Recommendation 1: Ensuring that investment decisions accurately reflect the value derived from the environment

Key recommendation for immediate action

Key recommendation 1.1: Update the wellbeing analysis template to better reflect the importance of the environment.

At the moment, wellbeing analysis templates do not adequately consider positive and negative environmental impacts. Incorporating impacts on natural capital across various analytic lenses needs to occur as agencies determine which initiatives to progress through the budget process. This template should be used by agencies, the Treasury and budget clusters to provide assessments of expected positive and negative environmental impacts.

The Treasury should be responsible for the implementation of this recommendation. **Agencies** should be responsible for undertaking the analysis required for these templates.

Additional recommendations to be implemented in the short to medium term

Recommendation 1.2: Update budget guidance to include information on the circumstances in which cost-effectiveness analysis could assist in value-for-money assessments.

Agencies should apply cost-effectiveness analysis to initiatives that aim to achieve the same environmental objective so the most efficient option can be determined, or so that the efficiency of the initiative can be compared to previous interventions.

The Treasury should be responsible for implementing this recommendation. **Agencies** should be responsible for operationalising this recommendation in the budget process.

Recommendation 1.3: Add new environmental values to CBAx for use within cost–benefit analysis.

Environmental values are used in cost–benefit analysis to assess the impacts of a budget initiative on society. Existing environmental values are insufficient to capture the extent of environmental amenity across different domains of wellbeing. Expanding and updating environmental values for use in a New Zealand context will require estimating new values using survey techniques or using benefit transfer methods (taking estimates from elsewhere). It will require that environmental values are kept up-to-date and new ones are added as relevant. New guidance needs to be developed to support policymakers on the use and interpretation of cost–benefit outputs that use environmental values.

The **Ministry for the Environment** should be responsible for investigating and advising on new environmental values. **The Treasury** should be responsible for providing guidance to agencies on how values should be used. **Agencies** should be responsible for implementing environmental values appropriately during cost–benefit analysis calculations and in other analytic tools.

Recommendation 2: Mitigating future risks, uncertainty and tipping points

Key recommendation for immediate action

Key recommendation 2.1: Update the Living Standards Framework Dashboard to include an improved set of longitudinal environmental indicators representing the condition of natural capital.

In setting the strategic priorities for budgets, the Living Standards Framework Dashboard needs to reliably inform decision makers about the key risks to wellbeing posed by the condition of the natural environment. Indicators need to adequately capture the quality and health of critical environmental systems with established links to wellbeing. Thresholds (environmental limits) and benchmarks (desired targets for improvement) should be included to guide spending priorities and monitor progress towards the achievement of future goals.

The Treasury should be responsible for implementing this recommendation. **The Treasury**, **budget clusters**, and **agencies** should be responsible for operationalising this recommendation in the budget process.

Additional recommendations to be implemented in the short to medium term

Recommendation 2.2: Develop baseline forecasts or outlooks that provide an indication of how future environmental conditions across different domains of the environment are expected to change over time.

Forecasts of future environmental conditions are not routinely undertaken or reported against across government. Yet, the rate of change in the state of the environment is critical if we are to understand how fast we may be approaching critical environmental thresholds and tipping points. Improved forecasts that show how the environment is changing across different domains is therefore necessary if environmental expenditure is to be usefully prioritised to those areas that need it the most.

The **Ministry for the Environment** should be responsible for producing future outlooks on environmental conditions. **The Treasury**, **agencies** and **budget clusters** should be responsible for ensuring this information feeds into various stages of the budget process.

Recommendation 2.3: Develop new exploratory scenarios that describe alternative possible futures capable of identifying key environmental risks and potential mitigation strategies.

Futures thinking techniques such as scenario analysis are used widely by consultants, corporations and the financial sector to assess and prepare for unknown, emergent or complex risks such as climate change. When used in a budget context, scenarios could be a powerful tool to guide priority setting and assess budget initiatives against a range of future scenarios by providing a better understanding of future risks and opportunities. The process of creating scenarios can also highlight gaps or weaknesses in present systems, infrastructure and preparedness capabilities, signalling opportunities to build further resilience.

The **Ministry for the Environment** should lead this with respect to the environment, potentially as part of its long-term insights work programme. It should incorporate work from the Ngā Tohu Waiora project on the development of indicators directly linked to the He Ara Waiora framework.[1] **The Treasury**, in consultation with the **Ministry for the Environment** and other **agencies**, should be responsible for developing and providing guidance on the use of scenarios for budgetary purposes. **The Treasury**, **budget clusters**, and **agencies** should be responsible for operationalising the recommendation in the budget process.

Recommendation 3: Ensuring the long-term nature of environmental impacts is not ignored

Key recommendation for immediate action

Key recommendation 3.1: Modify the social discount rate currently used to evaluate initiatives and replace it with one that better reflects the longer-term, intergenerational costs and benefits that pertain to the environment.

The longer term (50+ years) scarcely registers in most budget decision making. If intergenerational wellbeing is an important outcome of wellbeing budgets, then the longer term must be taken more seriously. The Treasury presently applies a relatively high social discount rate when compared to international peers. This needs to be modified. Taking adequate account of intergenerational wellbeing requires a sufficiently low discount rate over a time horizon where costs and benefits to future generations matter.

The social discount rate (and its method of application) is a normative decision, and ministers should confirm that the final rate (and method of application) accords with their view of intergenerational wellbeing. In order for ministers to do this, the Treasury should make explicit the normative view that informs its recommended discount rates.

The Treasury should be responsible for co-ordinating a public review on the use of social discount rates across government. This review should have Māori representation.

[1] The Ngā Tohu Waiora project is a Māori-led project supported collaboratively by Te Puni Kōkiri and the Treasury to design indicators that measure the He Ara Waiora framework. Te Puni Kōkiri, pers. comm., November 2021.

Recommendation 4: Improve decision making and communication in the face of environmental complexity

Key recommendation for immediate action

Key recommendation 4.1: Improve the presentation and communication of critical environmental information throughout the budget process, including to ministers.

Important environmental considerations need to be effectively communicated to senior officials and ministers at key decision points in the budget process. The budget process is only as good as the weakest link in the chain. Environmental impacts and their associated effects on wellbeing are currently that weak link. At different phases in the budget process, environmental information is analysed, synthesised and then passed to the next phase in the process, losing visibility along the way. Summary information provided to ministers should, as a minimum, include assessments of the expected positive and negative environmental impacts for current and future wellbeing in a form that allows for meaningful comparisons between them. For example, new metrics could be derived through multicriteria analysis or other methods.

The Treasury should be responsible for developing the communication strategy and templates to be used.

Additional recommendation to be implemented in the short to medium term

Recommendation 4.2: Develop a new, structured, multicriteria analysis tool for scoring the impacts of budget initiatives.

Each agency has its own internal process for assessing long-list options for budget initiative development and internal appraisal. An opportunity exists to develop a standard suite of templates that can be used across government agencies. These new multicriteria analysis templates could be used for initial screening of initiatives or more detailed analysis. The templates could form the basis for a scoring system and standardised qualitative assessment process to assess budget initiatives on their expected environmental impacts.

The Treasury should be responsible for leading the development of new tools and templates to appraise budget initiatives across all stages of the budget process.

7

Leptolepia novae-zelandiae

Adopting Māori wellbeing ethics to improve Treasury budgeting processes

Author: Dr John Reid
Senior Research Fellow
Ngāi Tahu Research Centre
University of Canterbury
October 13, 2021

Introduction

The first purpose of this essay is to examine and explore key Māori ideas and concepts concerning wellbeing and how these ideas converge with and diverge from the Treasury's Living Standards Framework (LSF). The second purpose is to demonstrate how the Māori approach to wellbeing may be used to improve budgeting processes. The essay begins by analysing five core Māori concepts in relationship to wellbeing economics. These concepts are mauri, whakapapa, utu, tauutuutu, and tapu. It is then outlined how these indigenous modes of thinking can be used to overcome current incongruencies in the LSF to improve budgeting processes, particularly through integrating economic, scientific, and te ao Māori perspectives, and approaching the issues of trade-offs through a different lens.

Wellbeing from a Māori perspective[1]

Mauri

Arguably, the best approach for discussing wellbeing from a Māori perspective is to start with some principles central to the Māori conception and experience of the world. The first principle is mauri. Mauri cannot be defined, but it can be explained. Using an example, a river that forms and flows from pristine catchments, and supports a natural abundance of wildlife, may be considered to have high mauri. However, if that same river were to be polluted by contaminants and its wildlife diminished, then its mauri would be considered reduced. Thus, mauri may be thought of as the life generating and supporting capacity of an entity. This is the tangible element of mauri, one that is measurable through the presence, absence, or state of life. Nonetheless, this explanation does not quite capture mauri, because mauri also refers to the presence of the entity, that is the feelings that are induced when it is encountered. For example, the sound of birds feeding in a river, or the majesty of a river itself. Mauri not only applies to environmental entities such as rivers, forests, lakes, and oceans, it also applies to all things that live upon, or dwell within, those entities. For example, a fish that is sick may be considered to have its mauri compromised. Furthermore, mauri applies to humans, as individuals, whānau, communities, and societies. Just as humans can have their mauri compromised, and become unwell, so too can societies, which may fail to create the conditions in which the mauri of its members can express itself in its full vitality. The capacity of an entity, human or non-human, to express its full vitality and presence is referred to as mauri ora.

Whakapapa

This discussion leads us closer to an understanding of wellbeing from a Māori perspective – the expression of vitality and presence. However, a second principle needs to be explored when constructing the Māori perception of wellbeing – whakapapa. Whakapapa is a central principle used by Māori to organise and interpret the world. Through the whakapapa lens, everything in the world is related as a family member to every other thing. A tree in a forest, or a lizard in the grass, is a cousin, albeit distant. Recent advances in genomics demonstrates this view of the world to be factual, that is all living things descend from a common ancestor, and are therefore literally relatives.[2] However, Māori also extend the notion of family to the physical entities, the land, the seas, the sun, and air, that give rise to and support this life. These are the parents of life, beginning with Papatūānuku (the earth) and Ranginui (the sky), and their children. From this perspective, all things, living and non-living, are relatives that are in dynamic relationship with each other. Whakapapa provides the structure for thinking about how the 'family members' that make-up the world sit in relation to each other, from a wellbeing perspective.

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[1] The discussion in this section is informed by a range of publications including: Reid, R., Rout, M., Whitehead, J., and Katene, T., (2021). The Tauutuutu White Paper. Lincoln: Our Land and Water Science Challenge. https://ourlandandwater.nz/wp-content/uploads/2021/08/Tauutuutu_WhitePaper_ExecutiveSummary.pdf. Rout, M., Awatere, S., Mika, J. P., Reid, J., & Roskruge, M. (2021). A Māori Approach to Environmental Economics: Te ao tūroa, te ao hurihuri, te ao mārama—The Old World, a Changing World, a World of Light. In Oxford Research Encyclopedia of Environmental Science. Rout, M., Reid, J., et. al. (2019). Māori Marine Economy: A review of literature concerning the historical and contemporary structure of the Māori marine economy. Wellington: Sustainable Seas Science Challenge https://sustainableseaschallenge.co.nz/sites/default/files/2018-12/MaoriMarineEconomyLitReviewFinal30October2018-web3.pdf.

[2] See tree of life project: https://evolution.berkeley.edu/evolibrary/news/160505_treeoflife.

Utu

However, a third principle, utu, is needed to understand the nature of relationships between family members that either increase or decrease the presence and expression of mauri. There are many definitions of the term utu, but in the context of this essay, the term utu is referring to 'relationship balance.' When applied to the principle of whakapapa it refers to the relationship balance between different human and non-human family members. To outline how utu is applied, we can return to the river example outlined above. A community that pollutes a river, and reduces its mauri, may be understood to have established a negative imbalance in the relationship with that river. The consequence of this negative imbalance is that the river will reduce the mauri of the community in both tangible and intangible ways to re-establish balance. In terms of a tangible way, the river may no longer provide the community with a healthy place to swim, gather food, or access drinking water. In an intangible way, the act of harming the river is understood to be an undignified action, which undermines the mana of the community, generating shame. Thus, through harming the river, the community is harmed both physically and psychologically. Conversely a community that restores or enhances the health of a river may be understood to create a positive imbalance in the relationship with the river. The river will recreate balance by enhancing the mana and mauri of the community physically and psychologically. The same process also applies to human-to-human relationships, whereby acts that reduce the mana and mauri of an individual, or group, by another, requires that the imbalance be restored, for example through compensation and reconciliation processes, or in some cases revenge. Conversely acts that increase the mana and mauri of an individual, or group, by another, enhances the mana and mauri of both.

Through this exploration we are getting much closer to an understanding of wellbeing from a Māori perspective – wellbeing emerges from relationships between human individuals and groups, and between human and non-human family members, that maintain or enhance the mauri and mana of each other. Relationships between different members of the whakapapa family can be defined in four different ways: "symbiotic (mutually enhancing mauri); mutualistic (mutually maintaining mauri); commensalistic (not affecting each other's mauri); and, parasitic (one body diminishing the mauri of another)."[3] Clearly symbiotic, mutualistic, commensalistic relationships aim to build, or maintain wellbeing, while parasitic relationships lead to a diminishment of wellbeing of one entity at the expense of another. Parasitic relationships create imbalance that need to be repaired.

[3] Page 291, Reid, R., Rout, M., (2017). Can sustainability auditing be indigenized? https://link.springer.com/content/pdf/10.1007/s10460-017-9821-9.pdf.

Tauutuutu, the traditional Māori economy and wellbeing

Tauutuutu describes a traditional economic principle used in Māori society historically that demanded that the fruits of a particular individual or group's productive activity be continually redistributed to related individuals, whānau, and hapū. However, this distribution was not a 'gift' as such, but required the goods or services to be returned with at least an equivalent, but preferably greater value. The mana of individuals and groups grew based on their ability to provide, and the accumulation of familial obligations to return what had been provided with interest. This process supported and underpinned economic wellbeing historically. Firstly, it provided group social security, in that resources were broadly shared, while creating a stored 'set of obligations' in terms of goods, services, and labour, that could be called upon to be returned when needed. Secondly, the 'giving process' elevated the mana and mauri of the giver, and the receiver, through either a symbiotic or mutualistic exchange. Thirdly, the need to provide 'returns with interest' drove productivity, innovation, and growth. This third point is supported by strong evidence that during the European contact and early colonisation periods hapū went through a rapid process of capital accumulation, European technology adoption, and global market integration.

Wellbeing – bringing sacredness into the centre

Using the principle of whakapapa, the lines of discussion above can be brought together. It was outlined how all living things, and their progenitors, are a family. All descendants of this family have the same sacred origin, and therefore may be considered expressions of the sacred. This is encapsulated in the principle of tapu, which in part refers to an original essential sacredness of each individual family member. Actions that diminish the mana and mauri of human and non-human entities may often be considered to transgress their tapu, given that their sacred essence has not been respected, creating an imbalance that needs correcting. Conversely, actions that uphold tapu will also likely maintain or increase mana and mauri. Through this analysis we find that wellbeing emerges through relationships where tapu is respected, mauri is able to manifest itself and unfold, and mana is upheld. However, given that this is not always possible in the real world, where imbalances constantly emerge, actions are required to continually re-establish balance. In terms of applying these underpinning principles to the economic sphere, the practice of tauutuutu uses 'seesawing' mana and mauri enhancing obligations to establish social security, maintain whānau and hapū autonomy, form interdependence, uphold dignity, and drive productivity and innovation.

A Māori perspective on the Living Standards Framework[4]

Drawing on wellbeing approaches formed internationally the Treasury has developed the New Zealand Living Standards Framework (LSF). The 2018 LSF breaks the world into four baskets of capital stock: human capital; social capital; natural capital; and financial-physical capital. The basic logic behind the model is that flows produced by the capital stocks, in terms of goods and services, generate wellbeing. Maintaining wellbeing over time demands that the flows derived from capital stocks do not exceed the rate at which they are replenished, or substituted for, by human or natural processes. There are some distinct similarities between the LSF and the Māori approach to wellbeing. The first is that human and environmental systems have a stock, or quantity, of wellbeing supporting capacity. In the LSF Dashboard the total stock in a basket of capital is calculated using multiple measures. For example the quantity of social capital is an aggregate of discrimination, corruption, belonging, and trust measures. Although, the LSF does not currently employ a method for weighing, standardising, and aggregating measures to quantify a basket of capital, there is a basic assumption that there is a total stock. Māori similarly view human and non-human systems as having a total stock of life-supporting capacity, however unlike the LSF they possess a standardised 'measure' for ascertaining this stock – mauri. Secondly, both implicitly seek to ensure that flows derived from the stock do not exceed the rate at which the stocks in aggregate are replenished.

However, there are also some fundamental differences between the approaches. The first is that the LSF is a instrumentalist model. It converts all of society and the environment into capital stocks. Humans, their cultures, societies, and nature become resources valued in terms of their instrumentalist value in producing ongoing flows of goods and services. Wellbeing, from this perspective, is derived from consumption of resource flows. In addition it is an anthropocentric model. Although both humans and nature are understood as resource stock, it is only the wellbeing of human consumers that is focused on in the model. This is in contrast to the whakapapa centric position of Māori, in which the wellbeing of both human and non-human entities in terms of mana and mauri is considered. Furthermore, the Māori approach does not reduce human and non-human communities to their use value only. As outlined previously, Māori value maintaining the mauri of non-human entities, such as rivers, to ensure that it can provide resources in terms of food and clean water, however, there is a simultaneous concern with maintaining the mana of the entity and acknowledging its sacred origins. In this manner both the tangible utility and intangible properties of human and non-human entities is brought into focus.

[4] Discussion in this section draws upon the following publications: Reid, J., & Rout, M. (2020) Developing Sustainability Indicators – the need for radical transparency. Ecological Indicators. https://doi.org/10.1016/j.ecolind.2019.105941; Rout, M., & Reid, J. (2020). Embracing indigenous metaphors: A new/old way of thinking about sustainability. Sustainability Science. https://doi.org/10.1007/s11625-020-00783-0; Reid, J., & Rout, M. (2018). Can sustainability auditing be indigenized? Journal of the Agriculture, Food, and Human Values Society, 35(2), 283-294; Reid, J., & Rout, M. (2016). Getting to know your food: the insights of indigenous thinking in food provenance. Agriculture and Human Values. https://link.springer.com/article/10.1007/s10460-015-9617-8; Reid, R., Rout, M., Whitehead, J., and Katene, T., (2021). The Tauutuutu White Paper. Lincoln: Our Land and Water Science Challenge. https://ourlandandwater.nz/wp-content/uploads/2021/08/Tauutuutu_WhitePaper_ExecutiveSummary.pdf.

The challenge of integrating models

Although the LSF and Māori approaches share similarities there are also distinct and fairly fundamental differences. Treasury has built the He Ara Waiora model in an attempt to bring a Māori approach to wellbeing. It places wairua, or spiritual essence in the centre, out of which spirals the environment followed by the human domain. Wellbeing emerges from the maintenance of mana, which is actioned through upholding core Māori values, including manaakitanga, whanaungatanga, kotahitanga, and tikanga. Furthermore, it highlights the importance of Māori values and approaches in managing these stocks. The He Ara Waiora model shares many of the same Māori principles outlined in this essay, including the placing of sacredness into the centre of human-environmental relations, a focus on mana, and shifting the lens from an anthropocentric position to a socioecological position.

However, the Māori approach and the LSF approach clashes on a fundamental level in terms of the metaphors that underpin each model. As outlined in this paper, Māori utilise a familial metaphor, whakapapa, to understand the world and the interactions between human and non-human communities. Conversely the LSF approach uses a master–servant metaphor.[5] This is captured in the term ecosystem services, through which nature is interpreted as a servant providing flows of goods and services to maximise the wellbeing of individuals. Furthermore, it is a servant that is singularly valued for its utility. The use of this metaphor precludes a deeper understanding of non-humans as part of our family, with whom we share significant similarities and with whom we develop strong bonds, connections, and relationships. Many non-humans have consciousness and intentionality, and through their ecological communities shape the process of evolution (the unfolding of whakapapa) with humans. In contrast to the master–servant metaphor, the familial metaphor not only permits nature to be viewed from both a utilitarian view, but simultaneously a sacred view. Consequently, whakapapa provides a 'higher order' metaphor into which the LSF utilitarian approach could arguably be integrated. However, to fit with the whakapapa metaphor, rather than as a servant, nature would need to be recast as a family member providing for the human branch of the family, with the human part of the family providing for nature in return.

The LSF also runs into another problem – quantifying the services that nature provides. These services include for example the provision of clean water, healthy soils, stable climate, and clean air. In order to understand the level of these stocks, and to quantify the current and future flows of goods and services they can provide, sophisticated environmental modelling (e.g. hydrological, atmospheric, and biospheric) is needed at multiple scales (i.e. local, regional, national, and international). This is a significant scientific endeavour dealing with systems that are incredibly complicated, with emergent unpredictable properties and unknown functions that are characteristic of non-linear and stochastic systems.[6] Current environmental modelling varies significantly in levels of confidence, and consequently there are significant uncertainties in the level of capital stocks, and quantities of current and future flows of goods and services. Such scientific models need development and integration into the LSF, alongside the Māori approach.

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[5] Peterson, K. (2012). Ecosystem Services, Nonhuman Agencies, and Diffuse Dependence. Environmental Philosophy, 9(2), 1–20. http://www.jstor.org/stable/26169755.

[6] Reid, J., & Rout, M. Developing Sustainability Indicators – the need for radical transparency. Ecological Indicators. https://doi.org/10.1016/j.ecolind.2019.105941.

However, these science models are based on a different metaphor again from the LSF and Māori models. Science uses a machine metaphor, through which nature is viewed mechanistically – it appears as a system made-up of interacting discrete components, functions, and processes. Understanding how environmental systems work involves understanding mechanisms of nature and how all of the components interact. There is confluence between the master–servant metaphor in economics, and the machine metaphor in natural science, given that nature can be viewed as a machine, or factory, producing goods and services for human consumption. However, there is tension with the whakapapa metaphor used by Māori. The emphasis of natural science is on the material, discrete, and tangible components of environmental systems, which excludes the intangible dimensions that are additionally valued by Māori. In the environmental sphere many Māori are scientists, and use the scientific method to ascertain the tangible and measurable elements of environmental mauri. Much like taking the blood pressure of a human family member, scientific instruments and measures can be used to determine environmental health. Nonetheless, the intangible elements of mauri, mana, and sacredness cannot be captured this way. Given the whakapapa metaphor and core principles such as mauri are able to accommodate both the intangible dimensions and tangible scientific properties, it provides a higher order construct into which both the scientific models and LSF utilitarian approaches can be integrated.

However, facilitating integration between models requires transcultural and transdisciplinary processes. This involves making the metaphors that implicitly underpin the different scientific, economic, and cultural positions explicit, in a more expansive process that what has been undertaken above. They can then be discussed and ordered in relation to each other to establish an agreed collective position, however this does involve coming to agreement on some fundamental metaphysical positions. For example, how would mechanistic and master–servant positions, with their accompanying emphasis on materialism, individualism, and instrumentalism engage with a Māori whakapapa worldview that also recognises the sacred and views non-humans as relations? As outlined above, this may be possible through the adoption of higher order metaphors, such as whakapapa, that are able to accommodate other metaphors. Once a common metaphor is established then it becomes possible to arrive at an agreed set of valued functionings (as per Sen's capability approach)[7] and in turn a common position on wellbeing across models. Subsequently, indicators and metrics can be identified or developed, and modelling undertaken, that can support impact analysis of different policies and actions on wellbeing outcomes. Such an approach would not require a significant deconstruction of the current LSF, more of a rearrangement of current components to generate integration between cultural and disciplinary positions. Further, a broader integrated model, embracing greater diversity of perspective, is much more likely to capture complexity, determine risk (including tipping points), and offer improved accuracy when assessing the impacts of different actions and policy positions.

[7] Amartya, S. (2000). Development as freedom. New York: Anchor Books.

Trade-off thinking and tauutuutu in budget processes

Governments must make difficult decisions regarding their expenditure. Since Budget 2019, the LSF has played a role interrogating expenditure. Each potential line of expenditure will have different impacts on capital stocks. For example, heavy government investment in roading infrastructure may create a significant investment flow into human and social capital through increasing employment, incomes, and urban infrastructure. However such investments may also come with a heavy carbon footprint, leading to a decrease in natural capital and future flows (borrowing from the future), unless another line of expenditure offers carbon offsetting. Many lines of expenditure will involve these types of trade-offs between capital stocks, both individually and in aggregate, which must be weighed to determine a net benefit.

The te ao Māori concepts of utu and tauutuutu can provide some insight into how this trade-off issue might be approached. As outlined above, for Māori wellbeing may be considered to emerge through either symbiotic, mutualistic, or at a minimum commensalistic long-term relationships between the human and non-human communities. The focus is on both current and future human and non-human communities 'giving' to each other based on the expectation that such sacrifices will be returned with the minimum of an equivalent gift, or with interest. This mode of thinking tends to occupy the minds of many leading iwi and Māori incorporations within New Zealand, that have multi-generational visions and are seeking to invest their capital into productive activities and technologies that support mana-enhancing relationships with their human and non-human relations.[8] When translated into economic terms, this means making individual and aggregate expenditure decisions that support a flow of symbiotic 'gifting' from one capital stock category to others, without decrease when viewed from an intergenerational time horizon and a net position. The thinking is orientated not around trade-offs, or losses, but around near-term sacrifices leading to net, or aggregate, medium and long-term increases in flows across all capitals to support wellbeing. This indigenous worldview could be used to reorientate thinking, particular in policy development stages, into how future policy investments can lead to productive activities, and investment in technologies, that generate long-term symbiotic outcomes between human and non-human communities.

[8] Reid, R., Rout, M., Whitehead, J., and Katene, T., (2021). The Tauutuutu White Paper. Lincoln: Our Land and Water Science Challenge. https://ourlandandwater.nz/wp-content/uploads/2021/08/Tauutuutu_WhitePaper_ExecutiveSummary.pdf.

Conclusions

From a Māori perspective wellbeing emerges from relationships between human individuals and groups, and between human and non-human family members, that maintain or enhance the mauri and mana of each other. Negative imbalances in these relationships can emerge that reduce wellbeing. The core Māori economic practice of tauutuutu encourages escalating mana and mauri reciprocal exchange to establish social security, maintain individual and group autonomy, form healthy interdependencies, drive productivity, and maintain human-environmental balance. There are similarities between the te ao Māori view of wellbeing and the LSF view. Both converge in their view that human and non-human systems have a total 'stock' of life-supporting capacity, which can be reduced or grown through human actions. From the LSF perspective this stock is referred to as capital, and from the te ao Māori perspective mauri. Secondly, both implicitly seek to ensure that what flows from the stock does not exceed the rate at which the stocks, in aggregate, are replenished. However, the te ao Māori view and the LSF approach diverge in terms of the underlying metaphors that underpin each model generating dissonance between them. It is concluded that a transdisciplinary and transcultural process is required to overcome this divergence to support the integration between Māori, economic, and scientific approaches. Such an integrated model is more likely to capture complexity and offer improved accuracy when assessing the impacts of different actions and policy positions in treasury budgeting processes. Finally, it is concluded that indigenous thinking offers a lens to think differently about trade-offs in budgeting processes. The Māori approach to wellbeing offers a holistic perspective that encourages budget expenditure decisions that generate increasing flows of symbiotic 'gifting' from one capital stock category to others based on an intergenerational time horizon. The te ao Māori view offers a unique opportunity for New Zealand to generate an integrated and holistic approach to expenditure decision-making founded on indigenous principles.

Ko te whiwhi ki ngā matatika oranga Māori ki te whakapai ake i ngā hātepe whakamahere pūtea a Te Tai Ōhanga

Kaituhi: Dr John Reid
Paewai Kairangahau Matua
Te Pokapū Rangahau o Ngāi Tahu
Te Whare Wānanga o Ōtautahi
13 o Oketopa, 2021

Kupu whakataki

Ko te take tuatahi o tēnei tuhinga ko te mātai me te tūhura i ngā whakaaro me ngā huatau Māori e pā ana ki te oranga, ā, he pēhea te ōritetanga me te rerekētanga o ēnei whakaaro ki te Anga Paerewa Tauoranga (LSF) o te Te Tai Ōhanga. Ko te take tuatahi kia whakaatu he pēhea te whakamahi i te ahunga Māori ki te oranga kia whakapiki i te pai o ngā hātepe whakamahere pūtea. Ka tīmata tēnei tuhinga mā te tātari i ngā huatau Māori matua e rima e pā ana ki te ohaoha oranga. Ko ngā huatau nei, ko te mauri, te whakapapa, te utu, te tauutuutu, me te tapu. Kātahi ka whakahuatia he pēhea te whakamahi i ēnei ara whakaaro iwi taketake ki te karo i ngā rerekētanga onāianei i roto i te LSF ki te whakapiki i te pai o ngā hātepe whakamahere pūtea, otirā mā te pāhekoheko i ngā tirohanga nō te ao ohaoha, te ao pūtaiao, me te ao Māori, me te aro atu ki ngā take o ngā whakawhitiwhiti mā te arotahi rerekē.

Te Oranga ki tā te Māori titiro[1]

Mauri

Tērā pea, ko te ahunga pai kia kōrerorero mō te oranga ki tā te Māori titiro, kia tīmata ki ētahi mātāpono kei te iho o te huatau me te wheako o te Māori i roto i te ao. Ko te mātāpono tuatahi ko te mauri. Kāore e taea te kupu mauri te tautahi, engari ka taea te whakamārama. Hei tauira, mēnā ka whai āhua te awa i roto i ngā hōpua tikitū, ā, ka rere atu me te tautoko i te huhua noa o te koiora, he kaha tōna mauri. Heoi anō, mēnā ka parakinohia taua awa e ngā tāhawatanga, ā, ka heke iho ōna koiora, he iti iho tōna mauri. Nā reira, ko te mauri te raukaha o tētahi mea ki te whakaputa me te tautoko i te koiora. Koinei te āhuatanga ōkiko o te mauri, he mea e taea ana te ine mā te kite, te kore kite rānei i te koiora, te āhua rānei o te koiora. Engari, kāore tēnei whakamāramatanga e tino hopu ai i te āhua o te mauri, nā te mea e kōrero ana hoki te mauri mō te whakatinanatanga o te mea, arā, ngā aurongo e puta mai ana ina rokohanga atu. Hei tauira, te oro o ngā manu e kai ana i roto i te awa, te whakahirahira ake rānei o te awa.

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[1] Ka aro atu te kōrerorero i roto i tēnei wāhanga ki te huhua o ngā tānga tae atu ki: Reid, R., rātou ko Rout, M., ko Whitehead, J., ko Katene, T., (2021). The Tauutuutu White Paper. Lincoln: Our Land and Water Science Challenge. https://ourlandandwater.nz/wp-content/uploads/2021/08/Tauutuutu_WhitePaper_ExecutiveSummary.pdf. Ko Rout, M., rātou ko Awatere, S., ko Mika, J. P., ko Reid, J., ko Roskruge, M. (2021). A Māori Approach to Environmental Economics: Te ao tūroa, te ao hurihuri, te ao mārama—The Old World, a Changing World, a World of Light. I roto i te Oxford Research Encyclopedia of Environmental Science. Ko Rout, M., rātou ko Reid, J. mā. (2019). Māori Marine Economy: A review of literature concerning the historical and contemporary structure of the Māori marine economy. Te Whanganui-a-Tara: Sustainable Seas Science Challenge https://sustainableseaschallenge.co.nz/sites/default/files/2018-12/MaoriMarineEconomyLitReviewFinal30October2018-web3.pdf.

E hāngai ana te mauri ki ngā mea o te taiao pērā i ngā awa, ngā ngāherehere, ngā roto, me ngā moana, waihoki, ka hāngai hoki ki ngā mea katoa e noho ana i runga, i roto rānei, i aua mea. Hei tauira, kua mate te mauri o te ika māuiui. Waihoki, e hāngai ana te mauri ki ngā tāngata, hei tangata takitahi, hei whānau, hei hapori, hei pāpori anō hoki. Ka mate ai te mauri o ngā tāngata, ā, ka māuiui, pērā anō ngā pāpori, ka kore pea e auaha i ngā āhuatanga kia taea ai e ōna mema te āta whakaatu i te oranga o te mauri. Ko te raukaha o te mea, te tangata, te mea ehara i te tangata rānei, ki te whakaatu i tōna oranga, whakatinanatanga hoki, ko te mauri ora.

Whakapapa

Ka ārahina mātou e tēnei kōrerorero ki te māramatanga o te oranga ki tā te Māori titiro – te whakaaturanga o te oranga me te whakatinanatanga. Heoi anō, me tūhura te mātāpono tuarua ina hanga ana i te tirohanga a te Māori ki te oranga – whakapapa. Ko te whakapapa te mātāpono matua a te Māori ki te whakahaere me te whakamārama i te ao. Mā te arotahi whakapapa, he whanaungatanga i waenganui i ngā mea katoa i roto i te ao hei whānau. He karangatanga tō te rākau i roto i te ngāherehere, tō te mokomoko i roto i te otaota rānei, ahakoa te tawhiti. E whakaatu ana ngā rangahau hou ki te mātai huinga ira he tūturu tēnei, arā, ka heke mai ngā koiora katoa i tētahi tipuna kotahi, ā, nā reira, he whanaunga tūturu ngā koiora katoa.[2] Heoi anō, ka whakawhānui atu ngāi Māori i te kaupapa o te whānau ki ngā mea ōkiko, pērā i te whenua, ngā moana, te rā, te hau takiwā, i whakarewa ai, i tautoko ai hoki i tēnei koiora. Koinei ngā mātua o te koiora, ka tīmata i a Papatūānuku rāua ko Ranginui, me ā rāua tamariki. Mai i tēnei tirohanga, he whanaunga ngā mea katoa, ahakoa e ora ana, kāore i te ora rānei, e noho ana ki te hononga taineke tētahi ki tētahi. Ka whakarato te whakapapa i te anga hei whakaaro he pēhea te whanaungatanga i waenganui i ngā 'mema whānau' e waihanga ana i tēnei ao, mai i te tirohanga oranga.

Utu

Engari, ko te mātāpono tuatoru, te utu, e hiahiatia ana kia mārama ki te āhua o ngā hononga i waenganui i ngā mema whānau e whakapiki ai, e whakaheke ai rānei i te whakatinanatanga me te whakaaturanga o te mauri. He nui ngā tautuhinga o te kupu utu, engari i roto i te horopaki o tēnei tuhinga, ko te tikanga o te utu ko te 'hangarite whanaungatanga.' Ina whakahāngaitia ki te mātāpono o te whakapapa ko tōna tikanga ko te hangarite whanaungatanga i waenganui i ngā mema whānau tangata, ehara i te tangata rānei. Ki te whakahua he pēhea te whakatinana i te utu, me hoki atu ki te tauira o te awa i whakahuatia i runga ake. Ki te parakino te hapori i te awa, ā, ka whakaiti i tōna mauri, kua whakaritea kia kore e hangarite ana te whanaungatanga ki taua awa. Ko te tukunga iho o taua hangarite kore ka whakaheke te awa i te mauri o te hapori ki ngā ara ōkiko, me ngā ara kore kitea ki te whakatū anō i te hangarite. E pā ana ki te ara ōkiko, ka kore pea te awa e whakarato ai ki te hapori te wāhi hauora ki te kaukau, ki te kohi kai, ki te tiki rānei i te wai māori hei inu rānei. E pā ana ki te ara tē kitea, ko te mahi whakakino i te awa he mahinga kūare, e whakahē ana i te mana o te hapori, e whakaputa ana i te whakamā. Nā reira, mā te whakakino i te awa, e whakakino te hapori, ā-tinana, ā-hinengaro anō hoki. Engari, ki te whakahoki te hapori i te hauora, ka whakapiki rānei i te hauora, o te awa ka auaha i te kore hangarite pai ki te whanaungatanga ki te awa. Ka auaha anō te awa i te hangarite mā te whakapiki i te mana me te mauri o te hapori ā-tinana, ā-hinengaro hoki. E hāngai ana hoki taua hātepe ki ngā whanaungatanga tangata-ki-te-tangata. Arā, mēnā ka whakaheke ngā mahi i te

[2] Tirohia te hinonga tree of life: https://evolution.berkeley.edu/evolibrary/news/160505_treeoflife.

mana me te mauri o te tangata takitahi, te rōpū rānei, e tētahi, ka hiahiatia kia whakahokia te hangarite, hei tauira mā te utu paremata me ngā hātepe whakamārire, i ētahi wā rānei ko te utu. Engari ko ngā mahi e whakapiki ana i te mana me te mauri o te tangata takitahi, te rōpū rānei, e tētahi atu, ka whakapiki i te mana me te mauri o ngā mea e rua.

Mā tēnei tūhuratanga e whakatata atu ana tātou ki te māramatanga o te oranga ki tā te Māori titiro – ka puta mai te oranga i ngā whanaungatanga i waenganui i ngā tāngata takitahi me ngā rōpū, ā, i waenganui i ngā mema whānau tāngata, ehara i te tāngata hoki, e whakapūmau ana, e whakapiki ana rānei i te mauri me te mana, o tēnā, o tēnā. Ka tautuhia ngā whanaungatanga i waenganui i ngā mema rerekē o te whānau whakapapa ki ngā ara rerekē e whā: "koiora taupuhipuhi (he whakarākei ngātahi i te mauri); whakakotahi (he whakapūmau ngātahi i te mauri); tē whakakino (kāore i te whakaaweawe i te mauri o tētahi atu); ā, he pirinoa (ka whakaiti tētahi mea i te mauri o tētahi atu)."[3] E mārama ana ko te whāinga o ngā whanaungatanga koiora taupuhipuhi, whakakotahi, tē whakakino rānei kia hanga, kia whakapūmau rānei i te oranga, engari ko te mutunga iho o ngā whanaungatanga pirinoa ko te whakaiti o te oranga o tētahi mea kia whaihua tētahi atu. Ka auaha ngā whanaungatanga pirinoa i te hangarite kore e hiahiatia ana kia whakatikahia.

Tauutuutu, te ōhanga Māori o tua whakarere me te oranga

Ka tautuhi te tauutuutu i te mātāpono ohaoha nō tua whakarere e whakamahia ana i mua i roto i te pāpori Māori i whakahau me tohatoha atu ngā hua o tētahi tangata takitahi, te mahi whakaputa rānei o tētahi rōpū, ki ngā tāngata takitahi, ngā whānau, me ngā hapū e whai hononga ana. Heoi anō, ehara tēnei tuari i te 'koha', engari, e hiahiatia ana kia whakahokia ngā rawa, ngā ratonga rānei ki tētahi mea ōrite te uara, engari he pai ake mēnā he nui ake te uara. Ka piki te mana o ngā tāngata takitahi me ngā rōpū i runga i tō rātou āheinga ki te whakarato me te whakaemitanga o ngā kawenga ā-whānau ki te whakahoki i te mea i whakaratoa me te tāpirihanga i runga. I mua, ka tautoko, ka noho hei tūāpapa hoki tēnei hātepe i te oranga ohaoha. Tuatahi, ka whakaratohia te haumaru pāpori ā-rōpū, nā te mea he whānui te tuari o ngā rauemi, me te auaha i te whakaputunga o ngā 'huinga kawenga' e pā ana ki ngā rawa, ngā ratonga, me te mahi, ka taea te tono ina hiahiatia ana. Tuarua, ka whakarewa te 'hātepe tuku' i te mana me te mauri o te kaituku, me te kaiwhiwhi, mā te whakawhitinga koiora taupuhipuhi, whakakotahi rānei. Tuatoru, ka kōkiri te hiahia ki te whakarato i ngā 'whakahoki me te tāpirihanga' i te māpua, te auahatanga, me te whakatipuhanga. Ka tautokohia tēnei whakaaro e te taunakitanga kaha i te wā o te whakapānga mai o te Pākehā, me ngā wā tāmitanga i uru ngā hapū ki ngā hātepe tere o te whakaemitanga haupū rawa, te tango i te hangarau Pākehā, me te pāhekoheko ki te mākete ā-ao.

[3] Whārangi 291, Reid, R., Rout, M., (2017). Can sustainability auditing be indigenized? https://link.springer.com/content/pdf/10.1007/s10460-017-9821-9.pdf.

Oranga – te whakanoho i te tapu ki te iho

Mā te whakamahi i te mātāpono o te whakapapa, ka taea te whakakotahi i ngā tūmomo kōrero i runga ake. Ka whakahuatia i runga ake he whānau ngā mea koiora katoa, me ō rātou tīpuna. He ōrite te orokohanga o ngā uri katoa o tēnei whānau, ā, nā reira, he whakaputanga o te tapu. Ka whakatinanahia tēnei i roto i te mātāpono o te tapu, ko tētahi tikanga ōna ko te tapu ake o ia mema takitahi o te whānau. Mēnā ka whakaiti ngā mahi i te mana me te mauri o ngā tangata me ngā mea ehara i te tangata he mea takahi i tō rātou ake tapu, nā te mea kāore i whakautea tō rātou iho tapu, e auaha ana i te kore hangarite me whakatika. Engari, ki te tautoko ngā mahi i te tapu, he nui ake te tūponotanga ka whakapūmau, ka whakapiki rānei i te mana me te mauri. Mā te tātaritanga nei e kite tātou ka puta mai te oranga i ngā whanaungatanga e whakautea ana te tapu, ka taea e te mauri te whakatinana i a ia anō me te whakawhānui, ā, ka tautokohia te mana. Heoi anō, nā te mea kāore e taea i te ao hurihuri nei, e puta mai ana ngā kore hangarite, ka hiahiatia tonutia ngā mahi ki te whakatū anō i te hangarite. E pā ana ki te whakahāngai i ēnei mātāpono taketake ki te ao ohaoha, ka whakamahi te tikanga tauutuutu i ngā kawenga whakapiki mana me te mauri 'whakamanei' ki te whakatū i te haumaru pāpori, whakapūmau i te mana motuhake o te whānau me te hapū, whakaāhua i te taupuhipuhi, tautoko i te amaru, me te kōkiri i te māpua me te auahatanga.

He tirohanga Māori ki te Anga Paerewa Tauoranga[4]

Nā te tiro atu ki ngā ahunga oranga i auahatia ā-ao, i whakawhanake Te Tai Ōhanga i te Anga Paerewa Tauoranga (LSF). Ka whakawehe te LSF 2018 i te ao ki ngā kete e whā o te haupū rawa: haupū rawa tāngata; haupū rawa pāpori; haupū rawa taiao; ā, haupū rawa ahumoni-ōkiko. Ko te pūtake o te arorau i raro i te tauira mā ngā rerenga e whakaputaina ai e ngā taputapu haupū rawa, e whakaputa i te oranga. Ki te whakapūmau i te oranga mō te wā roa me kaua e nui ake ngā rerenga i puta mai i ngā taputapu haupū rawa i te pāpātanga o te whakahoutanga, te whakakapinga rānei, e ngā hātepe tangata, ā-taiao rānei. He tino ōritetanga i waenganui i te LSF me te ahunga Māori ki te oranga. Ko te tuatahi he taputapu, he nuinga rānei, tō ngā pūnaha taiao o te raukaha tautoko oranga. I roto i te papatohu LSF ka tātaihia te taputapu katoa i roto i te kete o te haupū rawa mā te whakamahi i ngā inenga huhua. Hei tauira ko te nuinga o te haupū rawa pāpori he whakaemitanga o ngā inenga whakaparahako, whakakino, whai wāhi, me te pono. Ahakoa kāore te LSF e whakamahi ana ināianei i te hātepe ki te ine-taumaha, whakarite aro whānui, me te whakaemi i ngā inenga ki te tatau i te kete haupū rawa, e whakapaetia ana he taputapu tapeke. He pērā anō tā te Māori titiro, he taputapu tapeke o te raukaha tautoko oranga tō ngā pūnaha tē tangata, engari, kāore e ōrite ana ki te LSF, he 'inenga' aro whānui ki te whakaatu i tēnei taputapu – mauri. Tuarua, ka āta rapu ngā mea e rua ki te whakatūturu kāore ngā rerenga e puta mai ana i te taputapu e nui ake ai i te pāpātanga, hui katoa, ka whakahoutia ngā taputapu.

[4] Ka tiro atu ngā kōrerorero i roto i tēnei wāhanga ki ngā tānga e whai ake nei: Reid, J., & Rout, M. (2020) Developing Sustainability Indicators – the need for radical transparency. Ecological Indicators. https://doi.org/10.1016/j.ecolind.2019.105941; Rout, M., & Reid, J. (2020). Embracing indigenous metaphors: A new/old way of thinking about sustainability. Sustainability Science. https://doi.org/10.1007/s11625-020-00783-0; Reid, J., & Rout, M. (2018). Can sustainability auditing be indigenized? Journal of the Agriculture, Food, and Human Values Society, 35(2), 283-294; Reid, J., & Rout, M. (2016). Getting to know your food: the insights of indigenous thinking in food provenance. Agriculture and Human Values. https://link.springer.com/article/10.1007/s10460-015-9617-8; Reid, R., rātou ko Rout, M., ko Whitehead, J., ko Katene, T., (2021). The Tauutuutu White Paper. Lincoln: Our Land and Water Science Challenge. https://ourlandandwater.nz/wp-content/uploads/2021/08/Tauutuutu_WhitePaper_ExecutiveSummary.pdf.

Engari, he rerekētanga waiwai i waenganui i ngā ahunga. Ko te tuatahi, ko te LSF he tauira taputapu. Ka whakarerekē i te katoa o te pāpori me te taiao ki ngā taputapu haupū rawa. He rauemi ngā tāngata, ō rātou ahurea, pāpori, taiao hoki e uaratia ana e pā ana ki te uara taputapu ki te whakaputa i ngā rerenga haere tonu o ngā rawa me ngā ratonga. E ai ki tēnei tirohanga, ka puta mai te oranga i te whakapaunga o ngā rerenga rauemi. Tāpiri atu ki tēnei he tauira whakanui tāngata. Ahakoa e mōhiotia ana ko ngā tāngata me te taiao he taputapu rauemi, ko te arotahi anake o te tauira ko te oranga o ngā tāngata whakapau. He whakatairitenga tēnei ki te whakaaro whakanui whakapapa o te Māori, e whakaarohia ana te oranga o ngā tāngata me ngā mea ehara i te tāngata e pā ana ki te mana me te mauri. Waihoki, kāore te ahunga Māori e whakaiti ana i ngā hapori tāngata, ehara i te tāngata hoki ki te uara whakamahi anake. Pērā i ngā kōrero i runga ake, ki tā te Māori he uara nō te whakapūmau i te mauri o ngā mea ehara i te tangata, pērā i ngā awa, ki te whakatūturu ka taea te whakarato rauemi kai, wai māori hoki, heoi anō, he aro nui hoki ki te whakapūmau i te mana o te mea me te tūtohu i ana orokohanga tapu. Nā reira, ka arotahitia te painga e kitea ana me ngā āhuatanga tē kitea o ngā tāngata me ngā mea ehara i te tangata.

Ko te wero ki te pāhekoheko i ngā tauira

Ahakoa he ōritetanga i waenganui i ngā ahunga LSF me tā te Māori, he rerekētanga mārama, waiwai hoki. Kua hanga Te Tai Ōhanga i te tauira He Ara Waiora kia whakauru i te ahunga Māori ki te oranga. Ka whakaritea te wairua ki te iho, ā, mai i konei ka makaurangi te taiao me te takiwā tangata e whai ana i muri. Ka puta mai te oranga i te whakapūmautanga o te mana, e whakahaeretia ana mā te tautoko i ngā uara Māori taketake, tae atu ki te manaakitanga, whanaungatanga, kotahitanga, me te tikanga. Waihoki, ka miramira i te hiranga o ngā uara Māori me ngā ahunga ki te whakahaere i ēnei taputapu. Ka tuari te tauira He Ara Waiora i ngā mātāpono Māori mahi kua whakahuatia i roto i tēnei tuhinga, tae atu ki te whakarite i te tapu ki te iho o ngā whanaungatanga tangata-taiao, he arotahi ki te mana, me te neke i te arotahi mai i te tūnga aro tangata ki te tūnga pāpori-taiao.

Heoi anō, ka taupatupatu te ahunga Māori me te ahunga LSF i runga i te taumata tūāpapa e pā ana ki ngā kupu whakarite i raro iho i ia tauira. Pērā i te whakahuatanga i roto i tēnei pepa, ka whakamahi ngāi Māori i te kupu whakarite whānau, whakapapa, kia mārama ki te ao me ngā pāhekohekotanga i waenganui i ngā hapori tangata, ehara i te tangata hoki. Engari, ka whakamahi te ahunga LSF i te kupu whakarite rangatira-pononga.[5] Ka hopukia tēnei i roto i te kupu ratonga pūnaha hauropi, e whakamāramahia ai te taiao hei pononga e whakarato ana i ngā rerenga o ngā rawa me ngā ratonga kia whakanui i te oranga o ngā tāngata takitahi. Waihoki, ko te pononga te mea e tino uaratia ana mō tana mahi. Ka aukati te whakamahi o tēnei kupu whakarite i te māramatanga hōhonutanga o te hunga ehara i te tangata hei wāhanga nō tō tātou whānau, he ōritetanga i waenganui, ā, he hononga kaha, he tūhononga, he whanaungatanga. He maha ngā mea ehara i te tangata e whai ana i te māramatanga me te āta mahi, ā, mā ō rātou hapori hauropi e tārai i te hātepe o te kukuwhatanga (te whārikitanga o te whakapapa) ki ngā tāngata. Hei whakatairitenga ki te kupu whakarite rangatira-pononga, ka whakaaetia e te kupu whakarite whānau kia tirohia te taiao mai i te tirohanga whakamahi, engari, i te wā kotahi, he tirohanga tapu. Nā reira, e whakarato ana te whakapapa i te kupu whakarite 'taumata teitei' e taea ana te pāhekoheko o te mahi noa LSF. Heoi anō, kia tau ki te kupu whakarite whakapapa, kaua ko te pononga, me hanga kē te taiao hei whanaunga e whakarato ana i te peka tangata o te whānau, me te wāhanga tāngata o te whānau e whakarato ana mō te taiao.

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[5] Peterson, K. (2012). Ecosystem Services, Nonhuman Agencies, and Diffuse Dependence. Environmental Philosophy, 9(2), 1–20. http://www.jstor.org/stable/26169755.

Ka tūtuki hoki te LSF ki tētahi atu raruraru – te tatau i ngā ratonga e whakaratohia ana e te taiao. Kei roto i ēnei ratonga, hei tauira, te whakarato i te wai māori, ngā oneone hauora, te āhuarangi pūmau, me te hau takiwā mā. Ki te mārama ki te taumata o ēnei taputapu, me te tatau i ngā rerenga onāianei, ā muri ake hoki, o ngā rawa me ngā ratonga e taea ai te whakarato, e hiahiatia ana te whakatauira taiao whīwhiwhi (arā nō te wai, nō te āhuarangi, nō te ao hoki) ki ngā rahi huhua (arā, ā-takiwā, ā-motu, ā-ao anō hoki). He mahi pūtaiao hira tēnei e aro ana ki ngā pūnaha whīwhiwhi, me ngā āhuatanga e puta mai ana kāore e taea te matapae, ā, he mahi kāore i te mōhiotia nō ngā pūnaha ehara i te rārangi, matapōkere hoki.[6] He nui te rerekētanga o te whakatauira taiao onāianei mō ngā taumata ngākau titikaha, nā reira he nui ngā mea kāore i te tino mōhiotia i roto i te taumata o ngā taputapu haupū rawa, me te nui o ngā rerenga onāianei, ā muri ake hoki o ngā rawa me ngā ratonga. Me whakawhanake me te pāhekoheko i ngā tauira pūtaiao pērā ki te LSF, i te taha o te ahunga Māori.

Heoi anō, ko te tūāpapa o ēnei tauira pūtaiao he kupu whakarite rerekē i tā ngā tauira LSF me te Māori. Ka whakamahi te pūtaiao i te kupu whakarite pūrere, ka whakaarohia te taiao anō he pūrere – he pūnaha ka hangaia ki ngā waehanga, ngā āhuatanga, me ngā hātepe rerekē. Ki te mārama he pēhea te whakamahi o ngā pūnaha taiao, me mārama ki ngā pūrere o te taiao, ā, he pēhea te pāhekoheko o ngā waehanga. He pūtahitanga i waenganui i te kupu whakarite rangatira-pononga i roto i te ohaoha, me te kupu whakarite pūrere i roto i te pūtaiao taiao, nā te mea ka kitea te taiao hei pūrere, hei wheketere rānei, e whakaputa ana i ngā rawa me ngā ratonga kia pau i te tangata. Heoi anō, he renarena i roto i te kupu whakarite whakapapa e whakamahia ana e ngāi Māori. Ka whakanui te pūtaiao taiao i ngā waehanga rawa, motuhake, ōkiko o ngā pūnaha taiao, hāunga ngā ahu kiko kore e uaratia ana e ngāi Māori. I roto i te takiwā o te taiao he maha ngā kaipūtaiao Māori, ā, ka whakamahi rātou i te tikanga pūtaiao kia kite i ngā mea ōkiko me ngā mea e āhei ai te ine o te mauri taiao. He pērā i te whakaatu i te pēhanga toto o te mema whānau tāngata, ka taea te whakamahi i ngā taputapu me ngā inenga ki te whakatau i te hauora taiao. Heoi anō, kāore e taea te hopu ngā wāhanga kiko kore o te mauri, te mana me te tapu mā tēnei mahi. Nā te mea ka āhei te kupu whakarite whakapapa me ngā mātāpono matua pērā i te mauri te kapi i ngā ahu kiko kore me ngā āhuatanga pūtaiao ōkiko hoki, ka whakarato i te anga taumata teitei e taea ana te pāhekoheko i ngā tauira pūtaiao me ngā mahi LSF.

Heoi anō, me whai i ngā hātepe whakawhiti ahurea, whakawhiti akoranga hoki ki te whakangāwari i te pāhekoheko i waenganui i ngā tauira. Ka taea te kōrerorero me te whakaraupapa tētahi ki tētahi ki te whakatū i te whakaaro kotahi e whakaaetia ana, heoi anō, kei roto i tēnei te whakaae ki ētahi whakapae tūrehurehu tūāpapa. Hei tauira, me pēhea ngā whakapae pūrere me te rangatira-pononga, me tō rāua whakanui i te rawa, takitahi, me te taputapu e whakapāpā atu ki te tirohanga whakapapa ao Māori e mōhio ana hoki ki ngā mea tapu, ā, ka kitea ngā mea ehara i te tangata hei whanaunga? Pērā i te whakahuatanga i runga ake, ka taea pea mā te whakatakoto i ngā kupu whakarite hōhonu, pērā i te whakapapa, e taea ana te kapi i ētahi atu kupu whakarite. Ina whakatūria ana te kupu whakarite whānui, e āhei ana te tae atu ki te huinga mahinga uara e whakaaetia ana (pērā i te ahunga āheinga o Sen)[7], me te aha, he whakapae kotahi mō te oranga puta noa i ngā tauira. I muri iho, ka taea te tautuhi, te whakawhanake rānei i ngā tūtohu me ngā inenga, me te whakamahi i te whakatauira, e taea ana te tautoko i te tātaritanga pānga o ngā kaupapahere rerekē me ngā mahi ki ngā putanga oranga. Kāore te ahunga pērā e hiahia ana ki te

[6] Reid, J., & Rout, M. Developing Sustainability Indicators – the need for radical transparency. Ecological Indicators. https://doi.org/10.1016/j.ecolind.2019.105941.

[7] Amartya, S. (2000). Development as freedom. New York: Anchor Books.

whakakorenga nui o te LSF onāianei, engari he whakarārangi anō i ngā waehanga onāianei ki te whakaputa i te pāhekoheko i waenganui i ngā tūnga ahurea me te akoranga. Waihoki, he tauira pāhekoheko whānui, e awhi ana i te kanorau nui ake o te tirohanga, he nui ake te tūponotanga ki te hopu i te whīwhiwhi, te whakatau i te tūraru (tae atu ki ngā wā tāhoro), me te tāpae i te tika ina aromatawai ana i ngā pānga o ngā mahi rerekē me ngā tūnga kaupapahere.

Te whakaaro whakawhiti me te tauutuutu i roto i ngā hātepe pūtea

He whakataunga uaua mā ngā Kāwanatanga e pā ana ki ā rātou whakapau moni. Mai i te Pūtea 2019, he mahi tā te LSF ki te uiui i te whakapau moni. He rerekē ngā pānga o ia rārangi o te whakapau moni ki ngā taputapu haupū rawa. Hei tauira, ka auaha te whakangao nui a te kāwanatanga ki te hanganga rori i te rerenga whakangao nui ki te haupū rawa tangata me te pāpori mā te whakapiki i te mahi, ngā whiwhinga moni, me te hanganga tāone. Heoi anō, he nui rawa pea te tapuwae waro taumaha, me te whakaiti o te haupū rawa taiao me ngā rerenga ā muri ake (te noho nama ki anamata), ki te kore tētahi rārangi whakapau moni e tāpae ana i te whakakore waro. Kei roto i ngā rārangi whakapau moni ēnei tūmomo hokohoko i waenganui i ngā taputapu haupū rawa, ā-takitahi, ā-hiatonga hoki, me ine te taumaha kia whakatau i te painga toenga.

Ka taea ngā huatau nō te ao Māori o te utu me te tauutuutu te whakarato i te māramatanga ki te ahunga tika ki tēnei take whakawhiti. Pērā i ngā kōrero i runga ake, ki te Māori ka puta mai te oranga mā ngā whanaungatanga koiora taupuhipuhi, kotahi, i te itinga iho ko ngā whanaungatanga whai painga karioi a te hapori tangata i ngā hapori ehara i te tangata. Ko te arotahi ko te 'tuku' a ngā hapori tāngata, ehara i te tāngata rānei, onāianei, ā muri ake hoki, tētahi ki tētahi i runga i te kawatau ka whakahokia ngā whakahere me te koha ōrite i te itinga iho, me te tāpirihanga rānei. Kei roto tēnei tūmomo whakaaro i ngā mahara o ngā iwi me ngā kaporeihana Māori maha i roto i Aotearoa, me tā rātou tirohanga mō ngā whakatipuranga huhua, ā, e rapu ana ki te whakangao i tō rātou haupū rawa ki ngā mahi māpua me ngā hangarau e tautoko ana i ngā whanaungatanga tautoko mana ki ō rātou whanaunga tangata, ehara i te tangata hoki.[8] Ina whakamāramatia ana ki ngā kupu ohaoha, ko te tikanga o tēnei te whakatau whakapau moni takitahi, hiatonga hoki e tautoko ana i te rerenga o te 'tuku' koiora taupuhipuhi mai i tētahi whakarōpūtanga taputapu haupū rawa ki ētahi atu, me te kore whakaheke ina tiro ana i te taepaepatanga wā mai i tētahi whakatipuranga ki tētahi me te tūnga hiatonga.[9] Kāore e hāngai ana te whakaaro ki ngā hokohoko, ngā ngarohanga moni rānei, engari ngā whakahere wā-tata, wā-roa rānei, e tae atu ana ki ngā pikinga raumata, hiatonga rānei, o ngā rerenga puta noa i ngā haupū rawa katoa ki te tautoko i te oranga. Ka taea e tēnei tirohanga matawhānui ā-iwi taketake te whakarerekē i te whakaaro, otirā i roto i ngā wāhanga whakawhanake kaupapahere, he pēhea ngā whakangao kaupapahere anamata e tae atu ai ki ngā mahi māpua, me te whakangao ki ngā hangarau, e whakaputa ai i ngā putanga koiora taupuhipuhi wā-roa i waenganui i ngā hapori tangata, ehara i te tangata hoki.

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[8] Reid, R., rātou ko Rout, M., ko Whitehead, J., ko Katene, T., (2021). The Tauutuutu White Paper. Lincoln: Our Land and Water Science Challenge. https://ourlandandwater.nz/wp-content/uploads/2021/08/Tauutuutu_WhitePaper_ExecutiveSummary.pdf.

Ngā whakakapinga

Ki tā te Māori tirohanga oranga, ka puta mai te oranga i ngā whanaungatanga i waenganui i ngā tāngata takitahi me ngā rōpū, ā, i waenganui i ngā mema whānau tāngata, ehara i te tangata hoki, e whakapūmau ana, e whakapiki ana rānei i te mauri me te mana, o tēnā, o tēnā. Ka puta pea ngā hangarite kore i roto i ēnei whanaungatanga e whakaiti ana i te oranga. Ka whakatenatena te tikanga ohaoha matua a te Māori o te tauutuutu i te hokohoko tauutuutu hei whakapiki i te mana me te mauri ki te whakatū i te haumaru pāpori, whakapūmau i te rangatiratanga o te tangata me te rōpū, waihanga i ngā taupuhipuhi, kōkiri i te māpua, me te whakapūmau i te hangarite tangata-taiao. He ōritetanga i waenganui i te tirohanga ao Māori me te tirohanga LSF o te oranga. He ōrite te whakaaro o ngā mea e rua he 'taputapu' tapeke tō ngā pūnaha tangata, ehara i te tangata hoki, o te raukaha tautoko tauoranga, ka taea te whakaiti, te whakapiki rānei mā ngā mahi tāngata. Mai i te tirohanga LSF ka kīia tēnei taputapu he haupū rawa, ā, mai i te tirohanga nō te ao Māori, he mauri. Tuarua, ka āta rapu ngā mea e rua ki te whakatūturu kāore ngā mea e rere ana i te taputapu e nui ake ai i te pāpātanga, hui katoa, ka whakahoutia ngā taputapu. Heoi anō, he rerekē te tirohanga ao Māori me te ahunga LSF e pā ana ki ngā kupu whakarite tūāpapa o ia tauira e whakaputa ana i te taupatupatu i waenganui i a rāua. Ko te whakataunga e hiahiatia ana te hātepe e kapi ana i ngā akoranga me ngā ahurea ki te tūraki i tēnei wehenga ki te tautoko i te pāhekoheko i waenganui i ngā ahunga Māori, te ohaoha, me te pūtaiao. He nui ake te tūponotanga o te tauira pāhekoheko ki te hopu i te whīwhiwhi me te tāpae i te mea tika rawa ina aromatawai ana i ngā pānga o ngā mahi rerekē me ngā tūnga kaupapahere i roto i ngā hātepe whakamahere pūtea a te Tai Ōhanga. Ka mutu, koinei te whakatau, e tāpae ana te whakaaro iwi taketake i te arotahi ki te whakaaro rerekē mō ngā whakawhiti i roto i ngā hātepe whakamahere pūtea. Ka tāpae te ahunga Māori ki te oranga i te tirohanga matawhānui e whakatenatena ana i ngā whakataunga whakapau pūtea e whakaputa ana i ngā rerenga nui ake o te 'tuku' koiora taupuhipuhi mai i tētahi rōpū taputapu haupū rawa ki ētahi atu i runga i te tāepaepa wā mai i tētahi whakatipuranga ki tētahi whakatipuranga. Ka tāpae te tirohanga ao Māori i te kōwhiringa ahurei ki Aotearoa ki te whakaputa i te ahunga pāhekoheko me te whānui ki te whakataunga whakapau moni me ngā mātāpono iwi taketake hei tūāpapa.

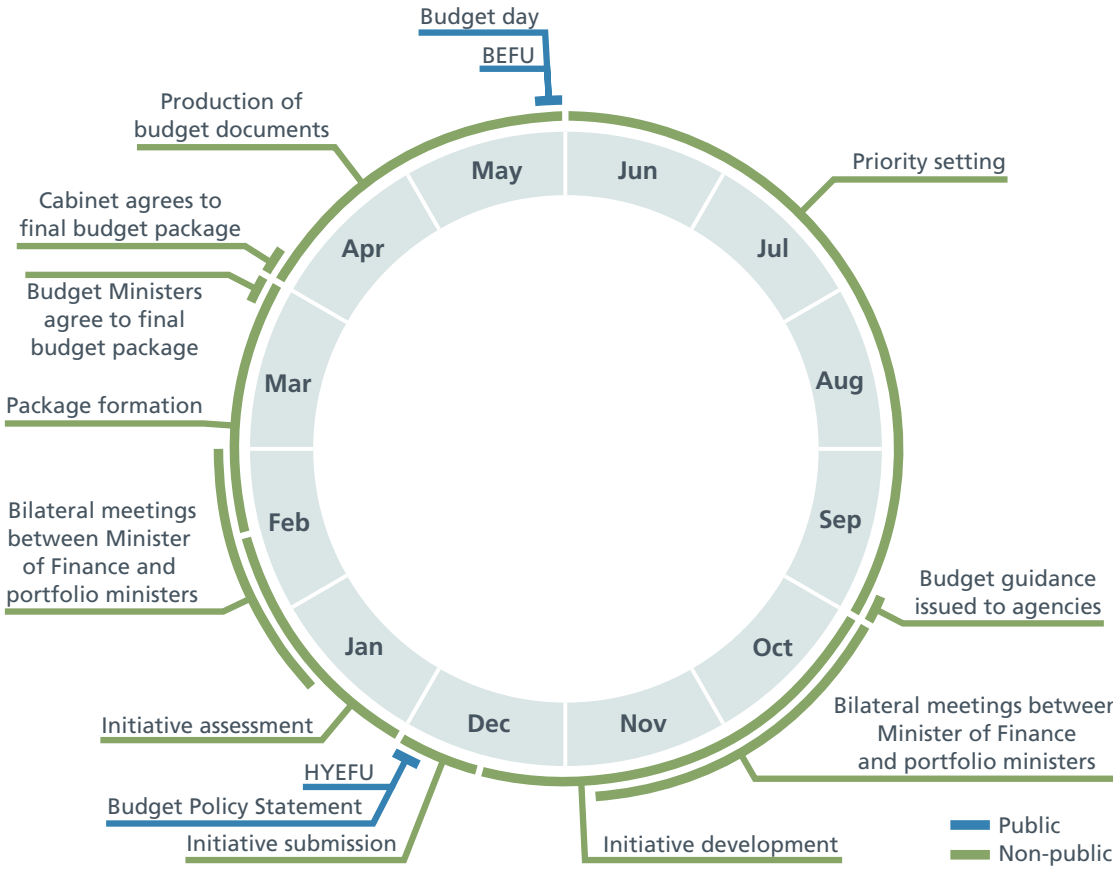
8


Hymenophyllum sanguinolentum

Appendices

Appendix 1: A detailed overview of budget process

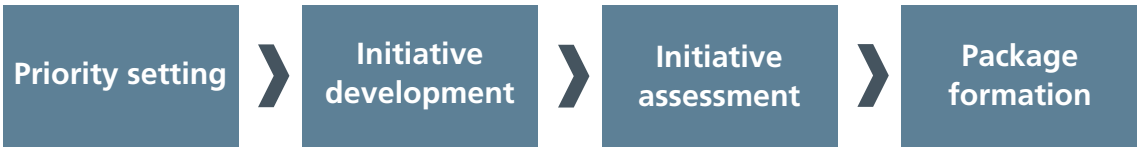
The budget is a complicated process that must be completed within a strict time frame. This appendix provides a detailed overview of this process as it relates to new spending initiatives and baseline reviews. Figure 8.1.1 presents a stylised timeline of the budget process.



Source: PCE

Figure 8.1.1: Timeline for the development of a wellbeing budget, as it relates to budget initiatives. This representation is presented as a heuristic. In reality, the budget process is not broken into discrete stages and does not necessarily contain the same stages at the same time each year. HYEFU refers to the Half Year Economic and Fiscal Update; BEFU refers to the Budget Economic and Fiscal Update.

Figure 8.1.2 illustrates the key elements of the wellbeing budget process. Each is considered in turn. In addition, comment is made on formal reviews of baseline spending.



Source: PCE

Figure 8.1.2: Key elements in the development of a wellbeing budget, as it relates to budget initiatives. This representation is presented as a heuristic to help structure the subsequent discussion. In reality, the budget process is not broken into discrete stages.

The setting of strategic priorities, including wellbeing objectives[1]

In the context of the budget process, the setting of strategic priorities takes place within a political process and is informed by expert advice. Strategic priorities – including wellbeing objectives – are politically important not only because of their role in the budget process but because they are publicly elaborated and tested.

The priority-setting process is led by the Minister of Finance, advised by the Treasury. It can also include input from other government agencies, their chief science advisors and the broader community through targeted consultation. The importance of strategic priorities pre-dates wellbeing budgets.

The first explicit articulation of wellbeing objectives appears to have been a series of documents produced by the Treasury in preparation for Budget 2019. The Treasury identified four opportunities and 12 wellbeing objectives.[2] Probably as a result of the deficiencies of environmental information gathered under New Zealand's environmental reporting systems, it was not possible for the Treasury to identify the full range of potential environmental opportunities or objectives.

The four opportunities were framed as representing areas with potential to improve wellbeing. They represented key findings from an early version of the Living Standards Framework (LSF) Dashboard and analysis of data from the General Social Survey.[3]

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[1] In addition to budget documents, this section draws upon the Treasury (pers. comm., 19 November 2020).

[2] The Treasury, 2018b, p.2.

[3] The Treasury, 2018h, p.2; 2018b, p.4. While one of the four opportunities was directly relevant to the environment domain, the Treasury is explicit that it "may have missed" opportunities (see The Treasury, 2018b, p.3).

The 12 wellbeing objectives responded to the opportunities and were informed by sector-specific data and analysis.[4] Three of the 12 objectives were directly relevant to the environment domain.[5]

Useful feedback on the four opportunities and 12 wellbeing objectives was provided by agency chief executives and chief science advisors.[6] This consultation resulted in productive input into the priority-setting process. Six objectives were recommended by the chief science advisors, including two revised environmental objectives.

Seven wellbeing objectives (including two environmental objectives) were selected by the Minister of Finance for submission to Cabinet for consultation.[7] As a result of this consultation, one environmental objective and one non-environmental objective were removed from the list.[8] Cabinet subsequently approved the five objectives. The surviving environmental objective was in effect a combination of two of the original 12 objectives.

For Budget 2020 and Budget 2021, abbreviated variations to this process were followed. For Budget 2020, the priority-setting process focused on identifying sub-objectives.[9] The Treasury drafted an initial list of 13 sub-objectives before consulting with agencies via senior officials groups. The Treasury "refined" the draft list of sub-objectives and made "minor changes" to the objectives based on this feedback.[10] The Treasury also consulted on draft sub-objectives with chief departmental science advisors and undertook the additional step of targeted consultation with eight key stakeholders, including one stakeholder with a direct environmental mandate. The Treasury "broadly support[ed]" the feedback received on the objectives and the suggested changes to the wellbeing objectives and sub-objectives.[11]

In future budgets (from Budget 2022), advice relied upon in priority setting will be produced by agency officials where there is a relevant cluster (such as the Natural Resources Cluster).

The development of budget initiatives[12]

The development of budget initiatives involves both technical and political considerations. Before initiatives are produced by agencies, they must appear on the programme of that agency. Ultimately, they must be sanctioned by their minister.

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4 The Treasury, 2018h, p.2.

5 Like the identified opportunities, the Treasury was explicit that the identified wellbeing objectives were "not an exhaustive list" but instead "they reflect areas where the Treasury has information which points to a particular problem or opportunity" (see The Treasury, 2018b, p.3).

6 The Treasury, 2018h, p.5. In total, 10 agency chief science advisors plus the Prime Minister's Chief Science Advisor.

7 The Treasury, 2018i, p.1.

8 Office of the Minister of Finance, 2018, pp.5–7.

9 The Treasury, 2019d, p.4.

10 The Treasury, 2019d, p.4.

11 The Treasury, 2019d, p.2.

12 In addition to budget documents, this section draws upon Department of Conservation (pers. comm., 3 March 2021, 11 September 2021), Ministry for the Environment (pers. comm., 17 and 23 February 2021, 29 March 2021), Ministry of Transport (pers. comm., 14 and 22 April 2021) and the Treasury (pers. comm., 23 September 2020, 16 November 2020, 17 March 2021, 28 October 2021, 13 September 2021).

The range of considerations will include government priorities, budget priorities, wellbeing objectives, ministerial priorities, agency priorities, the agency's strategic objectives and budget guidance. More intangibly, initiatives are likely to be ones that have a plausible chance of succeeding. Inside agencies, these considerations are typically articulated in an initial list of potential initiatives that are then refined into a final list.

Once the decision to produce an initiative has been taken, its elaboration is undertaken by agency officials. Officials with a financial or accounting role will typically focus on identifying the fiscal implications of the initiative. Those with a policy or operational role will focus on the strategic dimensions of the initiative, including problem definition, policy appraisal and options analysis (identifying its anticipated outputs and outcomes). Where an initiative involves substantial analysis or research, officials or external consultants with more specialised expertise may be involved – for example, in producing a formal cost–benefit analysis (CBA).

Budget initiatives may be produced as an ad hoc response to a specific budget process. They may be a response to particular wellbeing objectives or an informal ministerial request. In this case, the policy work that is undertaken to support the initiative may represent the majority or even the totality of the analysis that is ever undertaken to support it.

However, initiatives will also be produced that represent the results of larger and more sustained policy processes. In these cases, the actual development period of an initiative may extend over several years.[13] Some initiatives may have been the result of prior unsuccessful submissions that have been subsequently resubmitted, possibly with the benefit of more detailed analysis.

Typically, the formal period allocated to produce and submit budget initiatives is two to four months. This is a tight time frame. Initiative development proceeds at pace. In general, agency officials consider that more time and effort should be allowed for initiative development, as the time formally allocated is insufficient to complete a budget initiative of high quality. Where initiatives are better integrated into wider policy processes developed over longer periods, they will typically be supported by more detail and more robust analysis.

While the development of initiatives is undertaken by agency officials, it does not take place in isolation from the Treasury. The Treasury plays a dual role being on the one hand a sceptical counterparty and on the other a source of expert advice in helping agencies to put initiatives forward in a coherent way.

There are two primary channels for the Treasury's input. The first involves formal information sessions (from the Treasury to officials from multiple agencies). These information sessions cover the budget process, budget guidance, initiative development, initiative submission, initiative assessment and CBAx – the Treasury's formal CBA tool.[14] For Budget 2021, staff of the Office of the Parliamentary Commissioner for the Environment attended these information sessions, and, though the sessions were of high quality, attendance levels by agency officials were lower than anticipated. This could be because of the context (Covid-19) or because initiatives are led by agency officials who are familiar with (or think they are familiar with) budget requirements.

[13] In some instances, it may only become apparent as a policy is developed that it will require a budget initiative.

[14] As described by budget guidance. See, for example, The Treasury (2018c, pp.3, 4). On CBAx, see Appendix 2.

The second channel is a process of formal and informal engagement by the Treasury's vote analysts. These analysts may be engaged by agencies to help with, among other things:

- assessing which initiative template should be used
- instructing how to complete an initiative template
- assessing whether an initiative might align with wellbeing objectives
- testing assumptions
- assessing how formal CBA can be used to measure the impact of an initiative on wellbeing
- guiding decisions regarding the use of CBAx.[15]

It appears that agencies do not take consistent advantage of the support available from the Treasury. For example, two vote analysts from Treasury could not recall a single instance of their respective vote agencies asking for advice on CBAx. Nonetheless, informal conversations take place between vote analysts and agencies – for example, on the kind of evidential base that is required, and the nature of the distinction between outputs and outcomes.

The assessment of budget initiatives[16]

Budget initiatives are assessed by officials. That process has varied between budgets. In the context of wellbeing budgets, it is necessary to make a distinction between assessments undertaken by Treasury officials (Budgets 2019, 2020 and 2021) and assessments undertaken by agency officials in the context of budget secretariats (Budget 2020), including the Just Transition Secretariat. In future budgets (from Budget 2022), initiative assessments will take place by agency officials where there is a relevant cluster (such as the Natural Resources Cluster) and by Treasury officials where there is not.

When initiative assessment is undertaken by the Treasury, it is primarily undertaken by vote analysts. Vote analysts analyse the initiative and identify gaps and weaknesses in the evidence base supporting it. The vote analyst will often maintain a dialogue with the responsible agency asking questions to inform the assessment. The process of assessment typically takes a month.

[15] As described by budget guidance. See, for example, The Treasury (2020a, p.13).

[16] In addition to budget documents, this section draws upon the Treasury (pers. comm., 16 November 2020, 24 February 2021, 17 March 2021, 28 October 2021) and Just Transition Secretariat (pers. comm., 23 October 2020, 29 March 2021).

While initiative assessments are primarily undertaken by vote analysts, the process of assessment is ultimately undertaken as part of a collaborative process by vote teams within the Treasury.[17] Final advice will draw on discussions with other vote analysts, vote managers and the budget team at the Treasury.[18] Internal moderation ensures there is a degree of consistency in assessments. The formality and breadth of this moderation varies from year to year.[19] Following moderation, the assessment is finalised and approved by a vote manager. The assessment then forms the basis of the Treasury's subsequent advice to the Minister of Finance.[20]

This process of assessment appears to diverge when it is undertaken by officials from non-Treasury agencies through budget secretariats. Budget secretariats are cross-agency groupings of officials responsible for the assessment of initiatives and the formation of budget packages. For each of the five wellbeing objectives identified, a budget secretariat was constituted for Budget 2020. The Just Transition Secretariat coordinated the assessment of new spending initiatives that contributed to the Just Transition wellbeing objective concerning emissions. The Just Transition Secretariat involved a number of agencies from the natural resources, energy and transport sectors.[21]

Inside the Just Transition Secretariat, the assessment of initiatives was undertaken by agency officials as well as external contractors. An attempt was made to ensure that the official that assessed a given initiative was from an agency other than the agency that had submitted that initiative.[22] Like the process inside the Treasury, initiative assessment inside the secretariat was ultimately a collective and collaborative process. It drew upon collective reasoning and was ultimately based on informal Delphi-style judgements. While it was considered important that individual budget initiatives stood on their own feet, assessment was focused more on the overall budget package of which they were a part.

While budget secretariats were formally separate from the Treasury, the Treasury nonetheless provided formal guidance in the form of assessment templates. These templates were used only as a starting point by the Just Transition Secretariat. In addition, officials from the Treasury acted as aides to budget secretariats, though they had no formal role.

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[17] A vote team consists of the vote analysts responsible for assessing initiatives within that vote (and potentially closely related votes) and their vote manager.

[18] While the vote team provides the technical analysis and assessment that feeds into initiative assessment and package formation, the budget team provides the administrative support.

[19] The Treasury, 2018c, p.5.

[20] The Treasury, 2018c, p.5.

[21] The Just Transition Secretariat included the Ministry for the Environment; Department of Conservation; Ministry for Primary Industries; Ministry of Business, Innovation and Employment; and Ministry of Transport. It was led by the Minister for the Environment and involved ministers responsible for each agency.

[22] Where this was not feasible, a second official (from a different agency) would provide quality control to ensure that the assessment was reasonable.

The formation of budget packages[23]

A budget package is a collection of budget initiatives that are progressing towards a positive funding decision. The formation of budget packages is iterative, and agencies may be asked to provide additional information with respect to the initiatives they submitted.[24] Typically, an initial draft package is formed, which is then revised multiple times before a final package is formulated. The formation of an initial draft package necessarily involves prioritisation, as agencies submit bids for significantly more than budget allowances.

At the Treasury, the formation of an initial budget package begins once initiative assessments leave vote teams following moderation.[25] This initial draft package is the package that is recommended by the Treasury to the Minister of Finance, based on the assessment of all initiatives within the available allowances. The budget team forms the initial draft packages for new spending priority initiatives (when there are no independent budget secretariats involved), other new spending initiatives, and appropriations that need to be supplemented to account for cost pressures. The budget team relies on the recommendations provided by vote analysts, which will include advice on the possible scaling, sequencing, or even deferral of initiatives.

For the single budget process in which budget secretariats undertook initiative assessment and the formation of budget packages, the process ran parallel to that of the Treasury. For priority new spending initiatives, the relevant budget secretariat assumed the role of the Treasury by producing an initial draft package. The Just Transition Secretariat formed initial small, medium and large packages on the basis of whether initiatives were assessed as "must runs", "priorities if the funding package is small", "what initiatives might be good to have if the funding starts to increase", and "initiatives that are opposite of 'must runs'". Within the Just Transition Secretariat, package formation was a collective process.

When the Treasury is undertaking initiative assessment and the formation of budget packages, the budget team at the Treasury iterates packages to respond to changes and decisions made by the Minister of Finance and other Budget Ministers. When budget secretariats are involved in undertaking initiative assessment and the formation of budget packages, an additional stream of iterations with the secretariat lead-ministers is added. While secretariats took on some of the role of the budget team at the Treasury, the Treasury provided additional advice to the Minister of Finance on each priority package.[26]

Regardless of whether the Treasury or budget secretariats are involved in package formation, there is significant time pressure to iterate budget packages (perhaps as little as two weeks) and make final decisions. As such, the iteration of budget packages necessarily includes significant reliance on professional judgements.

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[23] In addition to budget documents, this section draws upon the Treasury (pers. comm., 23 September 2020, 16 November 2020, 1 December 2020, 17 March 2021, 28 October 2021) and Just Transition Secretariat (pers. comm., 23 October 2020, 23 February 2021, 29 March 2021).

[24] The Treasury, 2019a, p.18.

[25] The Treasury, 2018c, p.5.

[26] The Treasury, 2019a, p.6.

A group of Budget Ministers led by the Minister of Finance effectively makes the final decisions that are sent to Cabinet for approval.[27] Prior to this, the Minister of Finance will have met with ministers to discuss the initiatives they are responsible for. A key piece of advice received by the Minister of Finance and Budget Ministers is a line-by-line summary of initiatives. While the Office of the Minister of Finance receives initiatives and initiative assessments, the extent to which these documents are used by the Minister is not clear. In addition, the Minister of Finance receives a budget report and regular verbal and written advice from officials at the Treasury. Other key advice includes slide packs and reports highlighting the latest forecasts and key choices that the Treasury considers that Budget Ministers should focus on. In a typical budget process, Budget Ministers meet three to four times as a formal decision-making group.

When the Budget Ministers have completed their work, Cabinet receives the budget as an entire package rather than discrete packages or initiatives. Cabinet is asked to approve the budget package as a whole.

How is baseline spending reviewed?[28]

Outside the budget process, ministers and agencies routinely review baseline expenditure. In the context of budget processes, wholesale formal reviews of baseline expenditure across agencies or groups of agencies are rare.

A wellbeing lens is intended to apply to all public expenditure, not just new spending initiatives. In the course of Budget 2022, a review of the baseline expenditure of three agencies – Department of Conservation, Ministry for the Environment and Ministry for Primary Industries – will be undertaken under the heading of a Natural Resources Cluster. Budget 2022 will also include a review of the baseline expenditure of agencies that are part of a Justice Cluster. Previous baseline reviews included the Ministry of Social Development (Budget 2019), the Ministry of Defence and the New Zealand Defence Force (Budget 2020), and the Ministry of Justice (Budget 2021).

The review of the Natural Resources Cluster started in early 2021 and is intended to finish in early 2022. As that review is still underway (and still developing) it is difficult to comment on how it is being undertaken. Nonetheless, some sense of what is likely to take place can be pieced together from previous baseline reviews and stated intentions. The model for the baseline review of the Natural Resources Cluster will be the previous reviews undertaken in earlier wellbeing budgets.

It is intended that baseline reviews should operate in a collaborative manner between the Treasury and agencies, from designing the review process, to analysing data and making recommendations.[29] The governance structure of a baseline review reflects this: baseline reviews have been governed by a joint Treasury/agency steering group which, in turn, oversees a joint Treasury/agency review team. The review team is relatively independent of the steering group, the Treasury and agencies. It is this team that ultimately reports to ministers.

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[27] Budget Ministers are typically drawn from the Prime Minister, the Minister of Finance, the Deputy Prime Minister and Associate Ministers of Finance.

[28] In addition to budget documents, this section draws upon agency officials involved in the baseline review of the Natural Resources Cluster (pers. comm., 16 June 2021) and the Treasury (pers. comm., 1 July 2021, 28 October 2021, 13 September 2021).

[29] Robertson, 2020.

A focus of the Natural Resources Cluster review team will be the strategic alignment of baseline expenditure. In simple terms, this is a focus on the extent to which expenditure is aligned with wellbeing outcomes. This requires an understanding of environmental opportunities, risks and priorities. Rather than attempting to do this from scratch, the review team intends to construct an 'outcomes framework' from existing agency and government documents, including wellbeing objectives.

Once an outcome framework has been constructed, it is intended that the review will proceed in two stages. The first stage is broad. It will map expenditure onto the outcomes framework via financial models and quantitative fiscal information. The second stage is both narrower and deeper and will focus on key priority areas, although it is anticipated that it will still include the majority of potential expenditure. It will focus on assessing the efficiency, effectiveness, financial sustainability and financial risk and resilience of expenditure. It will involve quantitative and qualitative information with the general form of analysis approximating the structure of ex-post policy appraisal or policy evaluation.

The review team will ultimately produce a final report that will feed into the broader budget decision-making process. It is intended that the report will provide advice on the value for money of baseline expenditure, assess the implications of this advice for future funding (new funding or reprioritisation), and provide advice on forward funding profiles. In principle, a baseline review could result in an increase in the baseline of agencies. The recommendations will either be accepted or not by ministers.

This represents a more thoughtful and thorough-going approach to examining public expenditure than the kind of review typically undertaken in the formal budget process. In the first wellbeing budget (Budget 2019), scrutiny of baselines took place at the portfolio level using the crude tool of requiring agencies to identify one per cent of baseline expenditure as "low value" or "low priority" spending.[30] The identification of this expenditure was designed to provide opportunities to align expenditure with strategic priorities.[31] Identifying the one per cent of qualifying expenditure was intended to be a prerequisite for the consideration of new spending initiatives related to that agency.[32] As such it can be regarded as part of an age-old Treasury responsibility for ensuring that all agencies look within their current resources before asking for more.

In contrast to the current form of baseline reviews, this minimal portfolio-level exercise was grafted onto the standard budget process.[33] Initiatives submitted for prioritisation were self-assessed by agencies in terms of feasibility and risk profile (severity, likelihood). Treasury assessment focused on the reasonableness of the self-assessment completed by the agency (including the risks associated with prioritisation) and which initiatives should be accepted by ministers for prioritisation. A draft prioritisation package was presented to finance ministers.[34]

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[30] Office of the Minister of Finance, 2018, pp.2, 10; The Treasury, 2018c, p.7.

[31] Office of the Minister of Finance, 2018, p.2. The Treasury, 2018c, p.3.

[32] Office of the Minister of Finance, 2018, pp.8, 10, 13; The Treasury, 2018c, p.6.

[33] The Treasury, 2018c, pp.38–40.

[34] The Treasury, 2019c, p.22.

Appendix 2: Analytic tools and information databases

This appendix contains a short description of several analytic tools and information databases that are currently used in the budget process or, in the case of information databases, have potential to be used in the budget process. The list of databases and tools is far from exhaustive. The specific focus of this appendix is on tools and databases that are formally or informally integrated into the budget process (e.g. the Living Standards Framework (LSF) Dashboard), that are required by the budget process (e.g. 'wellbeing analysis'), or are produced by the Treasury to assist with the assessment of initiatives in the budget process (e.g. CBAx), as well as tools that have influenced our recommendations (e.g. the Ministry of Transport's policy appraisal tool (PAT)).

The LSF Dashboard: The Treasury's dashboard of wellbeing indicators

Overview of the LSF Dashboard

The LSF Dashboard is a measurement tool that the Treasury has developed to support its use of the LSF.

The LSF Dashboard is intended to be used primarily by the Treasury to inform its advice about cross-government policy priorities for improving wellbeing, such as advice on budget priorities, and for wellbeing and stewardship reporting.

The LSF Dashboard and the budget process

In terms of the budgetary process, the LSF Dashboard fulfils two primary roles. First, it is one source of evidence into the Treasury's high-level advice to the Government on its wellbeing budget priorities. The second is to enable the Treasury to conduct regular wellbeing reporting as required under the Public Finance Act 1989.[35] The Act requires the Treasury to report on the state of New Zealand's wellbeing using a broad range of indicators to complement the more traditional focus on economic metrics.[36]

The LSF Dashboard, the environment and the LSF

Consistent with the underlying conceptual basis of the LSF, indicators relating to the natural environment are included in the dashboard depending on whether they relate to the environment as a domain of current or future wellbeing. Indicators relating to current wellbeing are further disaggregated by demographic and other variables (subject to data availability) to demonstrate distributional patterns.

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[35] The Treasury, 2019e, p.2.

[36] The Treasury has two different wellbeing reporting roles that are outlined in the Public Finance Act 1989. First, s 26NB of the Act requires the Treasury to produce reports on the state of wellbeing in New Zealand, with the first report to be produced before the end of 2022. Subsequent reports are to be produced at four-yearly intervals. It is intended that the LSF Dashboard will be the primary but not necessarily the sole source of indicators for the Treasury's wellbeing reports. This reporting function is not formally part of the budget process.

Second, the LSF Dashboard has also been used to support requirements under the Public Finance Act 1989 relating to the development of the Government's Budget Policy Statement (s 26M) and Fiscal Strategy Report (s 26KB). This includes informing the wellbeing objectives that the Government is required under the Public Finance Act 1989 to outline in the Budget Policy Statement and report against in the Fiscal Strategy Report. While the integration of a wellbeing outlook in the budget documents is not required by legislation, current practice has been to use the LSF Dashboard, alongside other evidence, to support an analysis of wellbeing trends in the Budget Policy Statement

The indicators were selected based on a formal feedback process, the input of technical experts and practical data considerations, including availability, consistency and update frequency.[37] Given its role as a policy tool, the LSF Dashboard only includes indicators for which data is available. The LSF Dashboard does not aim to be a comprehensive database of indicators and is not intended to provide the level of indicator granularity needed for agency or sector policy analysis. An outline of existing indicators as of April 2021 is provided in Table 8.2.1.[38]

As indicated by its name, the LSF Dashboard is aligned with the LSF. The current version of the dashboard – which is aligned with the 2018 LSF – contains indicators for each of the 12 domains of current wellbeing (including environment) and four major capital stocks (including natural capital). It does not contain explicit indicators related to risk and resilience. The LSF Dashboard currently consists of over 60 indicators. The Treasury intends to refresh the LSF Dashboard in 2022 to reflect the new and revised elements of the 2021 version of the LSF.

The 2018 LSF domains of current wellbeing included in the current LSF Dashboard are:

- civic engagement and governance
- cultural identity
- environment
- health
- housing
- income and consumption
- jobs and earnings
- knowledge and skills
- safety
- social connection
- subjective wellbeing
- time use.

The 2018 LSF capital stocks included in the current LSF Dashboard are:

- financial and physical capital
- human capital
- natural capital
- social capital.

[37] The Treasury, 2018f, pp.9–10.

[38] Note that although risk and resilience is included as a category in the underlying LSF, indicators have yet to be developed.

Table 8.2.1: Environmental indicators included in the LSF Dashboard.[39]

Indicator	Statistic	Data source
Air quality	National annual average PM_{10} concentrations.[i]	Stats NZ
	Population-weighted exposure to $PM_{2.5}$ concentrations.[ii]	OECD
Access to the natural environment	Percentage of adults who said they could easily get to all or most of the green spaces in their local area.	Stats NZ
Water quality (swimmability)	Percentage of tested river sites that are safe to swim in under normal conditions.	Ministry for the Environment
Perceived environmental quality	Percentage of people who rated the overall state of the natural environment in New Zealand as good or very good.	Lincoln University
Net greenhouse gas emission	Net greenhouse gas emissions in kilotonnes of carbon dioxide equivalent (CO_2-e).	Ministry for the Environment
Renewable energy	Renewable energy as a percentage of total primary energy supply.	Stats NZ and Ministry of Business, Innovation and Employment
Climate regulation	Carbon stored in forest and soil biomass.	Ministry for the Environment
Sustainable food production	Percentage of tested sites within targets for at least six of the seven types of soil test.	Ministry for the Environment
Drinking water	Proportion of the population served with drinking water that met all standards.	Ministry of Health
Biodiversity and genetic resources	Percentage of indigenous species at risk/ threatened among assessed species.	Department of Conservation
Waste management	Kilograms of waste, per capita.	Ministry for the Environment

Notes:

[i] PM_{10} is any airborne particulate matter with a diameter of 10 micrometres or less.

[ii] $PM_{2.5}$ is any airborne particulate matter with a diameter of 2.5 micrometres or less.

[39] The Treasury, 2019e.

IANZ: Stats NZ's database of wellbeing indicators

Overview of IANZ

Stats NZ's Ngā Tūtohu Aotearoa – Indicators Aotearoa New Zealand (IANZ) is a structured database of indicators that capture the different dimensions of wellbeing.

IANZ provides a repository of wellbeing indicators intended for general use across the wider public sector and the public. It aims to provide a broad statistical evidence base required to assess wellbeing. The indicators were developed after wide consultation with the general public, business and community groups and a range of technical experts. It supports a range of reporting requirements, including reporting under the United Nations' Sustainable Development Goals and the Treasury's LSF Dashboard.

IANZ and the budget process

IANZ is not formally integrated into the budget process, although the Treasury's LSF Dashboard does reproduce a number of indicators from IANZ.

IANZ, the environment and the LSF

IANZ includes 15 indicators relating to environment in the context of current wellbeing. These indicators are broad in scope and include measures relating to air quality, quality of the urban environment, waste and land.

IANZ includes 26 indicators relating to the environment in the context of future wellbeing. These indicators include measures of natural capital stocks and ecosystem services relating to energy, land and air and greenhouse gas pollution.

These indicators were selected on the basis that they represent the most important aspects of wellbeing to New Zealanders based on public consultation and feedback. The indicator selection process was unconstrained by data availability, and a substantial number of the indicators are still under development and have yet to be populated with data.[40] An outline of existing indicators and associated data gaps is provided in Table 8.2.2.

In part, IANZ is structured according to whether indicators relate to current wellbeing, future wellbeing or the impacts that New Zealand has on other countries.[41] This means that it shares some similarity with the LSF and the LSF Dashboard.

One noticeable difference between IANZ and the LSF Dashboard is that the latter generally focuses on the wellbeing of New Zealanders. However, IANZ explicitly accounts for transboundary impacts or the impact that New Zealanders have on the wellbeing of the global community.

More generally, IANZ is structured around the conceptual framework developed by the Conference of European Statisticians to measure sustainable development and has been influenced by the Sustainable Development Goals.[42] The focus on sustainable development encompasses an intergenerational dimension, which ensures IANZ is largely consistent with the LSF.

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[40] Stats NZ, 2019.

[41] Under the IANZ framework, topics relating to current wellbeing include subjective wellbeing; cities and settlements; land; health; ecosystems; economic standard of living; social connections; knowledge and skills; governance; climate; safety; water and sanitation; work; culture; air quality; identity; leisure; and waste. Capital stocks consist of natural capital, social capital, human capital, and financial and physical capital.

[42] United Nations Economic Commission for Europe, 2014.

Table 8.2.2: Environment-related indicators included in IANZ.

Topic	Indicator	Measure	Data source
Current wellbeing			
Air quality	Illness attributable to air quality	Modelled health effects from exposure to human generated PM_{10} per 100,000 people as a proxy	Stats NZ and MfE
Cities and settlements	Access to natural spaces	To be developed	To be determined
	Commuting time to work	To be developed	To be determined
	Homelessness	Estimated number of severely housing-deprived people	Ministry of Housing and Urban Development
	Housing affordability	Percentage of households spending more than 30 per cent of their household income on housing costs	Stats NZ
	Housing quality	To be developed	To be determined
	Overcrowding	Percentage of people in crowded households	Stats NZ
	Resilience of infrastructure	To be developed	To be determined
Climate	Costs of extreme weather events	To be developed	To be determined
Ecosystems	Biodiversity/native species	To be developed	To be determined
Land	Active stewardship of land	To be developed	To be determined
Waste	Material intensity, including recycling, landfill inflows, second-hand economy	To be developed	To be determined
	Waste flows in waterways and coastal marine environments	To be developed	To be determined
Water and sanitation	Drinking-water quality	Percentage of population with fully compliant drinking water (bacteriological, protozoal, chemical)	Ministry of Health
	Safety of water for recreation and food gathering	Percentage of New Zealand's modelled river length by Campylobacter infection risk as a proxy	Stats NZ and MfE
Future wellbeing			
Natural capital	Cultural ecosystem services	To be developed	To be determined
	Ecological integrity	To be developed	To be determined
	Efficiency of land use	To be developed	To be determined
	Energy consumption	Yearly energy consumption in New Zealand (gross petajoules of energy)	MBIE
	Energy intensity	Amount of energy the New Zealand economy uses to produce each unit of GDP (megajoules/$)	MBIE

Natural capital	Energy resources	To be developed	To be determined
	Fish stocks	Total allowable catch (tonnes) as a proxy measure	Ministry for Primary Industries
	Global CO_2 concentrations	Global concentration of CO_2 in parts per million	Earth System Research Laboratory (ESRL) Global Monitoring Division
	Gross greenhouse gas emissions	Gross greenhouse gas emissions in kilotonnes of CO_2-e	MfE
	Land assets	To be developed	To be determined
	Levels of pollutants: NO_2	Nitrogen dioxide concentrations that exceed the air quality standard	Stats NZ and MfE
	Levels of pollutants: PM_{10}	PM_{10} concentrations that exceed the air quality standard (PM_{10} concentrations to be used as a proxy until robust data on $PM_{2.5}$ are available)	Stats NZ and MfE
	Mineral resources	To be developed	To be determined
	Net greenhouse gas emissions	New Zealand's net greenhouse gas emissions in kilotonnes of CO_2-e	MfE
	Ocean acidification	New Zealand's subantarctic surface waters pH levels	Stats NZ and MfE
	Productive land	To be developed	To be determined
	Provisioning ecosystem services	To be developed	To be determined
	Quality of water resources	To be developed	To be determined
	Regulating ecosystem services	To be developed	To be determined
	Renewable energy	New Zealand's renewable energy as a percentage of total primary energy supply as a proxy	MBIE
	Soil health	To be developed	To be determined
	Stock of freshwater resources	To be developed	To be determined
	Waste generation	To be developed	To be determined
	Water stress	To be developed	To be determined
Financial and physical capital	Modified land: from a productive state	To be developed	To be determined
	Modified land: from a natural state	To be developed	To be determined
Transboundary impacts			
Waste	Export of waste (net and gross)	Net waste quantity (export minus import) by type measured in tonnes as a proxy	Stats NZ
Climate	Consumption-based greenhouse gas emissions	Consumption-based greenhouse gas emissions (tonnes of CO_2-e) per capita	Stats NZ
Natural capital	Net greenhouse gas emissions	New Zealand's net greenhouse gas emissions in kilotonnes of CO_2 equivalent	MfE

SEEA: The United Nations' System for Environmental-Economic Accounting

Overview of SEEA

The System of Environmental-Economic Accounting (SEEA) provides a statistical framework that integrates environmental and economic information using accounting standards and classifications that are consistent with the System of National Accounts.

Environmental-economic accounting provides a method for organising both environmental and economic data from disparate sources with different statistical classifications and standards in an integrated framework. This enables accounts and statistics to be derived, which in turn demonstrate the environmental impacts of economic activity and the requirements of the economy from the environment. Accounts produced using the SEEA framework allow for measures relating to key environmental assets, flows (of natural resources and pollutants), environment-related economic transactions, and ecosystems to be derived that summarise the underlying relationships between the environment and the economy as a source of human wellbeing.[43]

SEEA and the budget process

SEEA is not currently used in budget processes. However, Stats NZ currently produces a select number of environmental accounts covering fish stocks, flow accounts relating to greenhouse gas emissions and environment-related economic transactions that measure environmental taxation and expenditure.[44] To date, these accounts have not been formally integrated into the budgetary process to further understand the interdependencies between the environment and the economy.

SEEA, the environment and the LSF

There are several different types of environmental accounts that can be produced under the SEEA framework. Stock accounts track changes in the physical quantity of environmental assets over time (e.g. fish, timber, minerals and water) to illustrate whether economic activity is depleting the underlying natural capital base. Stock accounts can also be expressed in monetary units in the form of balance sheets and presented alongside other resources, including produced capital to provide a measure of the aggregate or comprehensive wealth of the economy.[45]

Other accounts that can be produced under the SEEA measure the flow of pollutants and materials across the economy–environment boundary. Flow accounts provide information on the pollutants generated from the production process (e.g. greenhouse gases, waste, discharges to water) that can have detrimental impacts on the environment and human wellbeing. They can also demonstrate the extent to which natural capital resource flows are consistent with the regenerative capacity of the environment (e.g. the flow of timber to the economy relative to the stock of timber).[46]

These environmental stock and flow accounts are complemented by the SEEA Ecosystem Accounting framework that was recently adopted by the United Nations Statistical Commission as a statistical standard. Traditional flow and stock accounts are largely compiled from the perspective of natural resources and associated environmental source and sink functions. In contrast, ecosystem accounts adopt a systems-based approach that concentrates on the contribution of the environment to human wellbeing.

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[43] United Nations et al., 2014a

[44] Stats NZ, 2018.

[45] United Nations et al., 2014a.

[46] United Nations et al., 2014a.

Ecosystem accounts adopt a spatially explicit approach that consists of several different accounting formats covering ecosystem extent, condition, service flows and monetary stock accounts. These different formats provide a conceptual accounting structure that can measure each part of the causal chain linking ecosystem functioning and condition to service provision, benefits and human wellbeing.[47]

Environmental-economic accounts produced under the SEEA framework are not currently integrated with the LSF. However, within a wellbeing context, these accounts can measure and assess changes in New Zealand's natural resource base, consistent with the Treasury's focus on intergenerational wellbeing.

One of the primary advantages of natural capital accounting from a wellbeing perspective is its ability to directly measure and track changes in natural capital stocks over time. Environmental asset accounts provide an assessment of natural capital stocks and changes in the physical quantity of resources over time. Monetary asset accounts can potentially mask fluctuations in changes in the underlying physical stock of natural capital because of changes in price and the discount rate. Accounts expressed in physical terms can provide decision makers with information regarding the sustainability of resources and their ability to deliver a flow of benefits to future generations.

Asset accounts can also be complemented with flow accounts that can be used to further decompose changes in aggregate stocks and provide a detailed overview of underlying drivers, including extraction and harvesting rates. Physical data relating to flows between the environment and the economy in terms of source and sink functions can be measured to provide an assessment of environmental and resource-intensity indicators.

While environmental-economic accounts restructure existing datasets, the resulting format allows for the development of aggregate indicators relating to various aspects of natural capital. For example, asset accounts can be used to produce indicators that determine whether existing patterns of economic activity are depleting the available natural resource base. Environmental flow accounts can also be used to assess the extent to which the natural resource base is being used to efficiently support wellbeing.

While there is scope for an expanded role for environmental-economic accounting within an information database structured by the LSF, the limitations of environmental-economic accounting need to be acknowledged. Environmental asset accounts that track opening and closing stocks of a resource only provide a high-level overview of the sustainability of natural capital. These aggregate stock measures tend to ignore the complexities of ecosystem processes and dynamics, including the existence of ecological thresholds and limits regarding the substitutability of natural capital stocks. This suggests that indicators derived from environmental-economic accounts should act as a complement to more traditional state of the environment type measures.

[47] United Nations et al., 2014b.

Wellbeing analysis templates: The Treasury's assessment tool[48]

Overview of wellbeing analysis

The Treasury's wellbeing analysis templates are a structured assessment tool that is orientated around the LSF.[49] For the sake of clarification, "wellbeing analysis" does not refer to the generic analysis of wellbeing but, rather, to a specific template provided to agencies, which they are required to complete in the course of submitting new spending budget initiatives.

The focus of wellbeing analysis is on "showing a strong narrative underpinned by evidence rather than monetisation of benefits and showing a positive return on investment."[50]

In its current form, wellbeing analysis is orientated towards summarising the qualitative and quantitative assessment of the expected impacts of a policy on domains of current wellbeing. For agencies to complete the wellbeing analysis template, the following information is required:[51]

- the impact on the domain of current wellbeing
- who is affected by the impact, including any distributional impacts
- the magnitude of impact
- time frames over which the impact will be realised
- the evidence base and quality that underpins the above.

Wellbeing analysis and the budget process

Wellbeing analysis was introduced in Budget 2019. From Budget 2020, the requirements for wellbeing analysis were "simplified".[52] From Budget 2021, the requirements for wellbeing analysis were less prescriptive in that they only required that "agencies consider the wellbeing impacts of their initiatives with respect to suitable wellbeing frameworks, rather than this being limited to the LSF alone."[53]

Since it was introduced, wellbeing analysis has been accompanied by guidance. Guidance for agencies included definitions of each wellbeing domain and, where relevant, each capital stock and risk and resilience.[54] It is unclear whether the guidance provided by the Treasury has been sufficient to allow agency officials to understand the LSF and how to embed environmental considerations into wellbeing analysis. In particular, it is not clear that officials that complete wellbeing analysis understand the conceptual structure of the 2018 LSF and its intended purpose as a conceptual foundation of wellbeing analysis.

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[48] This section draws upon Department of Conservation, pers. comm., 2 December 2020, 3 March 2021; MfE, pers. comm., 23 February 2021, 19 March 2021; Ministry of Transport, pers. comm., 22, 23 and 30 April 2021.

[49] The Treasury, 2018c, pp.23–25. The Treasury, 2019a, pp.13–14.

[50] The Treasury, 2018c, p.32.

[51] The Treasury, 2019a.

[52] The Treasury, 2019a, p.13.

[53] The Treasury, pers. comm., 30 March 2021.

[54] See, for example, The Treasury (2018c, pp.23, 25).

For instance, many agency officials that had undertaken wellbeing analysis could not distinguish the environment (as a domain of current wellbeing) from natural capital (as a capital stock) when queried. Similarly, it is not clear that agency officials know when an impact relates to the environment domain of current wellbeing or another domain – for example, when air quality is a health outcome or an environmental outcome. This lack of clarity is understandable given the information supplied to agencies and the time pressures they face.

Officials consistently communicated that they respond to initiative templates. Some officials take a positive view of wellbeing analysis: that it has incentivised both a broader view of impacts and the analysis of co-benefits, and allowed for new ways to communicate with decision makers. Other officials consider wellbeing analysis to have a mixture of elements of usefulness and compliance. These officials consider wellbeing analysis to require a minimal recognition of outcomes across economic, environmental, social and cultural dimensions but that it otherwise allows agencies to do what they want to do and would have done in its absence.

Wellbeing analysis, the environment and the LSF

The LSF has been integrated into wellbeing analysis with different degrees of completeness. In later versions, wellbeing analysis required only an assessment of the initiative against the LSF domains of wellbeing (representing current wellbeing).[55] An example of the complete wellbeing analysis template that concerns current wellbeing (including environment) is found in Figure 8.2.1 below, though the precise form of this template has varied slightly over time.

Impact Description	Affected Group	Timeframe Realised	Domain Impacted	Supporting Evidence	Magnitude of impact
Identify the expected impact.	*Indicate which group(s) or places will be impacted. Quantify the size of impacts where possible, taking into account population size if applicable.*	*Indicate if the impact will be realised in the short (<5 years), med (5-10 years), or long term (>10 years).*	*Using the icons, indicate the wellbeing domain(s) that will be most impacted.*	*Provide a summary of up to 250 words outlining the initiative's likely efficacy in achieving the stated impacts. Provide links to up to 3 of pieces evidence consulted that demonstrates this efficacy.*	*Indicate the magnitude and size of the impact, and where possible, monetise present value gain or (loss) PV$m.*

Source: The Treasury, 2019a

Figure 8.2.1: A screenshot of a wellbeing analysis template, for domains of current wellbeing (Budget 2020). Similar templates were used in Budget 2019 and Budget 2021.

In its earliest version, wellbeing analysis required an assessment of a budget initiative against the different LSF domains of wellbeing (representing current wellbeing), the different capital stocks (representing future wellbeing) and risk and resilience.[56] An example of the wellbeing analysis template that concerns capital stocks (including natural capital) is found in Figure 8.2.2 below; and an example of the wellbeing analysis template concerned with risk and resilience is found in Figure 8.2.3 below.

[55] The Treasury, 2019a, p.13. According to the Treasury, this change was made "following post-Budget 2019 feedback sessions with Vote analysts to better reflect expectations on agencies and the use of this analysis" (the Treasury, pers. comm., 30 March 2021).

[56] The Treasury, 2018c, p.8.

The removal of requirements to provide an analysis of capital stocks and risk and resilience represents, in the Treasury's word, a "simplified"[57] form of wellbeing analysis and a new focus for the template.[58]

The removal of the components of the LSF that are orientated towards intergenerational wellbeing has reduced the opportunity for information on intergenerational consequences of environmental impacts to be communicated.[59] By removing this component of wellbeing analysis, the tension between current wellbeing and its sustainability through time has therefore been removed, reducing the opportunity for intertemporal trade-offs. The removal of the requirement to consider impacts on capital stocks and risk and resilience thus provides less opportunity for agencies to consider the full long-term impacts of budget initiatives.

 **Capitals**	**Describe the impact and its magnitude**	**Realised in** <5 / 5-10 / 10+ years
Financial/Physical	**[increase, decrease or maintain?]** [Comment] *Eg, **Decrease.** This initiative draws down financial capital to fund the cost of the vaccinations .*	Eg, <5 years as the cost is immediate
Human	**[increase, decrease or maintain?]** [Comment] *Eg, **Increase.** This initiative is focussed on improving individual health by promoting vaccinations in children at an early age. This helps to build the stock of human capital by increasing the quality of life for an individual, reducing hospital visits and sickness and promoting productivity.*	Eg, 10+ years as the impact of getting vaccinations as a child is felt later on in life
Natural	**[increase, decrease or maintain?]** [Comment] *Eg, **Maintain**. This initiative has no impact on natural capital .*	Eg, N/A, as no impact
Social	**[increase, decrease or maintain?]** [Comment] *Eg, **Maintain.** This initiative has no impact on social capital.*	Eg, N/A, as no impact

Source: The Treasury, 2018c

Figure 8.2.2: A screenshot of a wellbeing analysis template, for capital stocks/future wellbeing (Budget 2019). No similar templates were used in Budget 2020 and Budget 2021.

[57] The Treasury, 2019a, p.13.

[58] The Treasury, pers. comm., 30 March 2021.

[59] The template orientated towards capital stocks was titled: "Wellbeing capitals – Sustainability for future wellbeing" (The Treasury, 2018c, p.35).

3.3 Risk and resilience narrative	
Does the initiative respond to or build resilience?	Please outline any implications for risk and resilience as a result of funding this initiative, linking to 3.2 and 3.3 where appropriate eg, does the proposal build resilience that will assist New Zealand to maintain or improve existing levels of wellbeing (through capital stocks and follows) or does the initiative directly respond to any current risks to wellbeing? ***NB.*** *If you have already covered this in your narrative around the problem definition in section 2.1 then please just cross reference and summarise your response to avoid duplication.*

Source: The Treasury, 2018c

Figure 8.2.3: A screenshot of a wellbeing analysis template, for risk and resilience (Budget 2019). No similar templates were used in Budget 2020 and Budget 2021.

PAT: Ministry of Transport's multicriteria analysis policy appraisal tool[60]

Overview of PAT

The policy appraisal tool (PAT) is the Ministry of Transport's own bespoke multicriteria analysis tool. PAT is a formal analytic tool used in the process of producing budget initiatives, including those that involve environmental considerations. It takes the form of an Excel spreadsheet and produces a visualisation of the positive and negative impacts of a particular initiative.[61]

PAT is orientated towards improving the Ministry of Transport's understanding of the impacts of transport policies, including budget initiatives.[62] It aims to assist officials to identify comprehensive outcomes in a consistent way.[63] Ultimately, the tool aims to assist in the generation of evidence-based policy.[64]

PAT and the budget process

In the context of the budget process, PAT helps Ministry of Transport officials to examine the impact of a policy on transport outcomes: economic prosperity, inclusive access, resilience and security, health, safety and environmental sustainability.[65] Officials are instructed to classify the "indicative change" across these sub-outcomes and provide evidence for the classification.[66] PAT requires the use of qualitative judgements, but it tries to be value-neutral to reduce bias.

[60] This section draws upon Ministry of Transport, pers. comm., 3 and 9 December 2020.

[61] Ministry of Transport, 2021.

[62] Ministry of Transport, 2020.

[63] Ministry of Transport, 2020.

[64] Ministry of Transport, 2020.

[65] Ministry of Transport, 2021. These transport outcomes are taken from the Ministry of Transport's transport outcomes framework (see Ministry of Transport, 2018). Environmental sustainability is described as "transitioning to net zero carbon emissions, and maintaining or improving biodiversity, water quality, and air quality" (Ministry of Transport, 2018, p.6).

[66] Ministry of Transport, 2021.

In contrast to many analytic tools, PAT is a "first cut" tool that aims to provide an initial indication of the impacts and outcomes of potential policies.[67] PAT can help to understand whether the use of additional tools (climate implications of policy assessment (CIPA), cost–benefit analysis (CBA), cost-effectiveness analysis etc) are needed, as well as providing a structured approach to identifying outcomes that should be included through the use of additional tools. As such, PAT is considered by the Ministry of Transport to be an analytic tool that is especially appropriate in the beginning stages of the policy process; it facilitates rather than replaces a formal policy appraisal.[68] At the same time, PAT stays relevant throughout the policy process.

PAT, the environment and the LSF

PAT helps Ministry of Transport officials to examine the impact of a policy on transport outcomes and environmental sustainability. Impacts on the environmental sustainability outcome include the following (which are often broken down further): climate change, air quality,[69] soil quality, freshwater environment, marine environment, habitats and ecosystem, biodiversity, resource efficiency and technology, intergenerational equity and other environmental impacts.[70]

PAT is aligned with the LSF and the Ministry of Transport's own Transport Outcomes Framework, which includes wellbeing-related outcomes. However, unlike many analytic tools discussed above, the explicitness of this alignment with the LSF is less pronounced. It does not rely on LSF terminology. Indeed, PAT does not distinguish between the environment as relating to a domain of current wellbeing (the environment) or to future wellbeing (natural capital). Instead, it merges environmental concerns into a single outcome: environmental sustainability.

ILMs: The Treasury's intervention logic mapping tool

Overview of ILMs

An intervention logic map (ILM) plots the chain of causation that is relevant to a policy. As depicted in Figure 8.2.4, the Treasury's ILM template provides a structured visual depiction of the relationship between a policy problem or opportunity (the current state, the counterfactual), a policy intervention (inputs), and its anticipated impacts and outcomes (over the short, medium and long term).

Source: adapted from The Treasury, 2020a

Figure 8.2.4: Adapted from the Treasury's ILM template (Budget 2021). Similar templates were used in Budget 2019 and Budget 2020.

In brief, an ILM is an analytic tool that is orientated towards the construction of the intervention chain, including the problem that a policy responds to.

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[67] Ministry of Transport, 2020.

[68] In terms of its specific position in the policy process, PAT is intended to be particularly relevant after a problem definition has been settled and before formal options are formulated. As indicated above, this contrasts with other analytic tools that the Ministry of Transport considers to be more tailored for more detailed policy assessment and formulation (Ministry of Transport, 2020).

[69] Air pollution ("human exposure to PM, NOX, SOX and CO emissions of the transport system") is categorised in PAT as a health outcome (Ministry of Transport, 2021).

[70] Ministry of Transport, 2021.

ILMs and the budget process

In the context of wellbeing budgets, providing an intervention logic is a general requirement for budget initiatives. The ILM template is used by agencies to provide a structured format through which to present the intervention logic that underpins a budget initiative.[71] It is important to note that ILMs are intended to be interpreted alongside wellbeing analysis, which provides more detailed information on the "impacts, evidence and assumptions" that underpin the ILM.[72]

An ILM represents an aspect of undertaking good quality policy analysis. Even in those cases where an ILM is merely an ordinary step in the policy process (rather than an activity that is completed for the first time in the context of the budget process), an ILM can be an important tool for communicating relevant information to decision makers. In this sense, ILMs constitute a site where knowledge of the problem and desired outcomes can be communicated, and where the importance of the initiative can be rationalised. In simple terms, an ILM can clarify what wellbeing outcomes an initiative is trying to achieve and how those wellbeing outcomes are expected to be achieved.

An ILM underpinned by evidence generally includes the following elements:

- good understanding of the current state and counterfactual with a clear description of the evidence taking a wellbeing approach
- a summary of the different options proposed to address the problem
- the assumed outcome behind the proposed initiative
- how the initiative will be implemented and evaluated.

ILMs, the environment and the LSF

ILMs do not explicitly integrate environmental considerations. They offer a generic template for mapping the intervention logic of a policy, which envisages a discrete policy problem (or opportunity), a set of inputs purchasing a set of outputs, and a set of identifiable outcomes generated through a linear causal process.

Specific environmental ILM templates could, in principle, be produced for different environmental domains, such as water. These may more readily account for the complexity of ecosystem processes (including feedback loops and thresholds) and the complexity of the relationship between the environment and wellbeing. These maps may more readily account for environmental interventions that are orientated towards capability and system setting, such as environmental reporting.

ILMs integrate the components of the LSF that are focused on current wellbeing. As part of an ILM, agencies are required to show how the proposed policy will impact on wellbeing domains, including the environment where relevant. As part of this, an ILM will need to provide evidence for the strength of the impact, magnitude and quality of supporting evidence for impacting the wellbeing domains. Similar to other policy tools, the components of the LSF that are focused on capital stocks and risk and resilience are not integrated into the requirements of an ILM.

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[71] The Treasury, 2018c, p.14; 2019a, p.30.

[72] The Treasury, 2018c, p.32.

CBAx: The Treasury's cost–benefit analysis tool[73]

Overview of CBAx

The Treasury's CBAx model is a CBA tool developed for public sector agencies to provide a forward-looking assessment of policies, including budget initiatives. The tool consists of an Excel spreadsheet that includes generic templates for conducting CBA.[74]

CBAx provides a guiding framework aimed at the consistent application of CBA across the public sector. It is designed to help agencies think, in a robust and rigorous way, about the impacts of a policy across domains of current wellbeing (including environment), across departmental silos, and with a view to considering more long-term thinking, with a maximum of a 50-year horizon.[75]

CBAx and the budget process

Though CBAx pre-dates the first wellbeing budget,[76] it is characterised by the Treasury as a supporting tool for the analysis of wellbeing. Updates to CBAx have been undertaken so that the tool provides a "fit-for-purpose" analysis of costs and benefits in the context of wellbeing budgets.[77]

CBAx is not mandatory in the budget process – though it has been in the past. When CBAx is not mandatory, only a small number of agencies complete CBAx assessments for their initiatives.[78] However, when the use of CBAx by agencies is mandatory (as it has been, with respect to social sector initiatives), it is used in essentially all initiatives.

CBAx, the environment and the LSF

While the CBAx tool was originally designed for social sector agencies,[79] the Treasury maintains that this updated version is fit for analysing different initiatives across many domains.[80]

It is difficult to form any general conclusions on the use of CBAx for initiatives with environmental considerations simply because agencies from the natural resources sector do not routinely complete a formal CBA.[81] Meanwhile, some agencies outside the natural resources sector that routinely submit initiatives with environmental considerations undertake bespoke CBA. In the context of Budget 2021, agencies from the natural resources sector submitted informal (qualitative) and formal (quantitative) CBAs in response to the new analysis requirements, including a limited number of CBAx analyses.[82]

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[73] This section draws upon the Treasury, pers. comm., 2 February 2021.

[74] For the most recent model, see The Treasury (2021a).

[75] The Treasury, 2020c, p.11.

[76] CBAx was introduced in 2015 (see Jensen and Thompson, 2020, p.70). The original framing of the tool made no reference to wellbeing but instead referenced the social investment approach of the Fifth National Government. For example, a 2015 media release noted that the tool would facilitate "implementing a whole-of-sector social investment approach" (see The Treasury, 2015). A subsequent framing of the tool – in the form of a poster – links it to living standards (but not the Living Standards Framework; see The Treasury, 2016a).

[77] The Treasury, 2018a.

[78] The Treasury, pers. comm., 10 March 2021.

[79] The Treasury, 2015. The original framing of the tool did, however, note that it "can also be used to help calculate return on investment for a range of other initiatives" (The Treasury, 2015).

[80] The Treasury, 2019f.

[81] Agencies from the natural resources sector may undertake formal CBAs in line with internal or external processes (e.g. the requirements of regulatory impact statements).

[82] This appears to mirror the practical implications of general CBA requirements in other contexts (e.g. regulatory impact statements or business cases) where, in practice, agencies largely complete a multi-criteria analysis.

The Treasury is explicit that CBAx, like CBA more broadly, has limitations,[83] including:

- the need to quantify (and monetise) impacts[84]
- a lack of evidence on the impacts and effectiveness of initiatives (e.g. the number of people that could be expected to gain employment)[85]
- gaps in evidence arising – for example, when an initiative may be new[86]
- capability and resourcing issues, both in terms of undertaking CBAx and assessing CBAx.[87]

These limitations appear to restrict the potential usefulness of CBAx for initiatives with environmental considerations. Some of these limitations may be present in integrating environmental considerations into other analytic tools but are often less impactful. Many of these limitations can be ameliorated.

CBAx only partly integrates the LSF. In particular, CBAx links the impacts of a policy to the domains of current wellbeing (including environment) – and not to capital stocks or resilience.[88] This means that it wholly assesses impacts on current wellbeing as the discounted value derived from future costs and benefits. Even though it can be used to consider impacts on wellbeing over a 50-year period, these impacts are always discounted into present value terms and are thus based on the wellbeing preferences of the current population.

The time horizon over which a proposal is assessed is of course dictated by the choice of discount rate applied, where even if a longer time horizon were considered, the discount applied would render the net present value in those future years insignificant.

CBAx impacts database: The Treasury's database of monetised values

Overview of the CBAx impacts database

The Treasury's CBAx tool includes a database of economic values that can be applied to forward-looking assessment of the value of likely policy impacts. The values included in the CBAx tool are derived from a variety of different valuation techniques, including stated preference surveys and replacement cost estimates.

A database of values assists policymakers to conduct a simple benefit transfer exercise to obtain an indication of the potential value of the (environmental) impacts associated with a policy option so that it can be incorporated within a CBA, or other analytic tools.

A database of values avoids the need for agencies to conduct new non-market valuation studies that can be costly and time-consuming to design and implement. In addition, a database of values promotes consistency across agencies in terms of the economic value ascribed to impacts.

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[83] The Treasury, 2019c; 2020c, p.5.

[84] The Treasury, 2019c; 2020c, p.5.

[85] The Treasury, 2019c; 2020c, p.5.

[86] The Treasury, 2020c, p.5.

[87] The Treasury, 2020c, p.40. See also The Treasury (2019f).

[88] The Treasury, 2018c, p.8. See also The Treasury (2018a). Insofar as CBA assesses the annual flow of costs and benefits in each successive period, it does not directly provide a quantitative assessment for the magnitude or quality of natural capital. The CBA calculation procedure merely provides an estimate for the future flow of wellbeing outcomes that are derived from the existence of natural capital in each specific period.

The CBAx impacts database and the budget process

In the budget process, the CBAx impacts database can be used in the context of a formal CBA, whether this uses the CBAx tool or involves a bespoke CBA model. CBAx values could, in principle, be used in other analytic tools, such as wellbeing analysis templates.

Given the effect that the use of these environmental values can have on net present value calculations, the extent to which officials have adequate training and are aware of the limitations of the CBAx impacts database remains unclear given that the CBAx model does not provide any guidance with respect to the use of these values. Officials are left to apply their own judgement when transferring these values to the policy context under consideration. Budget guidance provides limited support. Meanwhile, decision makers are assumed to have the appropriate level of expertise to interpret outputs from CBAx.

In summary, the CBAx impacts database provides insufficient guidance on the interpretation and use of environmental values.

The CBAx impacts database, the environment and the LSF

The CBAx impacts database currently includes 252 values linked to LSF domains of current wellbeing, including environment. Of the 252 values, 22 relate to the environment across freshwater quality, landfill waste, greenhouse gas emissions, wetland ecosystem services and urban development (including traffic congestion and loss of access to open space). The limited number of environmental values reflects, in part, the lack of New Zealand-specific values relating to many environmental amenities. See Box 8.2.1 for more information.

Box 8.2.1: Environmental values included in the CBAx impacts database

- Waste sent to landfill: Municipal landfill (class 1)
- Waste sent to landfill: Construction and demolition fill (class 2)
- Waste sent to landfill: Managed fill (class 3)
- Waste sent to landfill: Controlled fill (class 4)
- Cost of replacing wetland ecosystem services with physical infrastructure – per hectare
- Urban development: Productivity benefits of higher density labour markets – per added employee
- Urban development: Productivity benefits of higher density labour markets – per added household
- Urban development: Cost of increased traffic congestion (Auckland) – per capita
- Urban development: Cost of increased traffic congestion (Auckland) – per household
- Urban development: Mitigation cost of reduced freshwater and coastal water quality – per dwelling
- Urban development: Loss of access to open space – per dwelling
- Freshwater quality: Benefit of improved ecological quality of waterway – per adult per 1% increase in outcome
- Freshwater quality: Benefit of improved water clarity – per adult per 1% increase in outcome
- Shadow emission values relating to CO_2 segmented by time period and price paths that reflect uncertainty regarding future abatement costs

A repository of transferrable values reduces the risk that environmental impacts are excluded from CBA and implicitly assigned a zero economic value within the CBA calculation. However, the CBAx database is far from comprehensive, particularly relating to environmental impacts. For this reason, agencies can use values outside of the CBAx impacts database. In fact, CBAx guidance links to other value databases.[89]

Recent developments in non-market valuation, including the use of subjective valuation methods derived from self-reported assessments of wellbeing, have been incorporated into the CBAx model. While subjective valuation estimates have been included for some social and economic outcomes, estimates relating to changes in environmental quality have yet to be derived.

As discussed, the CBAx impacts database only partly integrates the LSF. Environmental values – like other values in the databases – are linked to LSF domains of current wellbeing rather than capital stocks or risk and resilience.

CIPA: The climate implications of policy assessment requirement administered by the Ministry for the Environment[90]

Overview of CIPA

The CIPA requirement is an informational framework required by Cabinet aimed at ensuring decision makers have information regarding the impact of a policy on emissions. It does not communicate information on the efficiency of an initiative in reducing emissions or the value for money of a policy. As such, it only supplements broader policy advice.[91] Through its quality assurance function, the CIPA framework helps to align emissions modelling approaches across government and ensure emissions impacts are consistently disclosed to decision makers.

The Ministry for the Environment's CIPA tool is an emissions factor calculator that provides an appraisal of how a policy will impact on emissions, including budget initiatives.[92] The CIPA Excel spreadsheet is a supporting tool that can be voluntarily used to support analysis required under CIPA.

CIPA and the budget process

In the context of budget processes, a quantitative CIPA is mandatory when budget initiatives meet certain qualifying criteria. A quantitative assessment is required when a budget initiative is either intended to reduce emissions or is anticipated to impact on emissions over certain thresholds.[93] Thus there is an element of circularity when a CIPA is required: a CIPA calculates the anticipated impact of a policy on emissions, but a CIPA is only required when this impact meets a certain threshold.

As CIPA requires the same kind of activity data that provide the basis for valuation, CBA and CIPA are complementary and can be used in a parallel. The CBAx tool could be updated to include CIPA as an output tab.

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[89] The Treasury, 2020c, p.21.

[90] This section draws upon MfE, pers. comm., 6 May 2021.

[91] MfE, 2019, p.28.

[92] For an overview of the tool, see MfE (2019). While many emissions are indirect, CIPA only models direct emissions (see MfE, 2019, p.16).

[93] MfE, 2019, p.5. There are two thresholds: when the initiative has an impact greater than 50,000 tonnes of CO_2-e per year (over the first ten years); when the initiative has an impact greater than 100,000 tonnes of CO_2-e per year (over the first 30 years).

CIPA, the environment and the LSF

Compared to other quantitative analytic tools (such as CBA), the CIPA tool is relatively simple. It takes information concerning the anticipated changes in activities (inputs and outputs) flowing from a policy intervention and calculates the resulting direct changes in emissions.

Given reasonably precise and accurate information on anticipated changes in activity, the actual calculation of changes in emissions is relatively uncomplicated. The complex part of a CIPA is the prior analysis required to produce the inputs that provide the base for emissions estimates. It is here that a CIPA confronts the traditional challenges of the policy process, such as establishing and quantifying the relationship between inputs, outputs and outcomes.

Though emissions are relevant to both the environment domain and natural capital, CIPA is not explicitly integrated with the LSF.

Appendix 3: NZIER evaluation of the quality of budget initiatives with environmental considerations

In 2018, the New Zealand Institute of Economic Research (NZIER) completed an evaluation of budget initiatives for the Treasury. This evaluation involved the development of a review process along with Treasury officials.[94]

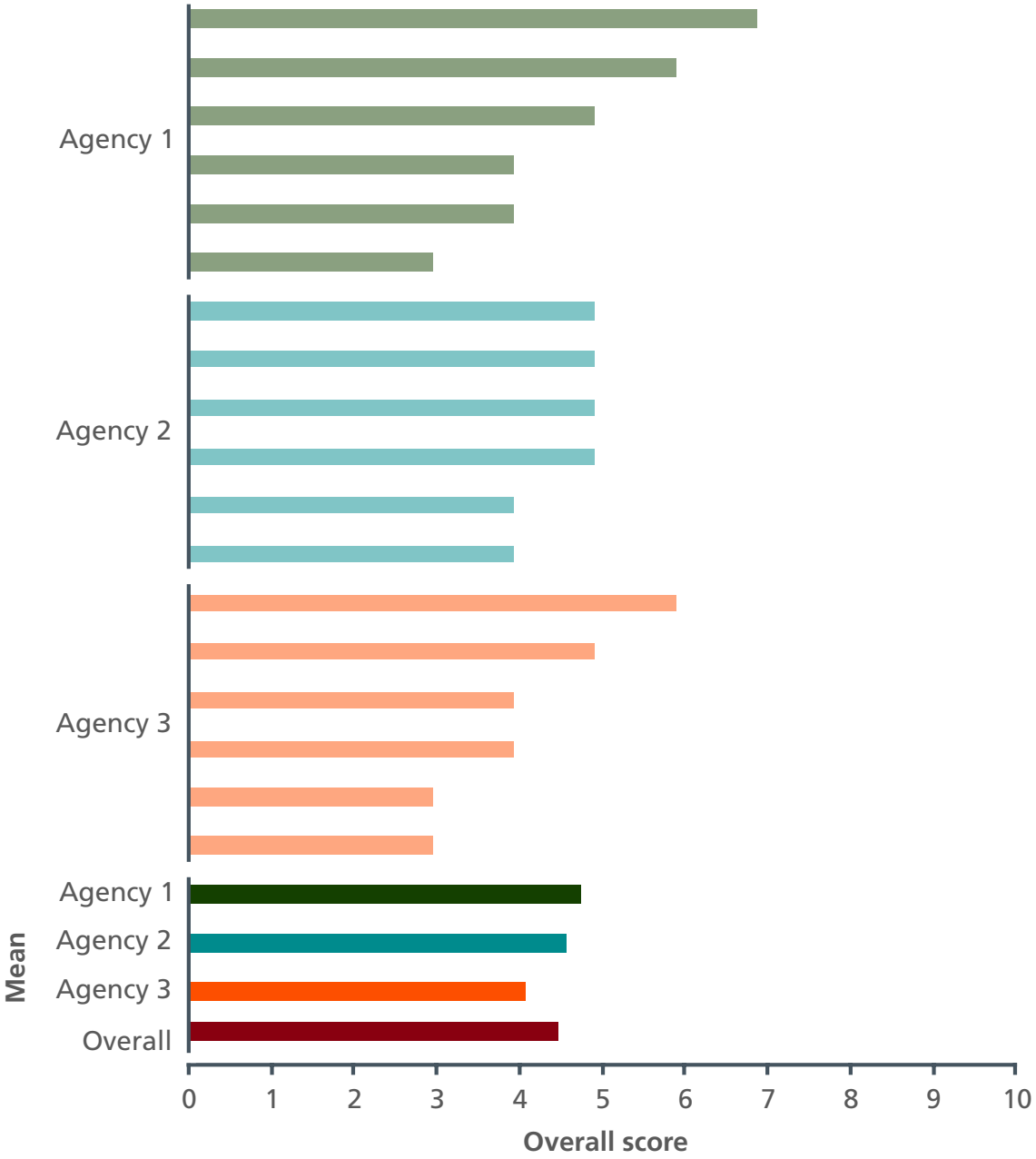
In 2021, the Parliamentary Commissioner for the Environment asked NZIER to evaluate a sample of budget initiatives with environmental considerations by using a review process aligned with that used in 2018. The sample included a total of 18 budget initiatives across three agencies that routinely submit budget initiatives with environmental considerations.

The sample of budget initiatives involving environmental considerations was assessed as "very low" quality by NZIER.[95]

The average score of the sample indicated that advice was, in general, "deficient in a number of quality criteria and needed considerable improvement".[96] The quality of the sample was assessed as ranging from "in need of a return to the very basic stages of identifying the problem and rationale for intervention" (3.0), up to "of a suitable quality to send to the Minister" (7.0) (with only one initiative achieving this assessment).

The average quality of the sample (4.6) corresponded to the characterisation "deficient in a number of quality criteria and needs considerable improvement".[97] No significant difference in the overall quality of initiatives was apparent between the agencies that were included in the sample.[98] A complete breakdown of the scores of all 18 budget initiatives is found in Figure 8.3.1.

[94] NZIER, 2018.
[95] NZIER, 2021, p.5.
[96] NZIER, 2021, p.5.
[97] NZIER, 2021, p.4. See also NZIER (2021, p.4).
[98] NZIER, 2021, p.5.



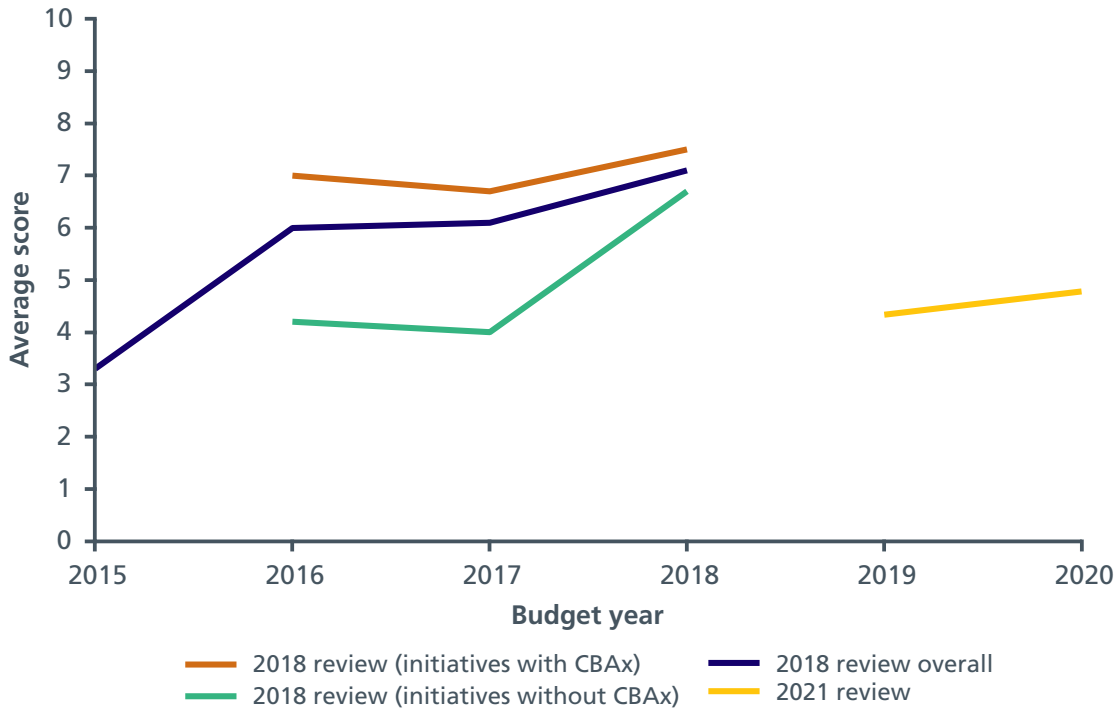
Source: NZIER, 2021

Figure 8.3.1: Overall scores of assessed initiatives with environmental considerations.

The claim that overall quality of environmental initiatives appears to be poor needs to be contextualised within budget initiatives more generally. A 2018 analysis undertaken by NZIER provides a viable comparison insofar as it analysed initiatives from a broadly representative sample of initiatives.

The average score from the 2021 sample of environmental initiatives (4.6/10) was significantly lower than the average score in the 2018 representative sample of initiatives involving a wide range of considerations, particularly compared with the most recent initiatives in that sample (7.2/10).[99] The comparison in Figure 8.3.2 between Budget 2018 (initiatives involving a wide range of considerations) and Budget 2019 (initiatives involving environmental consideration) brings out the comparative lack of quality of initiatives that involve environmental considerations.

In summary, NZIER found that the budget initiatives with environmental considerations were of lower quality than the budget initiatives that did not include environmental considerations.[100]



Source: NZIER, 2021

Figure 8.3.2: Trends in mean scores from the 2018 review and the 2021 review.

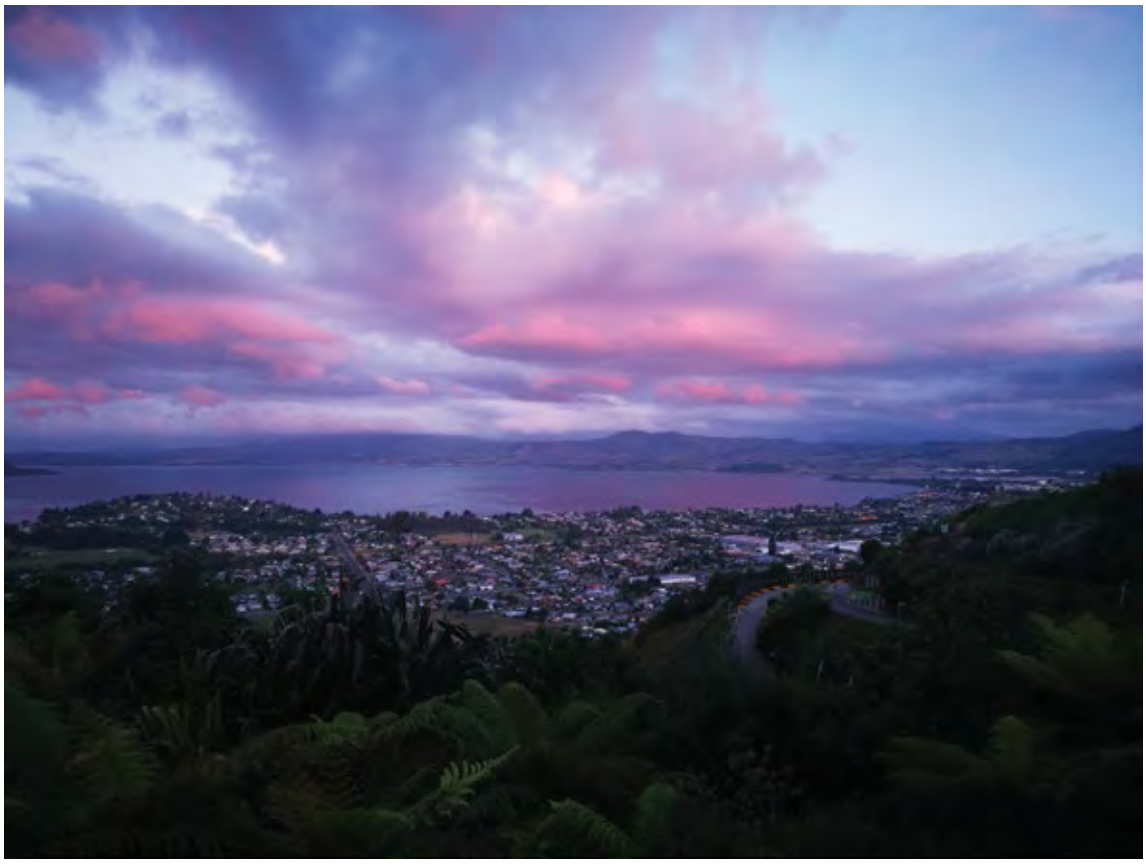
As NZIER suggests, "Agencies completing budget initiative advice templates where there are environmental considerations may be disadvantaged in the budget process and require additional support to address the specific challenges of providing sound advice in this context."[101]

[99] NZIER, 2021, p.5; 2018, p.3.
[100] NZIER, 2021, p.6.
[101] NZIER, 2021, p.6.

Appendix 4: Te Arawa Lakes Trust case study: A te ao Māori approach to decision making

This appendix summarises a component of a report written by Dr Jason Mika (Tūhoe, Ngāti Awa, Whakatōhea, Ngāti Kahungunu) for the Parliamentary Commissioner for the Environment on the concept of wellbeing within te ao Māori. Te Arawa Lakes Trust generously allowed Dr Mika and the Commissioner to explore how te ao Māori shapes their decision making, while taking into consideration their fiscal responsibilities, the wellbeing of their people and the environment.[102]

Te Arawa Lakes Trust is a post-settlement governance entity responsible for 14 lakes in the Rotorua district on behalf of Te Arawa iwi members. The Trust also has a responsibility to manage the assets received from their Treaty settlement in a sustainable and appropriate way. Assets include land and lake titles, cash, fishing licences and cultural redress. Cultural redress can include land transferred from the Crown to iwi that recognises their traditional, historical and spiritual association to the place.[103] In particular, the Trust manages its funds for the benefit of present and future Te Arawa members, including for wellbeing.



Source: Jasmine Waerea

Figure 8.4.1: Lake Rotorua, the second largest lake in the North Island by surface area, is one of 14 lakes Te Arawa Lakes Trust is responsible for.

[102] Mika, 2021.

[103] See: https://www.govt.nz/browse/history-culture-and-heritage/treaty-of-waitangi-claims/settling-historical-treaty-of-waitangi-claims/. See also: https://www.parliament.nz/en/get-involved/features/latest-treaty-settlement-bill/.

The Trust's approach to this responsibility is founded on the knowledge of Te Arawa history, aspirations and potential, and is guided by Te Arawa philosophy and values. Trustees are registered Te Arawa members and the Trust has various subcommittees for specific matters, including a Komiti Taiao (environment committee) and fisheries committee responsible for managing five taonga species. Seventy per cent of the Trust's resources (including human resources) are allocated to environmental work.

Te Arawa Management Limited (TAML) is 100 per cent owned by the Trust. Its role is to manage the commercial nature and activities of Te Arawa Group (the Trust, TAML and other subsidiaries), while also undertaking community development activities. TAML's dividends are distributed exclusively to the Trust while still remaining solvent. Annual plans and five-year strategies and plans are required by both the Trust and TAML to determine budget and resource allocation.

The Trust has a cultural values framework it uses to measure and improve its success against identified outcomes for the health and wellbeing of the environment and its people.[104] Te Tūāpapa o ngā Wai o Te Arawa, the cultural values framework, is focused on long-term aspirations for the lakes and their environs. The concept of wai (water) as essential for life is at the centre of this framework and binds all physical and spiritual elements.

In 2017 the Trust refocused its core activity "back to our Te Arawa Lakes Settlement Assets, specifically our [l]akes and our people",[105] and identified three priorities on which to focus its operations: the lakes – ngā moana o Te Arawa; the people – whanaungatanga; and the organisation – rōpū whakahaere.

The Trust also uses various guiding principles to ensure the Te Arawa way is embedded in its organisational structure. Those principles that relate to the environment are:

- hunga tiaki – Te Arawa iwi and hapū members as primary custodians of the lakes
- whanaungatanga – affirms collective values
- wairuatanga – links people to place
- whakapapa – genealogical links to the environment
- mana whenua – rights and decision-making powers at place
- mauri – the life force of an entity.

A te ao Māori worldview – or even more specifically, a te ao Arawa or ngā whānau o Arawa worldview – is crucial in making fiscal decisions. What follows is an illustration of how Te Arawa Lakes Trust makes fiscal decisions and how these decisions are shaped by the environment and wellbeing.

[104] There is a third, organisational excellence framework.

[105] Trust Annual Plan in Mika, 2021, p.37.

Decision making based on the relationship Te Arawa have with the lakes

Though Te Arawa Lakes Trust received settlement assets in 2009 through the Treaty settlement process,[106] those assets were not problem free. Land use (mainly farming) inside the lakes' catchments was not sustainable, placing the ongoing health and wellbeing of these ancestral taonga at risk. The Trust was also unable to fulfil its role as kaitiaki of the lakes as there was no funding to engage in environmental work with councils or the Crown.

In 2017, the Trust refocused its energies from the business of land management back to the lakes and the people. This fundamental change flows vertically through the organisational structure as the Trust and TAML work to one strategy. The Trust and TAML are required to make business decisions that balance out the social and environmental impacts and opportunities for Te Arawa people.

TAML has invested in a food processing business, kiwifruit orchards, farms and residential properties (to name but a few). All come with environmental impacts as well as opportunities.

> "For example, the company retired some of its farmland in Maketu to restore a wetland that leads to the estuary. Removing grazing pasture had a fiscal impact, but when the company considered what the land use should have been, whether or not it would help the tuna, the moana and that it was consistent with what the people wanted, the decision was made balancing elements of environmental, human and economic wellbeing. If strict use of commercial criteria (risk and returns) were used, the decision would have been different."[107]

The Trust is engaged in environmental work in and around Te Arawa lakes, as well as across the wider Te Arawa rohe. For example, as kaitiaki of taonga species like kōura, the Trust manages the Catfish Killas programme, which has recruited 1,500 volunteers, removing 180,000 catfish, a predatory pest species that has significantly impacted on kōura populations in Lakes Rotoiti and Rotorua.

The iwi also leads environmental initiatives at the governance level as an integral part of the Rotorua Te Arawa Lakes Strategy Group with Bay of Plenty Regional Council and Rotorua District Council. The strategy group, established as a result of the Te Arawa Lakes Settlement Act 2006, implements work to improve the water quality of the lakes through stream restoration, protection and monitoring. The Trust also focuses on influencing policy and undertaking research on a range of freshwater projects, climate change impacts and adaptation.

[106] The Trust received the lake beds and some land, but most land assets came from the former Te Arawa Māori Trust Board.
[107] Mika, 2021, p.6.

Source: Deliah Balle, Te Arawa Lakes Trust

Figure 8.4.2: Lake Rotoiti, one of 14 lakes Te Arawa Lakes Trust is responsible for, is connected to Lake Rotorua via the Ōhau Channel.

Making investment decisions

Investment decisions must benefit the people and at the same time must not compromise or hinder the work the Trust and hapū are doing to restore the health of the lakes and rohe.

> "It is important and beneficial to have Te Arawa on both the trust and the company because it means that decisions that balance the company's obligation to maximise returns with environmentally favourable decisions like converting 10ha of farmland to wetlands are possible. TAML is exploring land use changes away from farming, reducing water use, carbon production, and leaching, and organic farming. Alternative land uses and land purchases within the Te Arawa rohe are possible because land assets are unlikely to ever be sold. While conventional farms rely on realising capital gains on the sale of the farms at some point, capital gain is not a driving imperative behind investment decisions for TAML."[108]

[108] Mika, 2021, p.58.

TAML uses an investment matrix to assess its current and future enterprises and activities. The matrix has multiple bottom lines, which, for example, allowed the company to consider buying land that was the landing site of the Arawa waka. Traditional business models would not normally consider satisfying such cultural imperatives as financially favourable.

Making decisions in a joined up way is supported by the use of Te Tūāpapa o ngā Wai o Te Arawa.

> "The framework sets minimum standards of excellence in the quality of the lakes and the tribe's relationship with the lakes. It provides principles and boundaries as to what constitutes ethical investment in and use of the te taiao in and around the lakes. For instance, if TAML were offered a dairy farm, it would struggle to justify investing knowing the environmental impact."[109]

By taking all dimensions into consideration in making investment decisions, multiple outcomes can be achieved. TAML uses a weighting system to make decisions, which can be difficult ones but are ultimately decisions that take all of Te Arawa's values into consideration.

> "For instance, if TAML was considering buying a business and the business was located within the Te Arawa rohe, it would receive a higher weighting than if it were located outside it. Investments must make sense with who Te Arawa is (alignment with the identity, values, aspirations, material assets and nonmaterial elements of Te Arawa) and with commercial standards and expectations. TAML assess and manage financial and nonfinancial returns in a nuanced way, including for example, balancing considerations such as employing whānau, improving the lakes, and the longevity and sustainability of taonga and legacy assets against financial considerations. Profit is important for growth, but cash flow is critical to generating dividends to sustain TALT [the Trust] operations. This might require a different accounting framework, one which adequately and appropriately accounts for taonga and heritage assets, which presently does not exist."[110]

An example of this is owning and operating a plant nursery that would provide jobs for whānau, support wetlands restoration work and supply trees to Te Arawa. The opportunity would align with social, cultural and environmental aspirations for Te Arawa and have multiple environmental outcomes. For TAML and the Trust, working in this way is seen as an opportunity to socialise funds, meaning that the money is spent many times over when measured in social, economic and environmental terms. Decisions are made using multiple criteria and for the collective good.

Whakapapa as a decision-making advantage

While the rich cultural and natural landscape provides a backdrop for strong cultural and te reo revitalisation programmes, and access to forests, lakes and the sea for kai and recreation opportunities, the rohe of Te Arawa also faces challenges. Being separated from a daily relationship with the environment has flow-on effects as people become disconnected from whānau, traditional practices and whakapapa as geographical boundaries are forgotten and disregarded, and people stop sourcing and sharing kai from te taiao.

[109] Mika, 2021, p.62.
[110] Mika, 2021, p.64.

All trustees, directors and most staff whakapapa to Te Arawa and live within the rohe, so they are heavily invested in decisions because they affect them, their families and their communities. There is also scrutiny from iwi members who will willingly engage in a process where there is trust in their trustees. If the trustees cannot justify their decision to family members, then this is an indication that the wrong decision has been made. Decisions are both professional and personal to the trustees.

Whānau around the lake are considered hunga tiaki, custodians of the lakes in a collective sense, not as individuals but as a group. The Trust supports hunga tiaki because they are contemporary guardians of the lakes and the holders of traditional knowledge, whose observations, experience and daily association with the lakes alert the Trust and others to changes in environmental conditions on, in and around the lakes.

The Trust privileges hunga tiaki testimony in policy, planning and advocacy of Te Arawa interests in the lakes because they have such an intimate, lived, whakapapa-based relationship with the lakes. They also engage hunga tiaki on projects like wetlands and lake restoration. More formal roles for tasks such as environmental monitoring will be expanded because these opportunities strengthen ties and are an effective way to support environmental wellbeing.

The procurement strategy of the group is to employ iwi and hapū members of Te Arawa. The Trust empowers hapū to take a leadership role in environmental work. If the lake is healthy, then Te Arawa are fulfilling their role as hunga tiaki, maintaining access to kai and resources and enabling the connection of Te Arawa to their waters. One mechanism through which the Trust is able to provide this leadership is through its authority to issue fishing licences.

Whakapapa is also influential when the Trust and TAML make long-term decisions. The Trust makes decisions based on the impacts it might have on their mokopuna (grandchildren), as that is more enduring than decisions made on 'one-hit wonders'. "We must be better ancestors now for our mokopuna."[111]

Although providing work to iwi members is important, investment in the environment is forever. TAML's approach is to ask what is the best use of Papatūānuku, and aspire to that over time. Its investment plan is based on long-term commercial, cultural and environmental impacts, which allows it to consider fundamental changes:

> "With farming units, for instance, there is a size below which it becomes necessary to convert the entire land area to an alternative use. The timescale for such tipping points and land use conversions needs to be aligned with the onset of increasing returns in other activities and enterprises such as horticulture. When aggregated across similar Māori enterprises, this kind of thinking and practice has the potential be a circuit-breaker in the typical cycle of buying farms, minimising costs, and selling at an increased value. This is a cycle which entrenches certain land uses, minimises investment in the environment, and extracts value upon exchange of the farm, which has environmental impacts and economic inequities."[112]

[111] Interview participant in Mika, 2021, p.51.
[112] Mika, 2021, p.58.

Measuring success is not just financial

The Trust and TAML are dedicated to measuring their success both financially and non-financially. They use their organisational excellence framework, environmental outcomes framework and other principles and values to identify how effective they are at achieving their purpose.

Within their cultural values framework, Te Tūāpapa, one goal is about connecting their people to the environment. The Trust uses mauri as a way to measure this relationship. Thirty staff are engaged in environmental management, from operational staff to planning and governance. Additionally, iwi training is given when needed. The environmental plan is 95 per cent achieved and ready for review. The Trust also measures the mood of the people at annual general meetings. Externally, the Trust measures its relationship with the Crown, other groups and Pākehā.

Measuring success for the Trust is not just financial but very much focused on the connectivity of its people, of the people with the environment, and of its decision making. Using mauri as a measure is a good way to identify the quality of these connections and relationships as it shows what impact one decision might have on other priorities.

Conclusion

The Trust is guided by Te Arawa principles and values that are based on environmental and cultural aspirations for their lakes and surrounding rohe. "The principle is that if people look after the environment, it will look after the people. Financial resources are important, but money does not solve all problems."[113] Although the Trust and TAML have to make hard decisions about where they prioritise investment and resources, those decisions are connected and measured. The lakes are at the core of what the Trust does. "To make money sustainably as Māori, the activity and approach must support the entirety of who we are as Māori and as a Māori enterprise."[114]

[113] Mika, 2021, p.50.
[114] Mika, 2021, p.60.

Hymenophyllum rarum

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This report has been produced pursuant to subsections 16(1)(a) to (c) of the Environment Act 1986. The Parliamentary Commissioner for the Environment is an independent Officer of Parliament, with functions and powers set out in the Environment Act 1986. His role allows an opportunity to provide Members of Parliament with independent advice in their consideration of matters that may have impacts on the environment.

Parliamentary Commissioner for the Environment
Te Kaitiaki Taiao a Te Whare Pāremata
PO Box 10 241
Wellington 6140
Aotearoa New Zealand

Phone 64 4 471 1669
Email pce@pce.parliament.nz
Web pce.parliament.nz

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