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Book

Treasury Living Standards Dashboard : monitoring intergenerational wellbeing

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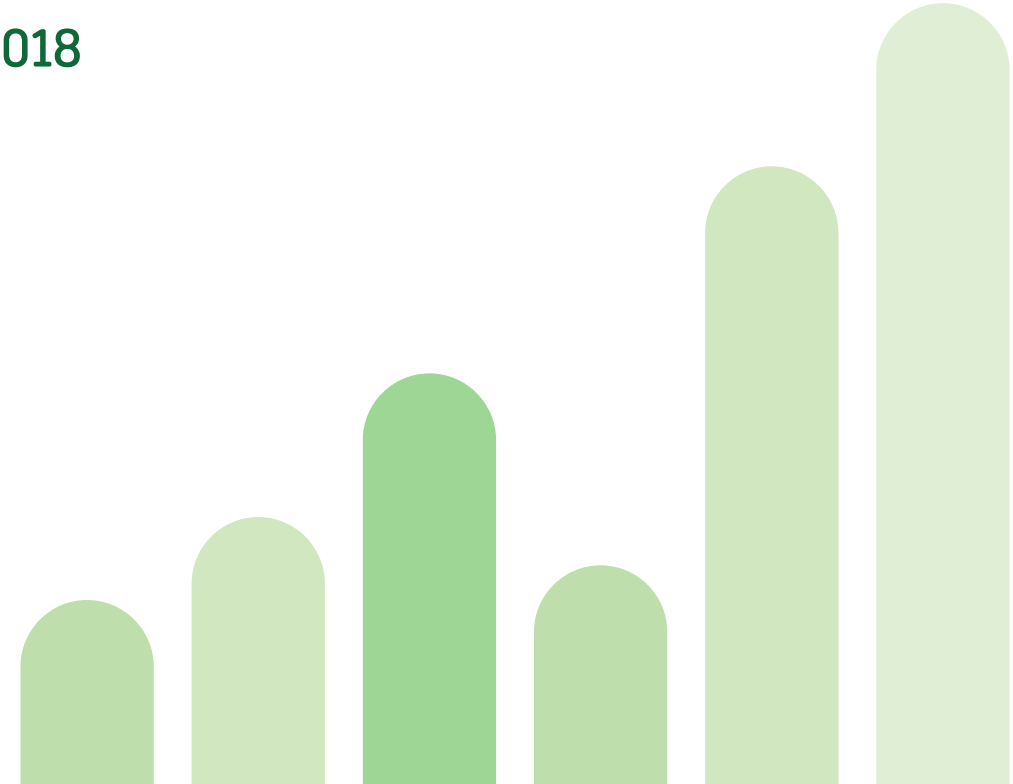
BEHAVIOURAL ECONOMIC & SOCIAL ANALYSIS

Treasury Living Standards Dashboard:

Monitoring Intergenerational Wellbeing

Conal Smith

June 2018



CONTENTS

As many of you know the LSF draws on OECD analysis of wider indicators of wellbeing. It gauges our success in developing four capitals – financial and physical, human, social and natural. These provide a more rounded picture of how successful Government policy is in improving New Zealanders' living standards.

Grant Robertson, Minister of Finance, IPANZ, 15/2/18

1 INTRODUCTION

The vision of the New Zealand Treasury is to promote higher living standards for all New Zealanders. To support this, the Treasury uses the Living Standards Framework to guide its policy-making. In 2017, the Living Standards Framework underwent a major "refresh" to focus it on the four capital stocks (physical and financial capital, natural capital, human capital and social capital) that underpin intergenerational wellbeing. The refresh was intended to improve the usefulness of the Living Standards Framework in supporting the Treasury's policy advice and medium-term strategy, and to bring the Living Standards Framework more closely into line with international practice by reflecting recent developments in the economics of wellbeing.

In order to usefully inform policy advice and strategic planning, the Living Standards Framework needs to be more than just a conceptual tool. It will be necessary to develop measures that can provide meaningful information on intergenerational wellbeing to complement existing fiscal and economic measures. This report sets out a proposal for a dashboard measure of intergenerational wellbeing – the *Living Standards Dashboard* – that aligns with the Treasury's needs and which is intended specifically to support the Treasury's medium- to long-term policy analysis.

The report is divided into five sections. Following this introduction, Section 2 of the report briefly discusses some of the key contextual factors that influence how any dashboard is likely to be used and which set the parameters for the project. If the dashboard is to be useful to the Treasury, it is essential to be clear about how it will be used. Section 3 discusses the conceptual model for the dashboard. While the Living Standards Framework is based on the same capital stocks model that underpins much international work on wellbeing (eg, The OECD Better Life Initiative), only a few elements of the full model are represented in the Whāriki diagram used to represent the Living Standards Framework. Meaningful measurement will require teasing out all of the key elements of the conceptual model in order to identify what it is that will need to be measured.

Fleshing out the conceptual model with specific indicators is the focus of Section 4. This is a largely technical task, with the key question being which measures provide the most accurate and useful information on each dimension in the conceptual model. In many cases it is possible to identify a suite of indicators relating to some part of the conceptual model of intergenerational wellbeing that can be used largely "as is". The System of National Accounts, for example, provides a well-tested series of measures for physical and financial capital. However, there are some areas (eg, natural capital) where measurement is much less developed.

The final section of the report focuses on the nature and scope of a dashboard suited to the Treasury's needs. Fully fleshing intergenerational wellbeing will result in too many indicators to provide an intelligible overview for the Treasury and other decision-makers focused on medium-term policy decisions. It is therefore necessary to identify a way of presenting the most important information about intergenerational wellbeing that is tailored to the Treasury's needs and captures the overall picture well, without getting lost in excessive detail. A tiered approach is proposed to address this issue, based around three distinct outputs. These include a comprehensive suite of indicators produced by Statistics New Zealand, a high-level overview aimed at presenting the "big picture" to decision-makers and a thematic focus that addresses particularly salient issues in more depth.

2 CONTEXT

The Living Standards Framework is focused on intergenerational wellbeing. However, the *Living Standards Dashboard* is not simply an academic exercise to measure intergenerational wellbeing. The design of the *Living Standards Dashboard* has to reflect the needs of the Treasury and the Government more widely, and has to usefully inform policy design. From this perspective it is essential that the *Living Standards Dashboard* reflects the Treasury's main institutional constraints and drivers.

2.1 Wellbeing and the good society

An important point to clarify early on is the relationship between the concept of intergenerational wellbeing and other potential points of view on the role of government in society. The Living Standards Framework is focused on increasing the intergenerational wellbeing of New Zealanders. This is because the Living Standards Framework is intended to support the New Zealand Treasury in its decision-making, and the Treasury's role is centred on improving the wellbeing of New Zealanders. However, intergenerational wellbeing is not the only way to think about the good society, and it might reasonably be that in a pluralistic environment other values should be considered alongside or instead of intergenerational wellbeing.

While the view that there are things (eg, human rights) that should have a high or higher priority than intergenerational wellbeing is reasonable, this does not mean that we should try to incorporate all of these things into the Living Standards Framework. The aim of the Living Standards Framework is to assist the Treasury in its role in contributing to the wellbeing of New Zealanders and effectively managing the resources that underpin the wellbeing of New Zealanders in the future. Doing so requires measuring these concepts well, and this is the primary focus for the *Living Standards Dashboard*. Just as the System of National Accounts aims to provide an accurate measure of the size of the economy, without implying that the size of the economy should be the sole focus of government policy, the *Living Standards Dashboard* aims to provide a good measure of the main stocks and flows important to intergenerational wellbeing without implying that this is the only goal for government.

This issue will be particularly important when applying the Living Standards Framework to policy issues where considerations such as existence value or due process are particularly salient (eg, natural capital, justice). Issues of this sort might reasonably cut across a wellbeing framework, and indeed, in many cases are intended to do so. The entire point of the idea of human rights, for example, is intended to set out a minimum set of entitlements that take priority over wider consequentialist concerns. This remains true even if, in practice, actual conflicts between a wellbeing perspective and other constraints such as human rights are rare.

2.2 Te ao Māori

Any comprehensive framework for intergenerational wellbeing in New Zealand needs to consider both the wellbeing of Māori and Māori conceptions of wellbeing. This reflects the status of Māori as the indigenous population of New Zealand and the principles of the Treaty of Waitangi. When using an international framework to assess the wellbeing of the New Zealand population, it is clearly important to look at outcomes for Māori. This is a fundamental part of any meaningful analysis of the distribution of wellbeing outcomes. However, looking at the wellbeing of Māori in this way is not equivalent to looking at Māori wellbeing. A robust assessment of Māori wellbeing needs to apply a conception of wellbeing grounded in te ao Māori.

This report focuses primarily on developing an internationally comparable framework for intergenerational wellbeing. While allowance is made for the framework to reflect issues of importance to New Zealanders (including Māori), the proposed framework does not specifically address Māori conceptions of wellbeing. Understanding wellbeing from a te ao Māori perspective is important for government policy and for New Zealand more widely. Some reassurance that the wellbeing domains in the Living Standards Framework are not completely alien to te ao

Māori can be taken from the fact that they are largely the same as the *Social Report* outcome domains which were the subject of extensive consultation with Māori in 2002 but further work on Māori conceptions of wellbeing should reflect the principle of kaupapa Māori – that a wellbeing framework ***for*** Māori needs to be developed ***by*** Māori. A complementary paper is currently being prepared for the Treasury focusing on Māori perspectives on wellbeing.

2.3 The Investment Statement

In 2013, the Public Finance Act (1989) was amended to require the Treasury to report to Parliament with an Investment Statement at least every four years. The Investment Statement outlines the importance of the Crown's balance sheet for the quality of New Zealanders' living standards and describes how the balance sheet has evolved, and how it is expected to change in the future. More specifically, the balance sheet and associated analysis describe the performance of the Crown's major asset and liability classes, and help to manage risks by identifying where the main risks and weaknesses are.

While the timeframe for the 2018 Investment Statement made initial steps towards incorporating an intergenerational wellbeing perspective into the Treasury's reporting, future Investment Statements will aim to take this further. It is therefore essential that the *Living Standards Dashboard* supports the Treasury by providing a sound framework for thinking about the four capitals in the context of a broadly conceived government balance sheet. Although it will not be possible to provide robust comparable values of all four capital stocks that could be directly incorporated into the Investment Statement, the indicators for the *Living Standards Dashboard* should be sufficient to support meaningful analysis about the direction of movement in the different capital stocks at a minimum, and comparisons of level with similar measures collected elsewhere.

2.4 Budget 2019

The Minister of Finance has announced that the 2019 budget will be a "wellbeing budget", with budget priorities explicitly structured around intergenerational wellbeing. This will involve a budget process that captures the impact of proposed initiatives in terms of both current wellbeing and the four capitals, as well as a framework to support Ministers in making budget decisions. Beyond this, it will be necessary to have a good overview of the supporting information about the broad state of current wellbeing and the four capitals in New Zealand that will provide context for the budget.

The *Living Standards Dashboard* will need to be aligned with Budget 2019 in two ways. First, where work preparing for Budget 2019 is covering the same ground as the *Living Standards Dashboard*, it is important to ensure that the relevant pieces of work within the Treasury are using broadly consistent conceptual frameworks. Beyond this, however, it is important at the level of specific indicators that common measures are used wherever possible so that genuine measurement gaps can be clearly identified.

2.5 Other wellbeing work

There is a wide variety of work underway across the New Zealand Government that relates to aspects of intergenerational wellbeing. The most significant work includes Statistics New Zealand's project to develop a sustainable development measurement framework for New Zealand. This work is framed around the Conference of European Statisticians capital stocks model, which aligns well with the focus of the Living Standards Framework on the four capitals. Given this, it will be essential that work on the *Living Standards Dashboard* is closely coordinated with development of both the overall framework used by Statistics New Zealand and the indicators that populate it. Other relevant pieces of work include:

- Child wellbeing strategy (DPMC)
- Lifetime child wellbeing model (Oranga Tamariki)
- Social Investment Agency wellbeing work programme (SIA)
- The *Social Report* (Ministry of Social Development), and
- SDG reporting (Ministry of Foreign Affairs and Trade and Statistics New Zealand).

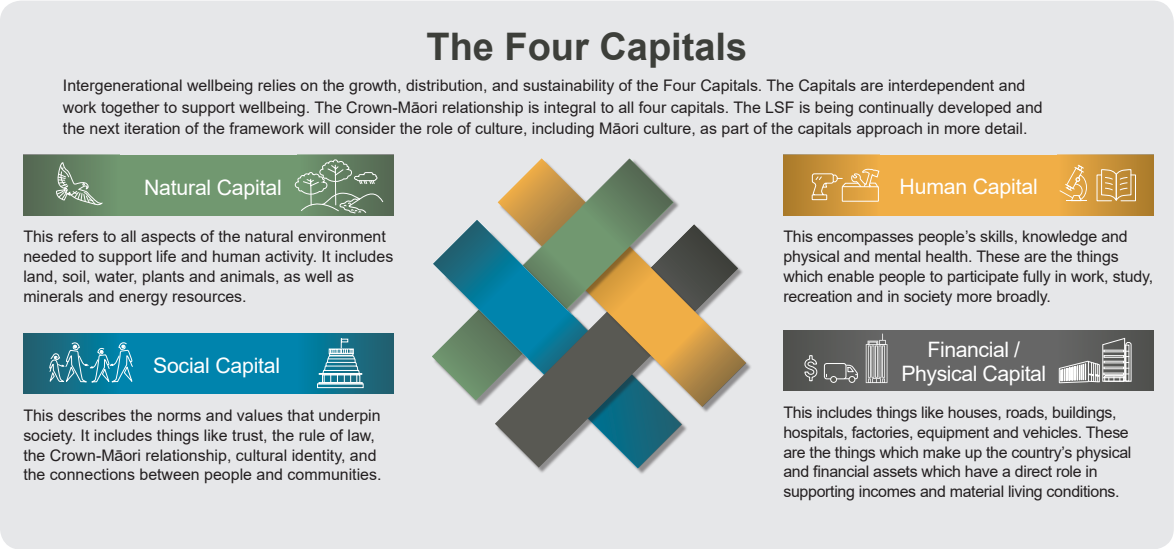
3 CONCEPTUAL FRAMEWORK

In order to make any progress in measuring something, it is necessary to be clear about exactly what is to be measured. The *Living Standards Dashboard* is intended to provide information to Treasury decision-makers about intergenerational wellbeing to inform medium-term strategy and policy-making. It is thus necessary to have a clear understanding of what is meant by intergenerational wellbeing and to establish the different concepts that will need to be measured for the *Living Standards Dashboard* to provide a clear picture of it. A conceptual framework addresses these issues and serves to ground the measurement proposal in a clear framework consistent with the best available scientific evidence and with economic theory.

3.1 The Living Standards Framework

The Living Standards Framework is how the Treasury frames its thinking about intergenerational wellbeing. It is intended to put sustainable, intergenerational wellbeing at the core of the Treasury's advice across its different functions, including economic policy advice, analysis of governmental expenditure and long-term management of New Zealand's asset stock. In the language of the State Sector Act (1988), the health of the four capitals is a way of assessing how well agencies are delivering their "stewardship role" for New Zealand public policy.

Figure 1. The Living Standards Framework



Source: Treasury, 2018

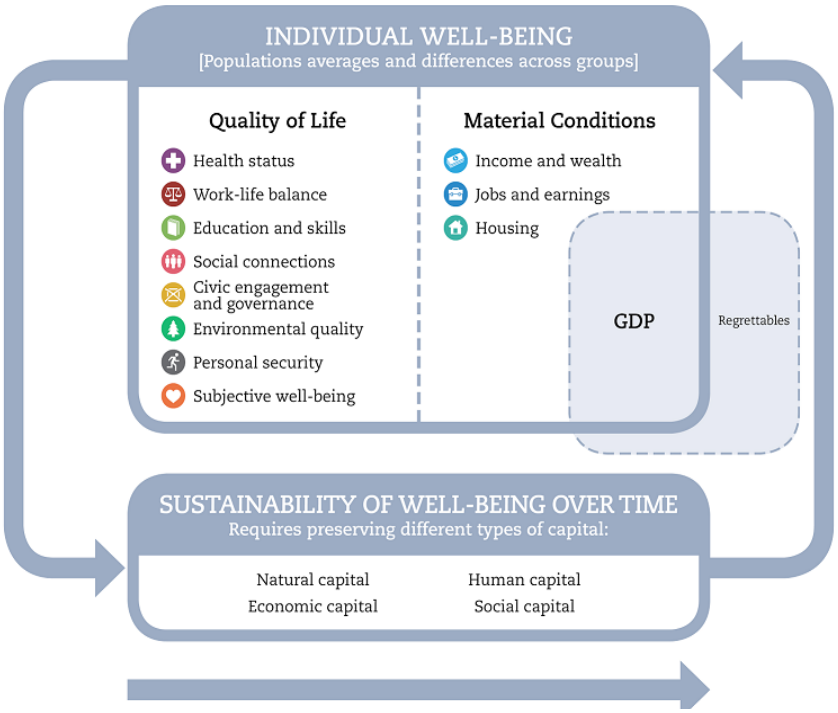
The Living Standards Framework (Figure 1 above) starts with a definition of intergenerational wellbeing, based on the Organization for Economic Cooperation and Development's (OECD's) *How's Life?* analysis. Four capital stocks are used as a way to organise indicators of intergenerational wellbeing, emphasising the Treasury's medium-term focus on managing New Zealand's assets. However, although consistent with the OECD framework, the model of the Living Standards Framework presented in Figure 1 represents only part of the broader OECD conceptual framework. This reflects the Treasury's core role as guardian of the New Zealand Government's asset stock, and is useful for communicating the broad purpose of the Living Standards Framework, but is too narrow to provide an effective model for measurement. In order to populate a meaningful *Living Standards Dashboard* it is necessary to flesh out the capital stocks model that underpins the Living Standards Framework to identify all of the key components that need to be measured.

3.2 The OECD/Better Life model

The Living Standards Framework is based on the OECD *How's Life?/Better Life* model, although it emphasises the four capitals heavily relative to the full OECD model. To flesh the capital stocks model out fully, it is useful to consider the full OECD model. Figure 2 below illustrates the OECD conceptual model of intergenerational wellbeing. At the core of the model is a fundamental distinction between "here and now" and the future. Individual wellbeing in the OECD model relates to the "here and now": it captures the flow of current wellbeing experienced by people. It is concerned with outcomes that are, in some sense, of intrinsic value in enabling people to pursue the sorts of lives they have reason to value, rather than focusing on goals with a more instrumental focus.

By individual wellbeing, the OECD does not mean to imply that wellbeing is a reductively individualistic concept, but simply that wellbeing is something that people experience. The OECD model of individual wellbeing specifically includes aspects related to the social context in which people are embedded. Measuring wellbeing, in the OECD framework, involves looking not only at the level of valued outcomes, but also at the distribution both across the population as a whole and also across different sub-populations such as age, sex or ethnicity. Finally, it should be noted that current wellbeing is multidimensional. It includes some aspects that relate to market outcomes (material conditions) – income and wealth, jobs and earnings and housing – but also a range of outcomes that go beyond what is traded in the market (quality of life) – health status, work-life balance, education and skills, social connections, civic engagement and governance, environmental quality, personal security and subjective wellbeing.

Figure 2. The OECD approach to measuring wellbeing



Source: OECD, 2013

The second crucial element of the OECD framework relates to the sustainability of wellbeing over time. This focuses on preserving the levels of the four capital stocks used to produce wellbeing outcomes: natural capital, human capital, economic capital and social capital. These capital stocks should be thought of as capital in the sense that they are resources that are capable of storing value, and which create a stream of benefits over time. However, the capital stocks are not assumed to produce benefits independently of each other in the OECD model. Instead, the model treats the capital stocks as factors of production used jointly to produce wellbeing outcomes. Each of the dimensions of individual wellbeing is the result of all of the different capital stocks. Investments in the capital stocks will result in the levels of the relevant stocks increasing, while depreciation, resource depletion and pollution or waste may result in capital stock levels declining.

The circular arrows connecting the capital stock to wellbeing represent the use of resources in production (the right hand side of Figure 2) and investment in the capital stocks (the left hand side of Figure 2).

The OECD framework as presented in Figure 2 also highlights some of the classic criticisms of gross domestic product (GDP) as a measure of wellbeing. In particular, there may be expenditure that contributes to GDP, but which represents a net negative impact on wellbeing (regrettables). However, this serves primarily an illustrative function rather than representing a core part of the framework requiring measurement.

The specific domains included in current wellbeing and the choice of the four capitals included under the sustainability section of the OECD framework are drawn primarily from the recommendations of the report of the Commission on the Measurement of Economic Performance and Social Progress (Fitoussi, Sen, & Stiglitz, 2009), more commonly referred to as the Sen/Stiglitz/Fitoussi Commission.

3.3 The economic model

One of the main strengths of the OECD wellbeing framework is that, like the System of National Accounts, it is grounded in a coherent economic model. This has three main advantages. First, it imposes a set of constraints on the OECD framework by providing a clear set of parameters about what should be included or excluded from the model and where different concepts fit. Without a framework of this sort there is a risk that attempts to add fundamentally different things or incorporating useful concepts in the wrong place can undermine the framework as a measure of wellbeing. This is almost certainly part of the reason why many early attempts to produce wellbeing indices historically underperformed GDP as a measure of people's wellbeing (Delhey & Kroll, 2013).

A second advantage of basing the measurement framework off an economic model is that it can help in applying the framework to policy issues. Measurement of wellbeing is not an end in itself, but a means of improving the quality of policy advice. By formalising the relationship between different parts of the measurement framework, an economic model can help to identify trade-offs, synergies or causal relationships between different parts of the measurement framework that may be relevant to policy.

The final advantage of grounding wellbeing measurement in an economic model lies in the ability to integrate the wellbeing measures with existing economic reporting. The System of National Accounts is grounded on concepts and measures derived from economic theory. Because of this it is possible to link the Treasury's economic reporting back to the core concepts of the underlying economic model. By choosing to measure intergenerational wellbeing through existing economic frameworks rather than starting again from scratch, reporting on current wellbeing and sustainability can be linked to the same set of core concepts. This both helps avoid double-counting between the wider sphere of wellbeing and traditional economic reporting as well as making it clear how the concepts used in the wellbeing framework relate to existing measures.

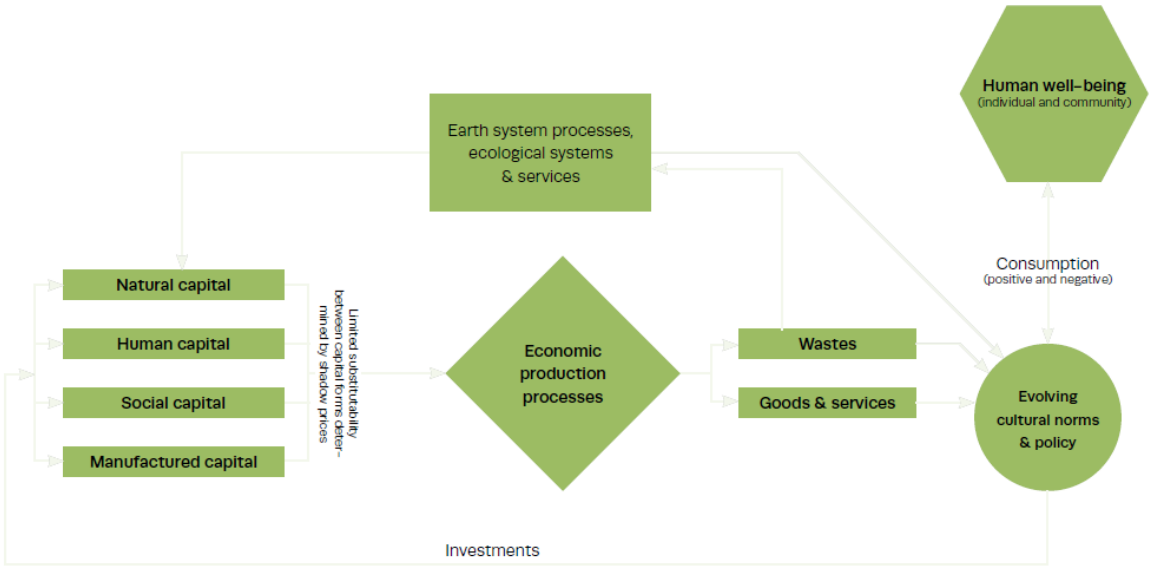
At the heart of the capital stocks model of wellbeing (used by the OECD) is the distinction between current (individual) wellbeing and the four capital stocks that underpin future wellbeing. This distinction is grounded in a simple economic model with both an aggregate production function using both capital and labour to produce an undifferentiated output. A utility function accounts for how output affects the utility of people as it is consumed. The United Nations Economic Commission for Europe (UNECE) (2014) identifies this simple model of wellbeing and the economy with the so-called Solow growth model (Solow, 1956).

In its original formulation, the Solow growth model sets aggregate income (GDP) as a function of produced capital and labour, with technology (productivity) acting as a multiplier on the combined effect of capital and labour. Capital depreciates over time and increases with investment, while utility is a function of consumption. Solow's main point in the paper was that, given that consumption plus investment must be equal to total output, an economy will reach an equilibrium level of total income where investment is equal to depreciation on the total capital stock. Consequently, long-term economic growth must be driven by technology/productivity rather than simply by capital accumulation.

In the context of measuring intergenerational wellbeing, the main value of the Solow growth model is that it emphasises the distinction between production and the capital stocks on one hand, and consumption/utility on the other. However, in its original form, this approach is relatively narrow. In discussing the capital stocks model of sustainable development, UNECE notes that the Solow model only considers produced capital and undifferentiated labour on the production side and only economic output as measured by GDP on the consumption/utility side. However, it is relatively easy to expand the model by adding in additional capital stocks to the production function, and by adding other dimensions of human wellbeing to the utility function. This is, in effect, the route taken by Kenneth Arrow and others (Arrow, Dasgupta, Goulder, Mumford, & Olsen, 2012) in their inclusive wealth model.

The Arrow et al. model focuses explicitly on intergenerational wellbeing and is intended to support the calculation of a monetary value for all relevant capital stocks. In particular, the Arrow et al. model identifies produced, natural and human capital as well as changes in multifactor productivity as the main drivers of human wellbeing. The capital stocks are collectively described as "comprehensive wealth" in order to emphasise that the intent of the model is to build on existing economic frameworks by adopting a more comprehensive set of capital stocks than simply those traded in the market. This model is represented in Figure 3 below from the United Nations Inclusive Wealth Report (UNU-IHDP & UNEP, 2014). However, a more formal presentation of the model is available in Arrow et al. (2012).

Figure 3. The inclusive wealth framework



Sources: UNU-IHDP & UNEP, 2014

Three main points should be taken from the diagram in Figure 3. The first of these is the broad similarity between the inclusive wealth framework and the OECD framework in Figure 2. Both make the same distinction between human/individual wellbeing and productive resources (the four capital stocks). Similarly, both identify flows from the capital stocks to produce wellbeing, and investments flowing back to the capitals. Where the OECD framework places more emphasis on the dimensions of human wellbeing, the inclusive wealth framework elaborates more on how the capital stocks are used to produce wellbeing. However, this distinction is more apparent than real. Both diagrams represent the same underlying model with emphasis on different parts of it reflecting the available data and communication goals in each case.

The second point to take from Figure 3 is that there are potentially some important elements of the capital stocks framework that will need to be measured, and which are not visible in the core OECD model. The most significant of these is characterised in Figure 3 as "economic production processes" and reflects the fact that the efficiency with which the capital stocks are used is crucial to the human wellbeing produced, not just the level of the capital stocks. However, it is also worth noting that the model set out in Figure 3 does not directly address issues relating to the distribution of capital stocks or wellbeing, although this is a key part of the OECD model.

In describing the Living Standards Framework, the Secretary to the Treasury has asserted that it represents "standard economics". The third main point to take from Figure 3 is an illustration of what this could mean. In essence, what the capital stocks model does is simply incorporate a set of important elements that are not traded in the market, but which undeniably matter, into a standard economic model. These include both the productive capital stocks not traded in the market (social capital and much of natural capital) and flows of human wellbeing from sources other than market consumption. Traditionally, these factors have not been formally represented in the economic models in order to keep the models simple enough to be analytically tractable and because non-market outcomes have been a challenge to measure in practice, not because the issues in question fall outside the scope of economic inquiry. However, the price of simplicity has been that non-market issues are often dealt with as peripheral to core economic analysis or in an ad-hoc way.

Incorporating the main non-market elements into a standard economic model raises both measurement and technical challenges. However, there has been substantial progress on both fronts over the past two decades. In particular, the measurement of human wellbeing is now underpinned by a significant body of empirical evidence (Box 1), and many of the technical challenges are proving to be more tractable than anticipated. In particular, developments in welfare economics have offered new methods for identifying shadow prices for non-market outcomes (Benjamin, Heffetz, Kimball, & Szembrot, 2014; Fujiwara, 2013), that make dealing with the trade-offs involved between market and non-market outcomes more practicable than was previously the case.

3.4 Adapting the OECD model to New Zealand

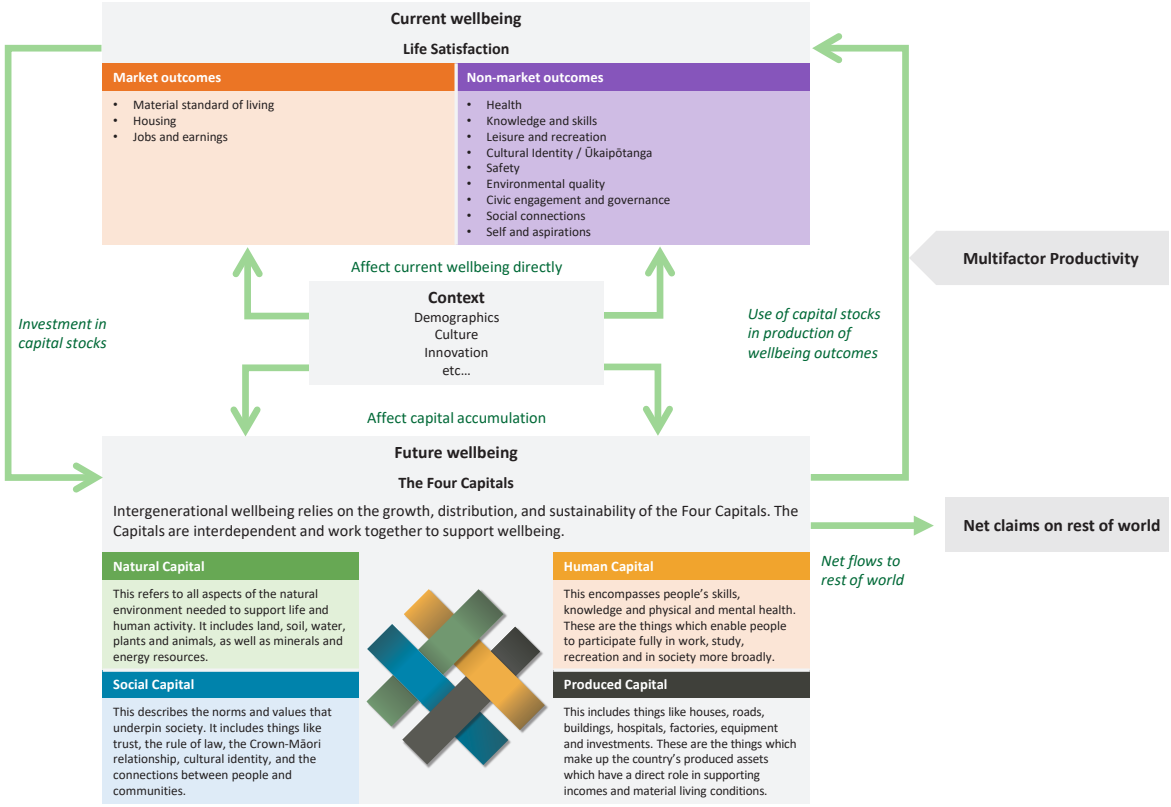
The OECD wellbeing model uses a coherent capital stocks model to evaluate intergenerational wellbeing, and is widely used internationally. Despite this, it is not a perfect fit for the New Zealand Treasury. In particular, the OECD model fails to consider explicitly some aspects of current wellbeing that are of great salience to New Zealanders – such as culture – and is framed in language that may hinder communication with some New Zealand communities. For example, the phrase "individual wellbeing" may be seen to suggest a reductive atomistic view of human wellbeing that does not align well with the views of some New Zealand communities. In fact, the fairly clear intent of the OECD is simply to reinforce the view that wellbeing is something that is experienced ultimately by people, but from a communications perspective the language is problematic.

Beyond the issues of broad content and communication, there is a more technical issue relating to data availability. Where the OECD's measurement framework is guided by the body of internationally comparable indicators available to the OECD, for New Zealand it is possible to supplement these with domestic data sources that may provide a more detailed picture of outcomes in New Zealand on some topics. Another set of technical issues fall out of the underlying economic models discussed in the previous section. In particular, it is essential that productivity be included in any measurement framework based on the capital stocks model, and issues of trans-border flows are important as well. Finally, while the OECD wellbeing framework is intended primarily to support broad cross-country comparisons of aggregate outcomes, the model used to inform the Living Standards Framework will need to be applied both to the Treasury's medium-term strategic policy advice and to meso- and micro-level policy issues related to advice on specific policy interventions.

Figure 4 below presents an attempt to flesh out the Living Standards Framework to incorporate the main features of the capital stocks model that will need to be measured for the *Living Standards Dashboard*. This model starts with the Treasury Whāriki diagram that captures the four capital stocks. However, it builds out from this to capture the main features of the OECD model (Figure 2) and key parts of the inclusive wealth framework (Figure 3). In particular, Figure 4 adds to the Whāriki current wellbeing, multifactor productivity, and the flows between different parts of the model. It also highlights the role of contextual factors such as culture and demographics in shaping wellbeing and net claims on the resources of the rest of the world.

Figure 4 identifies four main areas that any credible attempt to measure intergenerational wellbeing will have to cover. These are future wellbeing, current wellbeing, multifactor productivity and net claims on the rest of the world. The four capitals are at the core of the measures related to future wellbeing. Intergenerational wellbeing is sustainable if the level of the capital stocks is not declining. While produced capital and natural capital decline with use owing to depreciation and resource depletion, human and social capital do not and, under some circumstances, may even increase with use. Despite this, it is useful to think of all four capitals as similar in the sense that they represent stocks of productive resources that are used to produce human wellbeing. An important adjunct to this is that the capitals produce wellbeing outcomes jointly: in general, it is not possible to associate an aspect of current wellbeing with just a single capital stock.

Figure 4. A conceptual framework for the Living Standards Dashboard



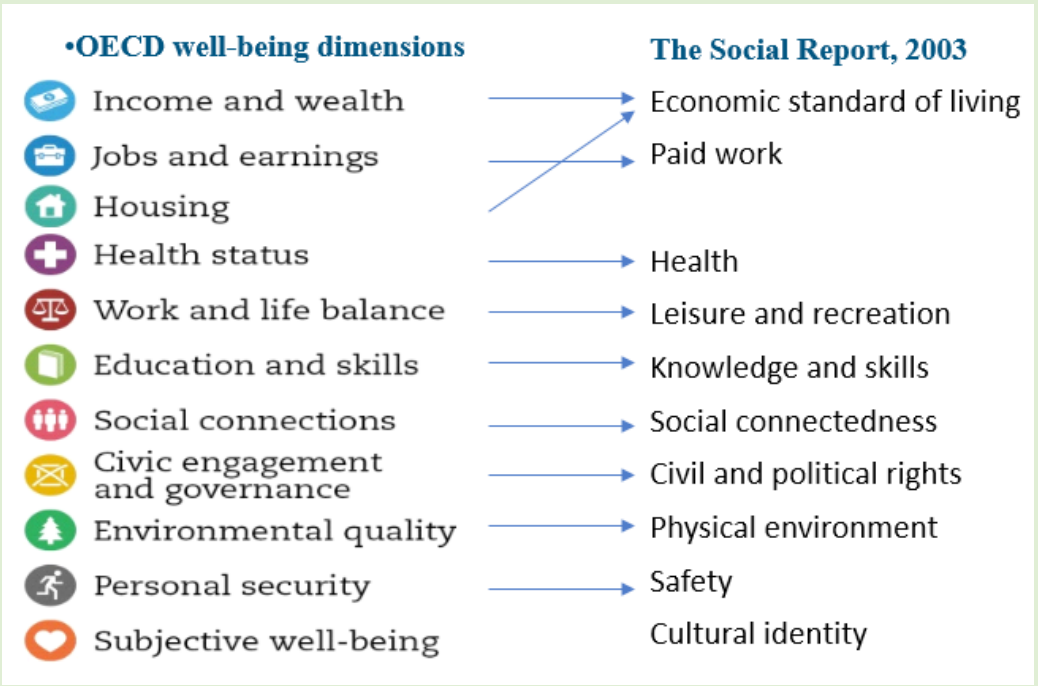
Where the four capitals measure the stock of resources used to produce wellbeing, current wellbeing measures what those resources produce: the wellbeing of New Zealanders. Current (human) wellbeing is something that people experience, and is inherently multidimensional. The dimensions of current wellbeing listed in Figure 4 are based on both the OECD *How's Life?* framework and the New Zealand *Social Report*, which are largely consistent with each other and which together to provide consistency with international standards and alignment with New Zealanders' values. Section 3.5 elaborates on some of the issues around incorporating a New Zealand perspective into the OECD framework. A distinction is made between market outcomes, which cover those aspects of wellbeing relating to market transactions, and non-market outcomes, which relates to other aspects of quality of life. To gain a meaningful picture of current wellbeing it is necessary not only to know the level of different outcomes, but also the distribution of outcomes across the population.

Box 1. The dimensions of current wellbeing

While there may be some debate about how a country's assets should be divided among different categories of capital for the purposes of measuring comprehensive wealth (eg, Dalziel & Saunders, 2014), the importance of natural, social, human and produced capital is relatively widely accepted. In contrast, the dimensions of current wellbeing have in the past been the subject of much more vigorous debate. At the most basic level there is a conceptual and philosophical debate about what current wellbeing actually "is". Sen (1993) argues that wellbeing is the ability of people to live the kind of lives they have reason to value, and that the dimensions of measurement are the "capabilities" that provide people with this kind of control over their lives. At the other extreme, Layard (2006) takes an explicitly utilitarian approach to wellbeing and defines it as the experience of good mental states such as life satisfaction. Empirically, however, the choice of philosophical approach makes little difference and there is strong evidence that wellbeing has a relatively coherent and enduring core structure.

The lists of capabilities that comprise wellbeing from a perspective grounded in Sen (eg, Fitoussi et al, 2009; OECD, 2011) map very closely onto the main determinants of life satisfaction (Boarini, Comola, Smith, Manchin, & De Keulenaer, 2012). Public consultations in widely varying parts of the world tend to come up with very similar sets of outcome domains. This is perhaps not surprising where there is clear cross-fertilisation from a high-profile international framework to a domestic framework such as in the case of Israel's indicators of "well-being, resilience, and sustainability" (OECD, 2015a). However, there are also very strong similarities between outcome frameworks developed entirely independently (Barrington-Leigh & Escande, 2018). The New Zealand *Social Report* (Ministry of Social Development, 2003) and Big Cities Quality of Life indicators (Quality of Life Project, 2007) both use outcome frameworks almost identical to that developed by the OECD (2011) despite entirely separate origins (Figure 5). Indeed, the only really substantive differences between the two frameworks are the addition of a cultural identity domain in the *Social Report*, that housing is treated within the economic standard of living domain in the *Social Report* rather than separately (although the housing indicators in each report are very similar), and the *Social Report* has no subjective wellbeing domain (although life satisfaction measures have regularly been included in the conclusion of the *Social Report*).

Figure 5. How's Life? (OECD, 2011) and Social Report (MSD, 2003) wellbeing frameworks



In addition to the views of experts, public consultation and evidence from life satisfaction, there is also solid behavioural evidence that the wellbeing domains represented in the OECD and similar models capture the important elements of wellbeing and add significant value to more traditional measures of progress such as GDP. Delhey and Kroll (2013) show that the OECD Better Life Index (BLI), which includes all of the dimensions of current wellbeing in the OECD framework, significantly out-performs both real gross national income (GNI) per capita, the UN's Human Development Index and a range of other indices of progress in terms of predicting average life satisfaction. The key distinguishing features of the BLI when compared with the other indices considered are the scope of the wellbeing domains (which provide a relatively comprehensive description of current wellbeing) and the fact that the BLI focuses explicitly on measuring current wellbeing rather than introducing other ad-hoc adjustments.

The link between measures of progress using the full set of OECD domains and life satisfaction is interesting because life satisfaction is strongly linked to people's actual behaviour. George Ward (2015), for example, shows that changes in life satisfaction predict changes in the vote share of the incumbent government in EU countries, and that this relationship is much stronger for life satisfaction than for economic growth, unemployment or inflation. Grimes, Oxley, and Tarrant (2012) also find that life satisfaction explains real-world behavioural choices using migration as an example, while Fleurbaey and Schwandt (2015) reach a similar conclusion on the relevance of life satisfaction from survey data.

Multifactor productivity connects the four capitals to current wellbeing. While the four capitals capture the most significant resource stocks used to produce wellbeing, the efficiency with which these stocks are used in production processes is also of fundamental importance. If we are able to use the capital stocks more efficiently, then this allows for higher levels of current wellbeing consistent with sustainability. It is important to note that the idea of multifactor productivity does not necessarily imply a single productivity measure. It is quite possible that New Zealand has higher productivity with respect to some dimensions of current wellbeing than others.

The final element of the framework that will require measurement is net claims on the rest of the world. This recognises that the productive resources available to New Zealand are not only a function of those within New Zealand, but also the claims New Zealanders have on the resources of other countries and the claims people in other countries have over the resources of New Zealanders. Much of this can be captured by measuring net financial capital, but environmental spill-overs from one country to another also need to be included.

An important element of the Living Standards Framework not explicitly reflected in Figure 4 is the importance of looking at the distribution of wellbeing and the capital stocks. We are interested not only in the level of outcomes achieved in all of the areas set out in Figure 4, but also in the distribution of outcomes. This will be of particular importance when the *Living Standards Dashboard* is used in a policy context, and is also reflected in the choice of indicators (see Section 4).

In considering Figure 4, it is worth highlighting two significant differences between the proposal here and the Treasury's existing model of the Living Standards Framework. Although relatively minor, both are significant. First, Figure 4 focuses on produced capital where the Living Standards Framework discusses physical and financial capital. As discussed in Section 4.2, produced capital includes physical capital and knowledge assets such as computer programs or intellectual property. Moving from physical capital to produced capital better aligns the Living Standards Framework with the System of National Accounts and standard economic terminology. As part of this adjustment, financial capital is moved from one of the four capitals to net claims on the rest of the world (see Section 4.4). The other main change is in the treatment of life satisfaction. Where the OECD includes life satisfaction as an indicator of subjective wellbeing (alongside other subjective wellbeing measures), Figure 4 places life satisfaction as a proxy measure for overall current wellbeing. Reflecting both concerns around conceptualising wellbeing purely in subjective terms (eg, Sen, 1993) and the limitations of the measure, life satisfaction is used in this way only as a complement rather than a substitute for measuring the individual domains of wellbeing

Box 2. Indicators of wellbeing and the capital stocks

The approach to developing a *Living Standards Dashboard* proposed here is based around the use of a suite of indicators to track changes in the level and distribution of the main elements of the Living Standards Framework. This reflects the fact that many elements of wellbeing as well as some capital stocks are difficult to measure directly with a continuous scalar metric. Instead, we are forced to rely on indicators of the relevant concept.

Indicators are statistics that provide information on some aspect of a particular phenomenon when a comprehensive measure of the phenomenon itself is unavailable or simply not possible. In the case of the *Living Standards Dashboard*, indicators are statistics that capture some important piece of information about a key part of the framework (eg, material standard of living, social capital). In a few cases – such as the use of net fixed assets as a measure of produced capital – the indicator might be very close to providing a good scalar and continuous measure of the underlying concept. In most cases, though, this is not true.

Generalised trust, for example, is a good indicator of social capital in that a high level of generalised trust is strong evidence of a high level of social capital, and changes in the level of social trust are likely to reflect changes in the level of social capital. However, we should be cautious about interpreting the generalised trust indicator (the mean score on a 0–10 scale for New Zealand) as a comprehensive measure of the quantity of social capital in New Zealand. For example, if New Zealand has a mean level of trust 1 point higher than another country, we could take this as evidence that New Zealand has a higher level of social capital, but not that New Zealand has exactly 10% more social capital than the comparison country.

Another point worth emphasising with respect to indicators is that an indicator reflects some concept within a broader framework: it is not just a simple descriptive statistic. In the case of the Living Standards Framework, indicators capture some aspect of current wellbeing, the capital stocks, multifactor productivity or net claims on the rest of the world. Other statistics – such as the age structure of the New Zealand population – may capture important contextual information that is relevant to interpreting the indicators in the *Living Standards Dashboard*, but these are not themselves indicators of wellbeing.

Finally, it is important to recognise that indicators are just that: indicators. They are not in themselves the outcome that is being targeted. This is why setting policy targets for indicators should be undertaken with great care, if at all. Once a target is set, the institutional incentives are often to pursue the target indicator rather than the underlying outcome that the indicator is meant to capture. This can have perverse incentives if it is possible to improve the indicator directly without altering the underlying outcome.

3.5 What does a wellbeing framework add to evaluating policy proposals?

The ultimate purpose of the *Living Standards Dashboard* is to support the Treasury's policy advice and medium-term strategy. While there is an obvious value in monitoring the resources that underpin the wellbeing of New Zealanders and the levels of current wellbeing, it may be less obvious as to how a wellbeing framework can be used to support better policy-making at a practical day-to-day level.

Boarini and Smith (2014; see also OECD, 2015a) set out a framework for thinking about the application of a wellbeing framework to policy that identifies three broad roles that such a framework can play. These are: ***alignment***, ***analysis*** and ***accountability***. Alignment focuses on the role that an explicit wellbeing framework can play in supporting different agencies in aligning their work with each other and with broader government priorities. By providing a common language and frame of reference for discussing the desired outcomes of policy, a wellbeing framework can assist in identifying externalities and issues that spill over from one policy silo to another.

A second way in which a wellbeing framework can be used to assist decision-making is through the analysis of the impact of policies. At heart, most policy analysis is concerned with identifying the effect of different proposed policy options on the wellbeing of the population. An explicit wellbeing framework helps identify the outcomes that policy targets and supports the measurement of outcomes. While the *Living Standards Dashboard* will be focused primarily on measuring wellbeing outcomes and the capital stocks at a national level, a key focus for the application of the refreshed Living Standards Framework to policy will be to support decision-making around the budget cycle in the evaluation of proposals for new expenditure, the review of existing baseline expenditure and in the context of regulatory policy. This will mean applying the wellbeing framework to analyse the impact of policy proposals on wellbeing at the meso and micro levels, and supporting this with relevant evidence of the policy impact across the different elements of the wellbeing framework.

An explicit wellbeing framework also supports government accountability. This occurs at two levels. First, national monitoring of the wellbeing and capital stocks can help the public assess whether the country is moving in the right direction. This is supported by incorporating elements of the framework, such as estimates of the four capital stocks, in formal accountability documents such as the Treasury's Investment Statement. At an agency level the framework itself can support accountability. Although many of the wellbeing domains and capital stocks are too generic to be of direct use as an accountability metric, they provide a common framework for agencies to anchor their performance measures to.

Beyond the alignment/analysis/accountability framing that focuses on the types of use to which a wellbeing framework can be put, it is also useful to identify the main policy issues that a framework can assist analysts in thinking about. The capital stocks model, on which the Living Standards Framework is based, highlights two key types of question:

- Does the proposed policy ***improve wellbeing now*** (current wellbeing) ***or in the future*** (capital stocks)?
- What are the ***spill-overs*** from the policy to outcomes other than the primary goal of the policy?

The first question directs the analyst's attention to the issue of whether a policy is aimed at addressing an issue affecting people's current wellbeing or whether it is aimed at increasing the stock of resources for the future. In the first case, the policy is conceptually concerned with current consumption, while in the second case, the policy is a form of saving. While many policy initiatives will have elements of both goals, it cannot be assumed that a policy that achieves its goal in one sense will necessarily have good outcomes in the other, and identifying these trade-offs is important.

A capital stocks model also directs analysts' attention towards spill-overs into outcomes other than the primary target of a policy. Policy interventions may have synergies, where a policy targeted at one dimension of wellbeing – such as health – may have spill-over effects on other dimensions of wellbeing (eg, jobs and earnings) or impact on the capital stocks (eg, human capital). Alternatively, a policy that has positive outcomes in one area – such as improving current income – may have negative effects in other dimensions of wellbeing or on the capital stocks (eg, natural capital).

One issue that inevitably arises in thinking about the trade-offs between different parts of a model such as the Living Standards Framework is the issue of valuation. How should we decide between a policy that improves health and jobs, and one that improves education and leisure? Traditional cost-benefit analysis (CBA) tools are helpful where the benefits are fully captured by market prices and quantities, and provide a useful framework for thinking about inter-temporal trade-offs. However, many of the policy impacts of interest will relate to non-market outcomes and will not be able to be assessed through traditional CBA. Recent developments in valuation techniques for non-market outcomes, including those based on life satisfaction (Fujiwara, 2013; OECD, 2013a) and choice experiments (Benjamin et al., 2014) offer a useful way forward here.

3.6 New Zealand issues

As discussed in the previous section, adapting the OECD wellbeing framework to New Zealand is not simply a matter of finding New Zealand data for all of the concepts to be measured. There are also some changes required to the framework itself. In fact, there are three broad classes of issue involved with adapting the OECD framework to a New Zealand context, and these need to be considered in some depth as the issues raised are important. In particular, there is obviously a potential for tension between adapting the framework so that it fits New Zealand better and international comparability. The three main issues that need to be considered are:

- ***Substantive:*** Are there any substantive elements of current wellbeing or any capital stocks that would need to be included in a New Zealand framework for intergenerational wellbeing and which are not in the OECD framework (and anything that should be dropped from the OECD framework)?
- ***Communications:*** Are there any changes to the OECD framework that need to be made in order to communicate the intended concept more effectively to a New Zealand audience where the concept being measured does not change?
- ***Technical:*** Are there any areas where the choice of indicator used to measure a dimension of current wellbeing or a capital stock might be different if the focus was on using the best available New Zealand data rather than prioritising international comparability?

Substantive issues: The place of culture

Although the OECD wellbeing framework is intended to be applicable across all the OECD member states (and to be grounded in the universal features of human wellbeing), it is reasonable to question whether there are aspects of wellbeing relevant to New Zealand that might not be well reflected in the OECD framework. At one level the OECD framework performs relatively well in a New Zealand context. An analysis of the *How's Life?* wellbeing domains shows that they are all important drivers of the life satisfaction of New Zealanders (Jia & Smith, 2016). More substantively, the *Social Report* (MSD, 2003, 2007) was developed to measure wellbeing in New Zealand and underwent substantial public and expert consultation in New Zealand on the measurement domains early on in its development (MSD, 2003), and has also been tested against subjective wellbeing measures (Brown, Woolf, & Smith, 2012). Although the *Social Report* does not explicitly consider some elements of intergenerational wellbeing, such as the capital stocks, as a description of current wellbeing the *Social Report* aligns very closely with the OECD framework.

Despite generally very close alignment between the New Zealand-centred view of wellbeing to be found in the *Social Report* and the OECD framework, there is one very substantial area of difference. Where the *Social Report* identifies cultural identity as one of the 10 core dimensions of wellbeing that it measures, the OECD has no corresponding dimension. The importance of culture as an issue is reflected in the discussion papers prepared by the Treasury on the Living Standards Framework which identify culture as an issue (King, Huseynli, & MacGibbon, 2018) and under development (Morrissey, forthcoming). As both a bicultural country (reflecting the Treaty of Waitangi) and a multicultural country (with an immigrant background), issues of culture, belonging and identity are of fundamental importance if a wellbeing framework is to work in New Zealand.

Culture can potentially impact on intergenerational wellbeing in a number of different ways. It can:

- affect measurement (culture may affect how people respond to self-report indicators)
- be a distinct dimension of current wellbeing (cultural identity as a domain of current wellbeing)
- be a way of classifying capital stocks (cultural capital), and
- be a driver of wellbeing (culture may affect people's wellbeing without itself being an aspect of wellbeing).

As a measurement issue, culture is worth being aware of, but issues of potential cultural response bias should not prevent the use of self-report indicators. The best available evidence suggests that cultural response bias to self-report questions exists, but the effect is generally not large (Exton, Smith, & Vandendriessche, 2015) and should not prevent self-report questions being used in many circumstances.

In contrast, the role of culture as a distinct dimension of current wellbeing appears to be very important in New Zealand. Culture can matter because identity affects the degree to which people feel a sense of belonging. The concept of Tūrangawaewae reflects the importance of identity with a place in Māori culture, but is also used in wider New Zealand culture. Beyond the importance of a sense of belonging, culture also matters to current wellbeing through inclusion. The ability of a person to express their culture – to live as themselves – is another fundamental way culture affects current wellbeing. Belonging is not sufficient as a way of encapsulating how culture matters to current wellbeing if it comes at the expense of having to conform to someone else's cultural norms and values. Finally, intrinsic value may be attached to some aspects of culture. An example of this is the importance attached in New Zealand to the preservation of te reo Māori. All three of these aspects of culture were captured in the *Social Report* cultural identity domain. It is therefore consistent with this to add a cultural identity domain to the framework for measuring current wellbeing in New Zealand (see Box 1).

Another aspect of culture that is sometimes raised in the context of measuring intergenerational wellbeing is the idea of cultural capital (eg, Dalziel & Saunders, 2014). Cultural capital is typically described with reference to "cultural skills and values … inherited from the previous generation" (Dalziel & Saunders, 2009, p19). While this has an immediate intuitive appeal, it is less clear how cultural capital in this sense can be distinguished meaningfully from human (skills) and social (productive norms and values) capital. Going back to the origins of the concept of cultural capital (Bourdieu, 1989), the emphasis is focused on how culture affects a person's character and tastes, and how this interacts with the character of the society in which the individual lives. Bourdieu primarily sees cultural capital as a positional good that impacts on how existing power structures are perpetuated within society. In this sense, cultural capital is not a capital stock in the sense used within the Living Standards Framework (ie, it is not a productive resource).

In the New Zealand context, cultural capital often appears to be used to mean the human and social capital associated with minority cultures. This raises two issues with the idea of incorporating cultural capital into the Living Standards Framework. First, cultural capital overlaps with the other capital stocks – particularly human and social capital – raising the issue of double counting. From this perspective alone it is probably undesirable to include cultural capital. However, there is also a risk that if cultural capital is included it simply becomes a way to ghettoise minority cultural issues within the Living Standards Framework. For this reason it is recommended that cultural capital not be added to the Living Standards Framework.

Although cultural capital does not work well as a concept, this is not to deny that culture may have an important role both as a driver of the accumulation of capital stocks and as an important factor shaping current wellbeing. In particular, it is clear that culture is fundamental in the transmission of human and social capital between generations. Because of this, culture is one of the key contextual factors affecting the Living Standards Framework, and represents an important area to understand better. The importance of culture in this sense is reflected in Figure 4.

Communication: how to describe wellbeing in New Zealand

While there is a substantial body of evidence suggesting that the broad content of wellbeing has a high degree of common content across cultures and contexts (see Box 1), how information on wellbeing is presented and discussed is much more culturally specific. For example, Fiona Cram (2014) notes that, while there are commonalities between Māori and Western conceptions of wellbeing, Māori conceptions of wellbeing frame these issues very differently. Similar issues potentially arise for other sub-populations within New Zealand, and for New Zealand when compared with other countries.

There is not a single solution to the issue of cultural specificity in the framing of wellbeing, and there is no authoritative source for mapping the OECD-derived measurement approach set out in Section 3.4 onto New Zealand. While some insight can be gained from looking at previous efforts by central government (Ministry of Social Development, 2007), local government (Quality of Life Project, 2007) and academics (Cram, 2014) to articulate wellbeing frameworks specific to New Zealand, none of these can be considered definitive. In fact, the main message to take from all three of these examples is that any wellbeing framework will benefit from expert and public consultation. While it is entirely possible that such consultation will not identify substantive gaps

in the framework if it is well founded, consultation can achieve two goals. First, it can help identify how best to communicate the framework to a particular audience, and second, it provides the resulting framework with legitimacy.

Both communication and legitimacy are relevant issues for the Living Standards Framework. While this paper provides advice on measuring intergenerational wellbeing from a technical perspective with a focus on international comparability, there would be real value in a formal process of testing the Living Standards Framework with the wider New Zealand public.

Technical issues: trade-offs between relevance and comparability

In addition to the cultural issues discussed above, measuring intergenerational wellbeing in New Zealand raises some more technical issues. Ideally, it would be possible to select indicators of intergenerational wellbeing that were based on international standards, comparable with the best available measures used by the OECD to compare wellbeing across countries, and which could provide a detailed breakdown of the distribution of outcomes within New Zealand. In practice, choices will need to be made between these objectives.

The need for choices arises because there is not yet a consistent set of international standards covering all of the available indicators needed to flesh out the *Living Standards Dashboard*. Even where standards do exist (eg, the OECD's *Guidelines on Measuring Trust*, 2017b), these are not always supported by data collection on the part of national statistical agencies. Because of this, there is often a choice between the indicators that are available at an international level and those that would be best from a purely domestic perspective. For example, in *How's Life?* 2017 (OECD, 2017a), the OECD sources data for trust in the national government from the Gallup World Poll. This provides a comparable indicator that is available for all OECD countries. However, the small sample size and limited range of demographic covariates in the Gallup World Poll mean that it can provide little or no information as to the distribution of trust in the national government within New Zealand. In contrast, the New Zealand General Social Survey can provide detailed information on a conceptually similar question – trust in Parliament. These data are of higher quality than the Gallup World Poll, with a larger sample size and excellent demographic information, but they are currently available only for New Zealand.

In some cases – such as the national accounts – the best available indicators may be the same both from the perspective of international comparability and from a domestic perspective. However, in many areas this will not be the case. The approach taken here in selecting indicators for the *Living Standards Dashboard* has been to give priority to international comparability, but to complement the internationally comparable measures with the closest available New Zealand measure where this is necessary to provide information on the distribution of outcomes within New Zealand, or where the New Zealand measure unambiguously adds significant new information.

3.7 Potential objections

The conceptual model presented here is open to a number of legitimate criticisms. Many of these reflect limitations in measurement, the simplifications involved in reducing a complex reality to an analytically tractable model, or the fuzzy nature of some of the elements to be measured. Nonetheless, many of the most common objections to the measurement of wellbeing have proved to be simply untrue empirically, or are less significant than might appear to be the case at first glance. In particular, it is worth considering five of the more common objections raised in the context of measuring wellbeing.

- People have different tastes.
- Wellbeing might be different across cultures or belief systems.
- Even the main theories of wellbeing are contradictory.
- Wellbeing is unobservable.
- Wellbeing frameworks are too complex and multidimensional to be useful for decision-making.

People have different tastes

One of the main objections made to measuring wellbeing outcomes such as those identified above is that people have different tastes. While one person might like cars, another might prefer to spend their time walking in forests. Because of this, it is asserted that the choice of outcome domains (health, knowledge and skills etc) is ultimately arbitrary and will vary from person to person. This fundamentally misunderstands the role of the outcome domains. These are not intended to represent specific consumption bundles people are required to hold in order to have wellbeing. Instead, they represent "primary goods" or "capabilities": those things required for people to have meaningful choice over how they live their lives and what they do. The wellbeing outcome domains, in effect, are intended to capture people's full range of consumption possibilities, including both market and non-market resources and goods. In other words, the wellbeing domains capture the ability of people to express or indulge their tastes (including choosing not to do so) rather than prescribing a specific consumption bundle.

Wellbeing might be different across cultures or belief systems

A commonly made criticism of the idea of measuring wellbeing is the assertion that wellbeing might vary considerably across different cultures or belief systems, thus rendering meaningful comparisons impossible. Although intuitively plausible, there is very little evidence supporting the view that cultural differences make comparisons of wellbeing of the type considered here impossible. For example, there is good evidence that the determinants of subjective wellbeing do not vary much across cultures (Fleche, Smith, & Sorsa, 2012; OECD, 2015a), suggesting that the main things that matter to people's wellbeing are relatively consistent. This result is not surprising, in that the broad categories of wellbeing used in the OECD and similar wellbeing frameworks are the types of thing that matter to people by the simple fact of being human. While how it is framed or described may vary by culture, something like health is likely to be valuable to most people. Similarly, the evidence suggests that cross-cultural bias in responses to measures of subjective wellbeing is not a large effect (Exton et al., 2015).

Even the main theories of wellbeing are contradictory

Another criticism of attempts to measure wellbeing or incorporate a wellbeing perspective into policy has been to focus on the different theories of wellbeing. In particular, it is often argued that a capabilities-based approach to wellbeing (Sen, 1993) differs fundamentally in its conceptual basis from more utilitarian approaches to wellbeing (eg, Layard, 2006), and may result in fundamentally different views about what it is important to measure or focus on from a policy perspective. In principle, this criticism carries considerable weight, and there is an extensive philosophical literature dealing with these issues. However, in practice, there is little evidence that the choice of approach makes much difference. The determinants of life satisfaction – typically treated as a proxy for utility by those advocating a utilitarian approach – turn out empirically to be largely the same things that are identified as important in a capabilities approach (Boarini et al., 2012; Brown et al., 2012; Helliwell, Layard, & Sachs, 2018).

Wellbeing is unobservable

A major criticism of wellbeing historically has been that it is unobservable. Even if it is possible to provide a meaningful conceptual definition, it is argued, it is still not possible to provide meaningful measures of a concept as intangible as wellbeing. This criticism, however, falls down in two places. First, a capabilities approach to measuring wellbeing lends itself well to observable measures. The dimensions of wellbeing identified by the OECD, for example, can mostly be measured through indicators of observable outcomes. Second, the measurement of intangible and subjective states has proved to be less of an issue than was traditionally imagined. International guidelines on the measurement of subjective wellbeing, for example, have been published (OECD, 2013a) and official measures of subjective wellbeing are available from the majority of OECD national statistical offices (OECD, 2015b).

Wellbeing frameworks are too complex and multidimensional to be useful for decision-making

The assertion that wellbeing frameworks are complex and multidimensional is often made as a criticism. Wellbeing measures such as those proposed by the OECD do not reduce down to a single indicator such as GDP, and it is argued that this represents a shortcoming which we should expect a robust approach to measuring wellbeing to overcome. The argument is made both by analogy to GDP – "GDP reduces a broad range of information to a single figure so the same goal should apply to wellbeing" – and more substantively. In particular, it is argued that a single figure is needed to communicate effectively with the public and to provide a single decision-point for policy-makers. Unlike some of the criticisms discussed above, part of this criticism is correct: wellbeing frameworks do tend to be complex and multidimensional. However, this is not a problem but simply reflects the fact that wellbeing is complex and multidimensional. Reducing the reality of wellbeing to a single number – even if it were possible – would not significantly advance policy. The policy response to a fall in wellbeing owing to rising unemployment is very different from the relevant policy response to a fall in wellbeing owing to declining environmental quality. The multidimensional nature of the OECD and similar wellbeing frameworks is a feature, not a bug, because it reflects the reality that wellbeing is multidimensional and the role of a wellbeing framework is to assist policy-makers in identifying and evaluating trade-offs between the different dimensions of wellbeing.

3.8 Other frameworks

The capital stocks framework discussed in Sections 3.1 to 3.4 is the approach to measuring intergenerational wellbeing most strongly supported by major international statistical organisations (including the OECD, UNECE and Eurostat), and is grounded in a robust framework based on solid scientific and economic principles (Fitoussi et al, 2009). It is also well adapted to bring out some of the key tensions and trade-offs between now and the future and between different dimensions of wellbeing involved in making policy decisions. However, although the capital stocks framework is well supported, it is not the only framework used to assess intergenerational wellbeing and sustainable development, and it is useful to discuss how the capital stocks framework relates to other alternative frameworks.

Perhaps the most widely known framework is the idea of economic, social and environmental reporting. This three-way framework was used as the framing for *Measuring Australia's Progress* by the Australian Bureau of Statistics (ABS, 2013), and informed the presentation of Statistics New Zealand's *Measuring New Zealand's Progress Using a Sustainable Development Approach* (Statistics New Zealand, 2009). Historically, the economic/social/environmental distinction is grounded in the triple bottom line reporting approach developed to assist commercial enterprises in assessing their sustainability,[1] but is also reflected in other contexts. For example, many national statistical agencies (including both the ABS and Statistics New Zealand) have traditionally had economic, social and environmental statistics reflected in their organisational structure.

Although many people find the economic/social/environmental framework intuitive, it has several disadvantages compared with the capital stocks approach. Where the economic/social/environmental framework tends to consider each dimension on its own, the capital stocks framework highlights that current wellbeing is a function of all of the capital stocks: there is no "economic" wellbeing that is produced by economic capital or "social" wellbeing that is a function of social capital. From a policy perspective, the tendency of an economic/social/environmental framework to reinforce existing silos within government rather than helping to identify trade-offs and spill-overs is another issue. Finally, there is little guidance as to what each dimension of this framework actually "is", meaning that the framework itself provides little guidance as to measurement. It is not uncommon for attempts to implement an economic/social/environmental framework in practice to include indicators that cannot meaningfully be related back to any of the concepts in the capitals framework.

[1] Note that the best practice in integrated reporting is no longer triple bottom line reporting (economic/social/environmental) but now follows a variant of the capital stocks model itself (Integrated Reporting Council, 2013).

Another framework worth discussing briefly here is the MONET system of sustainable development reporting developed by the Swiss Federal Statistical Offices and cited by Statistics New Zealand as an influence on *Measuring New Zealand's Progress Using a Sustainable Development Approach*. This framework is also discussed in the UNECE *Conference of European Statisticians Recommendations on Measuring Sustainable Development* (UNECE, 2014). In contrast to the capital stocks model, which is grounded in an economic model, the MONET system links measurement closely to policy targets that are based on loose "principles for sustainable development". These principles (Federal Statistical Office of Switzerland, 2016) vary from outcome statements with respect to wellbeing ("satisfaction and happiness", "promoting health"), measures of some elements of some capital stocks ("development of human capital") and policy recommendations ("market as economic order"). The inclusion of policy recommendations as part of the system to assess intergenerational wellbeing is particularly problematic as it prevents the framework from being used effectively to assess the effectiveness of different policy prescriptions. More generally, the MONET system's focus on generic "principles" to shape measurement rather than grounding measurement in a clear conceptual framework (UNECE, 2014) makes it difficult to integrate the MONET indicators with existing international statistical standards or to identify trade-offs between current and future wellbeing.

4 IDENTIFYING INDICATORS OF INTERGENERATIONAL WELLBEING

Given a clear conceptual outline, the choice of the best available indicators is essentially a technical task. The conceptual framework discussed in the previous section fills this role for the *Living Standards Dashboard* and provides an outline of what dimensions of wellbeing, capital stocks and other elements of the framework need to be measured. In selecting indicators for these, we want to know that each indicator is:

- directly ***relevant*** to the concept being measured
- ***comparable*** with indicators used elsewhere
- ***sensitive*** to policy interventions and amenable to change
- able to be ***disaggregated*** to look at the distribution of outcomes, and
- ***timely*** in that it is available without too long a delay and can provide information on changes over time.

A sixth criterion for indicator selection is applied to the suite of indicators as a whole: ***parsimony.*** This reflects the fact that, the more indicators that are included, the harder it is to make sense of the overall picture. The *Living Standards Dashboard* is intended to be used to inform policy, not to provide a detailed description of every aspect of intergenerational wellbeing in New Zealand. While there is undoubtedly a place for more detailed analysis, the indicators identified below for inclusion in the *Living Standards Dashboard* are intended as the minimum set that provide the required information.

In addition to these quality-related criteria, it is also important that data for the indicator are actually available. However, there is a risk that too strong a focus on data availability for the *Living Standards Dashboard* leads to the acceptance of poor-quality information where the available data are not good. Because of this, in addition to considering the available data, it is also important to identify areas where better data are needed.

The following sections of this report consider each distinct element of the Living Standards conceptual framework from the perspective of measurement. In each case, a brief description of the concept to be measured is provided, building on the high-level outline provided by the conceptual framework and consistent with the best available evidence on intergenerational wellbeing. In addition to describing the nature of the measurement concept, this outline also sets out its dimensionality. While it may be possible to capture some parts of the Living Standards Framework reasonably adequately with a single indicator, other parts may require more than one indicator.

After describing the measurement concept, potential indicators are then listed. The number of indicators considered depends not only on the dimensionality of the concept being measured, but also on whether there is a tension between international comparability and the need to reflect New Zealand circumstances. For example, in some cases the best available indicator for international comparisons cannot be used for the analysis of the distribution of outcomes within New Zealand owing to data limitations. In the interest of transparency, every indicator is assessed against the criteria given above. The full details of the evaluation are attached in Annex 1, while the discussion in the body of the report provides a brief summary of the main conclusions. Where the available indicators do not perform well against the criteria, suggestions for future data collection are outlined.

Indicators of distribution and inequality

Measuring wellbeing requires looking at the distribution of outcomes both between and within the different domains of wellbeing. While preferences over the importance attached to issues of distribution might reasonably vary, from the point of view of describing people's wellbeing, a situation where outcomes are distributed evenly across the population clearly differs materially from a situation where a small proportion of the population has very good outcomes in one of

the wellbeing domains and the rest of the population has poorer outcomes by comparison. It is therefore important that the *Living Standards Dashboard* describes not just average outcomes for New Zealanders, but also how those outcomes are distributed across the population.

In describing the distribution of wellbeing, there is a wide range of different ways that we could approach measurement. However, three core concepts are proposed here that would need to be captured by indicators of wellbeing at an absolute minimum. These are:

- How unequal is the distribution of outcomes overall (a measure of dispersion)?
- Which groups in the population face disadvantage (analysis by population group)?
- What proportion of the population faces severe disadvantage (hardship)?

Each of these three aspects of distribution would ideally be considered for each domain of wellbeing in the *Living Standards Dashboard*. There is also interest in the distribution of the capital stocks, although the issues here are less direct in that the capital stocks are resources for production rather than dimensions of wellbeing, and therefore not every individual person will need high levels of all capitals. For example, someone with high human capital can use this to earn an income regardless of whether they personally own the natural and produced capital used alongside their human capital by the business for which they work.

In addition, the joint distribution of outcomes across different domains of wellbeing matters. It is important to know whether disadvantage in New Zealand is concentrated among a few people who experience poor outcomes in multiple domains (eg, poor health, low incomes and poor safety outcomes) or whether people who experience poor outcomes in one area are different from those who experience poor outcomes in another area. This involves looking at multiple disadvantages and the joint distribution of wellbeing outcomes (Fitoussi et al, 2009).

The measurement challenge associated with measuring the distribution of outcomes is twofold. First, it requires data sources that are able to be disaggregated. While this is not generally an issue for much New Zealand data, some of the indicators used by the OECD in international comparisons lack the detailed micro-data required to provide information on the distribution of outcomes in New Zealand. This may require the use of different data sources or even different indicators of the same outcome in order to achieve internationally comparable measures of average outcomes in New Zealand/direction of change in outcomes and to also provide measures of the distribution of outcomes.

The second challenge associated with measuring distribution is managing the number of indicators. While monitoring the level and direction of change in an indicator requires only a single measure monitored over time, adequately capturing distribution implies multiple measures associated with every indicator (ie, level, dispersal, population groups and hardship). The challenges that this poses for developing and presenting a clear overview of wellbeing are addressed in Section 5. However, it also raises issues for the remainder of this section. In particular, defining not just the recommended indicators for each domain, but also how each of these would be reported in terms of level, dispersal, population groups and hardship in both current terms and for measuring change over time would make this report extremely unwieldy. The solution adopted here is to specify the indicator in terms of a measure of the level or average outcome for New Zealand. However, it is assumed that all indicators would be analysed in terms of both level, change and all three aspects of distribution, with the precise subset of these measures used in a report dependent on the purpose of the report and the need to ensure that any analysis presents a balanced picture of both level and distribution.

Box 3. The process of selecting indicators

Given a robust conceptual framework, the process of selecting indicators should be largely a technical task. The best measure of a particular concept is largely an empirical issue, and it is usually possible to draw on the scientific and statistical literature to identify the most appropriate indicator for a particular concept. Where international standards exist, such as in the case of the System of National Accounts, the choice of indicator may be very straightforward. In the absence of formal statistical standards, there may still be less formal guidelines produced by one of the major international statistical bodies (eg, OECD, 2013a, 2017b; UNECE, 2016). Similarly, national (Ministry of Social Development, 2003, 2007) and international (OECD, 2011, 2013c, 2015b, 2017a) efforts to measure some aspect of intergenerational wellbeing can serve as a guide to both the best available indicators and the available data.

On this basis it might seem as though there is little need to consult on the measurement of intergenerational wellbeing. Given the appropriate expert advice, it ought to be possible to come up with a good list of indicators with little external input. However, this view is wrong for three reasons. First, the measurement of intergenerational wellbeing covers an exceptionally wide range of different specialist areas. In many cases, not only is the available data changing rapidly, but so too is our understanding of the best measurement approaches. It is not necessarily the case that an expert in the measurement of subjective wellbeing will be the best placed person to provide advice on recent developments in the measurement of ecosystem services. There is therefore a strong case for widespread consultation among experts from different fields on the choice of indicators. This was a regular feature of the production of the *Social Report* by the Ministry of Social Development between 2001 and 2007 and was a key feature of the development of *How's Life?* at the OECD.

A second reason for consultation on the choice of indicators relates to communications. In this case, however, the focus is on consultation with the general public rather than experts. The key issue here is not whether the indicators are technically correct, but rather whether they are understood well. Different terms can be used to describe fundamentally the same outcomes, and for indicators to be useful it is important that they are clearly understood. This issue applies not just to the indicators but also the terms used in the conceptual framework.

Although the evidence suggests that public consultation is unlikely to result in radical changes to the broad framework proposed for measuring intergenerational wellbeing (see Box 1), there may be changes at the margin. In the case of New Zealand, for example, any consultation process is likely to identify the importance of cultural identity which is missing from the OECD framework. However, even if consultation identifies no major changes to the framework, the process is valuable in providing a legitimacy for the indicators and indicator framework. It is this link to the wider legitimacy of the indicators that is the third important reason for consultation. Without widespread public acceptance of the legitimacy of the outcome framework and indicators the proposed measurement framework is unlikely to be enduring.

4.1 Current wellbeing

Current wellbeing captures people's quality of life and ability to live the sort of lives they have reason to value in the present. The measurement approach proposed here identifies 13 dimensions of wellbeing that need to be measured. These are grouped into two areas – market outcomes and non-market outcomes – with life satisfaction considered separately.

Life satisfaction

Life satisfaction captures how people evaluate their life overall. This is in contrast to other measures of subjective wellbeing that focus more on current mood and emotion (affect) or other aspects of psychological functioning (eudaimonia). Although sometimes described as measuring "happiness", life satisfaction measures correlate only loosely with people's current mood and are generally accepted as reflecting a similar concept to that used by people when they decide that one course of action is preferable to another (OECD, 2013a). It can be thought of as a crude

measure by people of their overall current wellbeing taking into account the circumstances they experience across all the other dimensions of current wellbeing. By providing a picture of overall wellbeing that is grounded in people's preferences, measures of life satisfaction complement more traditional measures of wellbeing outcomes.

Recommended indicator

- Mean life satisfaction (0–10), New Zealand General Social Survey (NZGSS)

Alternative indicators considered

- Mean Cantril Ladder score (0–10), Gallup World Poll

Future data collection

- There would be significant value in increasing the frequency of the NZGSS to yearly and increasing the sample size to support more timely reporting and better distributional analysis. However, the NZGSS remains the best source of data for this outcome from the perspective of both international comparability and a New Zealand focus.

Market outcomes

Market outcomes are those that are the result of people's economic activities and which should be reflected in existing economic statistics. Material standard of living focuses on people's consumption and command over goods and services traded in the marketplace. A housing domain is added, reflecting that the housing market does not always clear, or may be dysfunctional in other ways. A similar rationale underpins the inclusion of a jobs and earnings domain, although the significant non-pecuniary impact of labour force status is also a factor here.

Material standard of living

Material standard of living captures the goods and services that people are able to consume and the economic resources that they have access to. It encompasses the incomes that households have access to, and also material measures of consumption. Income allows people to satisfy their needs and to pursue other goals that they feel are important to their lives. Although there are aspects of wellbeing that income cannot purchase, the material circumstances in which people live and their command over resources are fundamental aspects of current wellbeing.

Recommended indicators

- Household net adjusted disposable income per capita
- Mean equivalised household disposable income

Future data collection

- Household net adjusted disposable income per capita is currently not updated regularly for New Zealand and work may be required to ensure this takes place. Mean equivalised household disposable income is readily available, but improvements to the source data (currently the Household Economic Survey (HES)) are desirable to increase sample size and, if possible, it may be desirable to switch to the use of Inland Revenue data in the Integrated Data Infrastructure (IDI).

Housing

Housing as an outcome captures the quality and availability of dwellings. In this sense it has two core dimensions: the physical quality of the dwelling itself and whether there is a sufficient supply of housing to meet the needs of the population. The adequacy of the supply of housing can manifest through either crowding or the price of housing. Similarly, there are a number of different dimensions of housing quality that could be measured, although dampness and mould are the most salient issues in New Zealand.

Recommended indicators

- Rooms per person
- Housing cost overburden
- Housing quality

Future data collection

- Data for these indicators are drawn from a number of sources (census, HES, NZGSS) with different strengths and timeliness. Significant improvements could be made to both timeliness and the degree of disaggregation possible (especially by region) if the NZGSS sample size and frequency were improved.

Jobs and earnings

Jobs and earnings captures people's ability to participate in the paid labour market, and reflects both the quantity and quality of jobs. Access to a job is fundamental to people's ability to shape their lives, both because of the role of jobs as a source of income and because of their link to people's identity, social networks, skills and self-esteem. From a current wellbeing perspective there are two key dimensions to jobs and earnings. The first of these relates to the availability of jobs: Are people who want paid work able to find suitable jobs without undue search costs or waiting? With good evidence that involuntary exclusion from paid work has significant non-pecuniary costs, this points to the issue of unemployment, but also to discouraged workers and underemployment. Alongside this, the second main dimension of jobs and earnings relates to job quality. This includes earnings, safety at work and working conditions more generally.

Recommended indicators

- Unemployment rate
- Employment rate
- Median hourly earnings
- Work accidents per 100,000 workers

Future data collection

- Job strain

Non-market outcomes

Many of the things that affect a person's ability to live the kind of life they have reason to value lie outside the scope of market transactions. For example, a person's health status, risk of victimisation and the quality of the governance in the country in which the person lives all have a direct and material impact on the kind of life choices that person is able to make. Non-market outcomes capture those capabilities that are fundamental to quality of life, but which are fundamentally not fungible between people. Because non-market outcomes do not have a common metric, this part of wellbeing is inherently multidimensional. Nine non-market dimensions of wellbeing are identified here: health; knowledge and skills; leisure and recreation; cultural identity/ūkaipōtanga; safety; environmental quality; civic engagement and governance; social connections; and self-aspirations.

Health

Health is one of the fundamental capabilities that comprise current wellbeing. Poor health both limits people's options and has a direct impact on how people feel. Good health has two core dimensions: how long people live and the quality of their lives. This is closely related to the distinction between measures of mortality and measures of morbidity, and between fatal and non-fatal health outcomes. It is also important to capture both physical and mental health, as both have a significant contribution to overall health status.

Recommended indicators

- Life expectancy at birth
- Self-reported health status
- Limitations in daily activities
- Proportion of the population with poor mental health

Knowledge and skills

Having sufficient knowledge and skills to both make informed decisions about one's life and understand how to achieve life goals is clearly essential to a view of wellbeing that prioritises the ability to live the kind of life that one values. Knowledge and skills both have intrinsic value in this sense, but also have important instrumental value with respect to achieving good outcomes in other domains of wellbeing. From a measurement perspective we would ideally like to capture good measures of both cognitive and non-cognitive skills, including those acquired through formal education and those acquired informally. In practice, most of the available information relates to formal education, and information on skills more generally is scarcer.

Recommended indicators

- Educational attainment of the adult population (upper secondary)
- Educational attainment of the adult population (tertiary)
- Cognitive skills at age 15

Leisure and recreation

Free time and access to leisure and recreation are crucial components of a balanced lifestyle. The ability to have time off is essential for the ability to pursue valued activities outside of the labour market and home production. Recreation itself is intrinsically valuable to people and has positive spill-overs to other dimensions of wellbeing including both physical and mental health. The core elements of leisure and recreation that it is desirable to measure from a wellbeing perspective relate to the quantity of leisure available (free time) and the range of options available to people (recreational opportunities).

Recommended indicators

- Proportion of the population working long hours
- Time in leisure and personal care

Additional indicator

- Satisfaction with free time

Cultural identity/Ūkaipōtanga

Issues of cultural identity are clearly of importance to how people feel about their lives and the choices they make. The ability to live as who you are, without feeling compelled to adopt another identity to fit in with wider society, is an important aspect of wellbeing, as is having a sense of belonging and connection to a culture and place. Issues of cultural identity are particularly salient in a New Zealand context given the country's bicultural origins and its diverse immigrant population. From a measurement perspective there are three key sub-dimensions of cultural identity that we would like to measure. These are belonging (do people have a sense of belonging in New Zealand), expression (the ability to live without having to conform to another culture) and existence (protecting elements of culture, such as te reo Māori, that we believe are intrinsically important in a New Zealand context).

Recommended indicators

- Proportion of the population feeling a strong sense of belonging in New Zealand
- Proportion of the population able to be themselves in New Zealand
- Māori language speakers

Safety

Physical safety and freedom from victimisation, abuse and violence are obvious prerequisites for high levels of wellbeing. Violence and avoidable injuries can, at their most extreme, threaten life itself and in other cases directly reduce the quality of life of the victim. Beyond this, feelings of safety are also important. Even if actual levels of risk are low, feeling unsafe can be a major constraint on people's freedom as well as directly lowering wellbeing. Measures of safety need to capture both of these two main sub-dimensions: risk of victimisation and perceptions of safety.

Recommended indicators

- Intentional homicide rate per 100,000
- Self-reported victimisation
- Feelings of safety

Environmental quality

People's lives are strongly affected by the quality of the environment in which they live. In addition to being a source of natural capital, many aspects of the environment play a direct role in people's current wellbeing. Many aspects of low environmental quality such as poor air quality or a lack of green space are directly unpleasant to people and are primarily provided outside the market. People value the beauty and healthiness of the place where they live and may assign intrinsic values to the preservation of elements of the natural environment – such as endangered indigenous flora and fauna – even if they interact with these only rarely or at a distance. The diversity of the range of issues potentially covered by environmental quality makes it a difficult issue to capture effectively in just a few indicators. However, a minimal set of indicators would cover air or water quality as a measure of the quality of the environment, access to green space as a measure of the quantity of the natural environment accessible to people and subjective evaluation with the quality of the local environment.

Recommended indicators

- Air quality (PM10 concentrations per cubic metre)
- Air quality (PM2.5 concentrations per cubic metre)
- Satisfaction with water quality

Additional indicator

- Natural space footprint within a 1km radius of dwelling

Civic engagement and governance

People value procedural fairness strongly and unfair treatment both undermines people's control over their lives and lowers wellbeing directly. Civic engagement and governance is concerned with quality of government, procedural fairness and how these affect people's ability to participate in society, make choices about their lives and live with dignity. From a measurement perspective, civic engagement and governance is one of the less developed dimensions of wellbeing, and many of the measures are relatively poor proxies. Typically, such measures either focus on behavioural evidence of belief in the value of civil and political processes (eg, taking the time to vote) or people's experience of unfair behaviour.

Recommended indicators

- Voter turnout
- Proportion of the population reporting discrimination

Social connections

Humans are social creatures, and social interactions are an important feature of most people's lives. Positive social interaction is intrinsically pleasurable, and there are wider spill-overs from social interactions to the creation of broader social support networks that provide resilience against negative life events and which can support people's ability to pursue their life goals. Time use data, for example, show that social time is consistently one of the most positive experiences in people's lives (Kahneman & Krueger, 2006). Social connections is a dimension of current wellbeing, not a capital stock, and thus focuses on the intrinsically pleasurable aspect of social contact rather than the role of social connections in developing social capital.

Recommended indicators

- Social network support
- Loneliness

Additional indicator

- Time spent in positive social activities

Self and aspirations

Not all aspects of wellbeing are external to the individual. People's own mental states, beliefs and aspirations are also fundamental to wellbeing. These set the parameters of what is considered achievable and influence how we make decisions and the goals we strive for. While many aspects of people's mental states are either too hard to measure or are not appropriate in measuring wellbeing, there are some areas where measurement is more achievable. In particular, measures of locus of control, self-efficacy and aspects of personality such as optimism have a large direct effect on wellbeing and also impact on people's control over their lives. Population-level indicators of subjective outcomes of this sort are currently of limited availability, but a number do exist.

Recommended indicator

- Proportion of the population expecting future wellbeing to be higher than the present

Additional indicator

- Proportion of the population reporting a high level of control over their own life

4.2 The capital stocks

The four capital stocks represent the main categories of productive resources that are used to produce human wellbeing. They are described as capitals since they are productive, and because they represent a stock that persists over time and which can be accumulated. However, this analogy should not be pushed too far. The four capital stocks do not possess all of the characteristics traditionally associated with capital in an economic or accounting sense; for example, neither human nor social capital depreciates with use.

It is important to remember that the four capitals fundamentally represent factors of production that are used together to produce wellbeing, rather than each producing a stream of benefits on its own. This is somewhat at variance from the usage of capital as simply the present value of a future flow of services. For example, it would be possible to "capitalise" New Zealand's GDP by calculating the present value of all future GDP flows. This amount, however, would not be equivalent to any of the four capital stocks. To the degree that the capitalised value was accurate, it would represent the present value of all four capital stocks jointly, as all four capital stocks are involved in the production of GDP.

Finally, as aggregates, the capital stocks are considered largely in net rather than gross terms. In other words, the indicators are intended to capture the overall level of the stock for New Zealand, not to add up every individual area of strength or weakness. In the case of some indicators – such as for produced capital – the proposed indicator is actually calculated as the sum of assets and liabilities in that area, while for other capitals – such as social capital – the indicators represent the measures providing the best overview of the net stock.

The four capital stocks are:

- Produced capital
- Natural capital
- Human capital
- Social capital

Box 4. Monetisation or natural units?

One key measurement issue that is particularly significant in the context of measuring the capital stocks is the question of whether to report on levels of the capital stocks in their natural units or to try to give monetary values for the capital stocks. In the case of produced capital this issue does not arise, as produced capital is traded in the market and we have robust prices available for the capital stock. This information is used to produce a figure for the value of the gross fixed capital stock as part of the System of National Accounts. However, for the other capital stocks, market prices are generally not available.

There are two approaches to dealing with the measurement of capital stocks where information on market prices is not available. The first approach emphasises the value of making other capital stocks comparable with produced capital and the importance of having a single number to capture changes in the overall level of the capital stock. This involves identifying shadow prices for the different elements of the capital and applying these to produce a monetary measure for the level of the total capital stock. The System of Environmental Economic Accounts (SEEA) is an example of this approach, which provides a monetary value for those elements of natural capital that fall within the scope of SEEA (Van Zyl & Au, 2018). Although not formally linked to the System of National Accounts, a number of efforts have also been made to estimate monetary values for human capital (Morrissey, 2018; UNECE, 2016). The *Inclusive Wealth Report* (UNU-IHDP & UNEP, 2014) adopts this approach and attempts to provide monetary estimates for all capital stocks except social capital (which is folded into multifactor productivity).

The main alternative to monetising the capital stocks is to report them using their natural units. This is the approach taken by the OECD in *How's Life?* (OECD, 2017a). Reporting on the capital stocks in their natural units obviates the need to identify shadow prices for the different elements of each capital, but also makes it difficult to compare the values of different capital stocks and to answer questions about changes in the overall level of the capital.

The decision about whether to use monetary values or natural units is often framed in terms of the ability to produce robust shadow prices for the different elements of a capital stock. It is assumed that, where plausible shadow prices are available, monetisation is always desirable. However, this is not necessarily the case. First, plausible shadow prices are often not available and even when they are they remain highly sensitive to the assumptions used to develop them. More importantly, shadow prices typically represent the average trade-off between different elements of a capital stock (depending on the methodology used to develop them) and do not necessarily capture the marginal trade-offs. This is complicated still further because, for capitals that are neither freely traded nor good substitutes, the marginal trade-offs may vary a lot depending on the specific context.

Even given that these issues can be overcome, natural units may still be more useful than overall monetary values for many purposes. In particular, price changes have the potential to conceal underlying trends in the level of the capital stock. For example, the impact of declining fish stocks might be offset by rising fish prices, leading to false conclusions about the sustainability of natural capital levels. This issue is given a more formal treatment by Arrow et al. (2012) who provide a formal model showing that capital gains reflected in price rises should not be included in any evaluation of the sustainability of capital stocks. Reflecting all of these issues, this paper recommends reporting on capital stocks in their natural units rather than attempting to monetise them, with the exception of produced capital for which monetary values are, in a sense, the natural unit.

Produced capital

Produced capital is relatively well defined and has a clear measurement counterpart in the System of National Accounts. It is traditionally seen to consist of those tangible assets such as roads, railways, machinery and buildings that have a productive use. Some goods of this sort – such as private cars or other household appliances – are excepted from the definition and considered "consumer durables" in that they are not used in market production processes. On the other

hand, a range of intangible assets are typically counted as part of "produced" capital. These include knowledge assets such as intellectual property, computer software and creative works with commercial value.

Two points that are relevant for the choice of indicators are raised from the discussion above. The first is the choice of the term "produced capital" rather than "physical capital" as used in the original Treasury Whāriki diagram. Even the existing definition of fixed capital from the System of National Accounts includes intellectual property and similar intangible assets. It is thus better to refer to this element of the four capitals as produced capital rather than physical capital (and this is the approach adopted in this paper) since the key criteria distinguishing this capital stock from the others is that the assets are produced by people and can be exchanged between them.

A second point concerns consumer durables and similar produced goods that fit most of the definitions of produced capital but which are not used in market production. While these goods are not capital from the perspective of the traditional System of National Accounts, in that they are not productive, this is no longer the case once the range of goods and services is expanded from market production (GDP) to human wellbeing. Consumer durables unarguably do contribute to the production of goods and services in the household that the consumption of is part of human wellbeing, even if these goods and services are never bought or sold. For this reason there is a need to think about definitions of produced capital that go beyond the market sector. Alexander, Dziobek, and Galeza (2018) provide a useful discussion of the issues involved in extending the System of National Accounts' capital definition to cover consumer durables.

Two indicators are identified for measuring produced capital. The first two of these (net fixed assets per capita and expanded net fixed assets per capita) relate to the level of produced capital, while the third (household net worth) provides no information about the level of produced capital but is a useful complement to the others for looking at the distribution of capital assets within New Zealand.

Recommended indicators

- Net fixed assets per capita
- Expanded net fixed assets per capita
- Household net worth (distribution)

Natural capital

Natural capital refers to productive resources that already exist in nature without transformation by humans. Like current wellbeing, natural capital is inherently multidimensional. This means that it is difficult to reduce down to a single indicator that captures the state of the capital stock as a whole. Instead, it is necessary to examine the levels of a range of different aspects of natural capital that do not always move in the same direction and which are imperfect substitutes at best. The difficulty in measuring natural capital is further reinforced by the lack of a coherent widely accepted conceptual framework that describes the scope of natural capital, provides a way of classifying different indicators within the broader framework and which can identify where specific issues should be classified and point to areas where new or better measures are needed. While the UN SEEA provides a framework for incorporating some aspects of the environment into the System of National Accounts, it does not provide a comprehensive framework for natural capital. Instead, it is stated (United Nations, 2014a, p vii) that the SEEA:

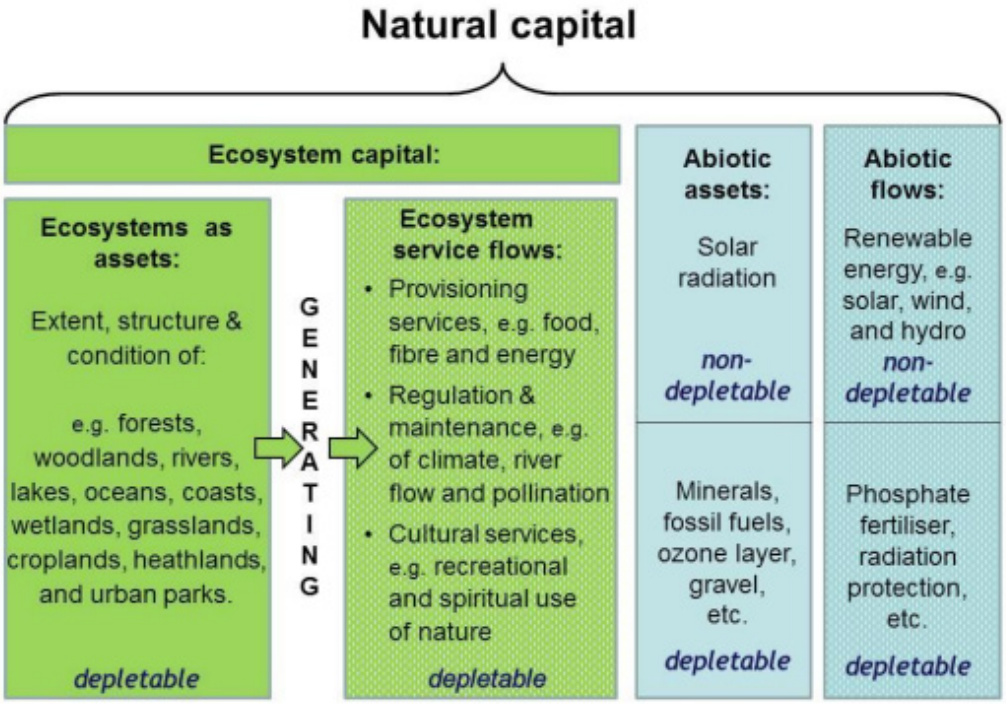
> *is a multipurpose conceptual framework that describes the interactions between the economy and the environment, and the stocks and changes in stocks of environmental assets.*

While there is some overlap here with natural capital – particularly in the idea of environmental assets – the objective of the SEEA is quite different. Even the definition of environmental assets is much narrower than is the case for social capital, focusing only on assets that can be valued using the System of National Accounts' valuation principles (United Nations, 2014a), and limited to a specific range of natural resources. An expansion to the core SEEA focusing on ecosystem services has also been developed (United Nations, 2014b). This expands the SEEA to "link ecosystems to

economic and other human activities" (United Nations, 2014b p iii) which significantly broadens the scope of the SEEA, but still does not provide a coherent natural capital lens on the range of topics covered.

One potential starting point for thinking about the components of natural capital is the Common Classification of Ecosystem Services (CICES) developed by the European Environment Agency. This takes the broad categories from the SEEA and expanded SEEA and maps these onto a conceptual framework for natural capital. Because the CICES framework is consistent with the SEEA, but also provides a structure for linking the SEEA to a comprehensive framework for natural capital, it is relatively well-suited to using as a basis for the *Living Standards Dashboard*. Figure 6 below provides an overview of this framework.

Figure 6. Components of natural capital



Source: Haines-Young & Potschin, 2018

The CICES framework in Figure 6 is built around a primary distinction between ecosystem capital, which captures biotic (biological) resources, and abiotic assets that capture aspects of natural capital that are not grounded in ecosystem production. This distinction is useful in that it provides a way of unambiguously classifying aspects of natural capital that do not depend on fuzzy thematic definitions. A second important distinction is between depletable and non-depletable resources. While some aspects of natural capital decline as more is used, other aspects – such as solar radiation – cannot be depleted. For non-depletable resources the key issue is level of utilisation which will probably have some maximum upper limit. Although natural capital is conceptually a stock, in many cases it is the flow of ecosystem services or productive capacity (eg, hydro-power capacity) that is most easily measured. This potentially raises a measurement issue for depletable resources in that high flows can be associated with high extraction rates and depletion of the resource stock.

The final element of the CICES framework is a distinction between different types of services from natural capital: provisioning; regulation and maintenance; and cultural services. Provisioning services capture the direct use of resources in the production of goods and services. Regulation and maintenance captures the role of natural capital in mediation of wastes and nuisances and biophysical maintenance (such as greenhouse gas sequestration). Cultural services cover the value to humans of interactions with nature.

Even fleshing out the dimensions listed above (bioitic/abiotic, depleting/non-depleting, provisioning, regulation and maintenance, cultural) yields a potential 12 (2 x 2 x 3) distinct dimensions to measure. In reality, dimension itself is likely to be difficult to summarise with a

single indicator. The British Office for National Statistics, for example, identified 33 distinct areas needing measurement in an effort to fully populate the CICES framework (Office for National Statistics, 2017). Nonetheless, it is possible to use this framework to flesh out a list of potential indicators for the immediate service flows associated with natural capital.

In contrast to the other capital stocks and wellbeing domains, the level of detail provided on natural capital indicators here is relatively limited. This reflects the fact that the UK implementation of the CICES framework on which they are based is only a starting point, and even in the UK many of the indicators have not yet been developed. Instead, a list of recommended indicators for development that should serve as a spring-board for work in New Zealand to flesh out a suite of natural capital measures is provided.

Recommended indicators for development

Biotic (ecosystem)

Provisioning

- Cultivated crops (tonnes)
- Grass (tonnes)
- Wild fish (tonnes)
- Woody biomass (tonnes)
- Wild produce (tonnes)
- Water abstraction (cubic metres)

Regulation and maintenance

- Air pollutant absorption (tonnes)
- Other waste remediation (tonnes/cubic metres)
- Noise mitigation
- Mediation of visual impact
- Flood protection
- Water supply maintenance
- Storm protection
- Erosion protection
- Greenhouse gas sequestration
- Local climate regulation
- Pollination

Cultural

- Outdoor recreation and amenity
- Heritage and intrinsic value
- Taonga and symbolic value

Abiotic

Provisioning

- Hydropower (joules)
- Wind energy (joules)
- Solar energy (joules)
- Geothermal energy (joules)
- Oil, gas and coal
- Other mineral extraction

Human capital

Human capital is defined by the OECD (2001, p18) as the "knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social, and economic well-being". It thus covers the skills, know-how and competencies of individuals and their ability to put these to productive use. Within this broad definition, two key sub-dimensions can be identified. The first of these relates to what individuals know: skills, knowledge and competencies. This is often the primary focus for attempts to measure human wellbeing, which often focus on formal qualifications or the economic return to qualifications (both narrowly economic and in broader wellbeing terms). The second dimension of human capital is, however, equally important: health. A person's ability to make use of any skills or knowledge they possess is a function of how healthy they are. Sickness or disability reduces both the time available to a person for productive activity and the level of effort and attention they may be able to give to a task.

A core feature of human capital is that it is embodied within people. It is not possible to transfer human capital from one person to another: while skills can be taught, teaching someone a skill does not result in the teacher losing their own knowledge. Teaching, in this sense, is an investment, not a transfer. A related point is that human capital is a feature of an individual person. Productive forms of knowledge that exist between people are more properly classified as social capital.

In measuring human capital, a key choice that needs to be made is whether to attempt to produce a single index of overall human capital or to use several indicators capturing different aspects of the concept. Much of the economic literature on human capital focuses on producing a single value for human capital based either on lifetime incomes or the cost of investments in human capital. Both of these approaches are rejected here as they are confined narrowly to the use of human capital in the market sector. Moreover, adding prices to an index of human capital brings little real additional information where much of the pricing information cannot be directly observed.

Although it is not recommended to adopt a dollar value for human capital, the idea of a single undimensional index of human capital makes some sense. It would be relatively straightforward to weight the age and sex distribution of skills in New Zealand by the healthy life expectancy of each age/sex group to obtain an index score for total human capital, with the main challenge being to identify a suitable measure of skills and competencies.

For the purposes of the *Living Standards Dashboard* an index is not calculated, mainly because of the sensitivity of the resulting index to the exact choice of measure of skills and competencies. However, the choice of indicators for the human capital domain follows closely the measures that would be involved in developing such an index. In contrast to the OECD (2017a), no indictors relating to likely future outcomes (eg, obesity, smoking) are included. This is because the indicators used here are intended to provide a picture of the current stock of human capital, not its likely future evolution. The latter concept, while interesting, should be treated separately from measures of the current stock.

Recommended indicators

- Health expectancy
- Educational attainment of the adult population (upper secondary)
- Educational attainment of the adult population (tertiary)
- Educational expectancy

Additional indicator

- Human capital stock index

Social capital

Compared with the other capital stocks, social capital is often considered to be relatively hard to define or measure. This reflects the fact that the academic literature on social capital covers an exceptionally wide range of different concepts and contexts, many of which are using the same term to describe fundamentally different phenomena (Frieling, 2018; Scrivens & Smith,

2013). For the purposes of the *Living Standards Dashboard* – and for measuring intergenerational wellbeing with a capital stocks approach more generally – we are interested only in social capital as a productive resource. This is sometimes described as "public social capital" (Frieling, 2018) and can be characterised as shared values and norms that contribute to the production of societal wellbeing.

Working from this definition of social capital it is possible to identify several core characteristics of social capital as opposed to other capital stocks or wider forms of social behaviour. First, social capital is about social interactions: it focuses on shared norms and values. If a norm or value held by an individual is productive on its own – such as a good work ethic – then we should classify this as an aspect of human capital. Social capital consists of norms and values that are productive because they are shared. Second, social capital is productive. We are interested in shared norms and values only to the extent that they can be used, in conjunction with the other capital stocks, to produce human wellbeing. It is for this reason that "private social capital" (the networks that an individual has access to) is largely excluded from the definition used here. Private social capital may help individuals get ahead, but it is essentially a positional good in that it affects access to existing resources, not the total quantity of resources available (ie, who gets the pie, not how large the pie is).

Evidence is mixed on the dimensionality of social capital. While a large number of different aspects of social capital are identified in the academic literature, it is not clear empirically whether these concepts are all independent of each other or whether they are simply different proxies for the same underlying phenomena. Frieling (2018) argues that public social capital is multidimensional in nature and identifies four dimensions: pro-social behaviour; pro-social norms; feelings of unity; and institutional trust. While there is a plausible rationale for each of these dimensions being relevant to public social capital on a conceptual basis, the evidence behind the indicators capturing a productive resource is mixed.

In the case of pro-social norms there is extensive and credible evidence that levels of generalised trust have a causal impact on economic growth and on wellbeing more generally (Algan & Cahuc, 2014; OECD, 2017b), and that this counts for a non-trivial proportion of variation in multifactor productivity and in subjective wellbeing. In this sense, generalised trust is the best available candidate for an overall measure of public social capital. Evidence for the importance of the other sub-dimensions is more varied. While there is fairly good evidence for the importance of institutional trust in wider wellbeing outcomes, much of the evidence suggests that the causal pathway goes via generalised trust (Frieling, 2018; OECD, 2017b), suggesting that institutional trust may not actually capture a distinct dimension of social capital. This is even more the case for civic behaviour, where the main case for the importance of civic behaviour is explicitly tied to its role in forming socially useful norms and values (Putnam, 1993). In contrast, there appears to be relatively little evidence linking a sense of belonging to the production of economic and wellbeing outcomes.

The measurement approach adopted here is based around generalised trust, but supplements this with a number of other widely used indicators of public social capital. Although generalised trust has the best evidence supporting it, the additional indicators help reduce the risk of measurement error associated with reliance on a single source of subjective data and may contribute to a more rounded picture of social capital. Four core indicators are proposed, with two additional indicators that might potentially supplement the core set.

Recommended indicators

- Mean generalised trust
- Voter turnout
- Mean trust in the police
- Mean trust in Parliament (the national government)

Additional indicators

- Proportion of the population volunteering
- Perceived corruption

4.3 Multifactor productivity

In addition to the quantity of resources available to New Zealand (the capital stocks), the efficiency with which resources can be used is also fundamental to the wellbeing of New Zealanders. Historically, most of the gains in living standards over the past century have been owing to improvements in the efficiency with which resources are used rather than increases in the levels of capital stocks. Multifactor productivity (MFP) measures the effectiveness with which resources can be combined to produce flows of consumption (including both market and non-market outcomes) that contribute to wellbeing.

It is sometimes argued (Dalziel & Saunders, 2014), that much of the improvements in the efficiency of resource used that here fall under MFP can be modelled more substantively as reflecting the impact of a fifth capital stock: knowledge capital. In this perspective, knowledge capital represents the stock of scientific, engineering and technical ideas and knowhow that can be applied to the production of wellbeing. This view has significant merit, and directs attention to the role that investment in research, development and innovation can play in lifting productivity. However, knowledge capital is not explicitly included as one of the four underlying capital stocks modelled in the proposed *Living Standards Dashboard* for two interrelated reasons. First, total knowledge capital is difficult to measure: much of it (perhaps most) is available freely and is difficult to quantify. This reflects the fact that most knowledge capital is not owned, and is essentially a global public good. Where knowledge capital is not a public good it is already reflected either as an element of produced capital (intellectual property) or embodied in a person's skills and knowledge (human capital).

In principle, the different dimensions of current wellbeing might have very different production functions, and hence there might be different levels of productivity for each of the different dimensions. For example, New Zealand has a GDP per capita that is near the OECD median, but high levels of life satisfaction relative to most other OECD countries. Both life satisfaction and GDP per capita in New Zealand, however, are based on exactly the same capital stocks, suggesting that what drives differences in outcomes across these two dimensions of wellbeing must either be to do with the allocation of the capital stocks or the efficiency with which they are used.

Measures of MFP provide an estimate of the efficiency of the use of resources in producing goods and services captured within the existing System of National Accounts (ie, GDP). From the perspective of the capital stocks model adopted here, most existing MFP estimates face significant limitations in that they incorporate the impact of social capital, most of natural capital and much of the qualitative impact of human capital into the estimate of MFP. Such measures do not, therefore, distinguish well between changes in efficiency and changes in the level of social or natural capital. However, in the absence of a purer measure of MFP, the available statistics are a good starting point.

If the available information on MFP is limited, estimates of MFP for dimensions of wellbeing other than incomes/material standard of living are almost non-existent. However, the analysis of life satisfaction data provides some useful information. In particular, the country-specific residual on average life satisfaction after accounting for the impact of observable characteristics provides a complementary measure of the efficiency by which countries are able to make use of their resource base to produce wellbeing. The residual is not quite the equivalent to MFP for life satisfaction in that it is based off an analysis of the drivers of life satisfaction rather than the capital stocks, but is closely related conceptually. As international data on the capital stocks improves it may be possible to eventually move to substitute the life satisfaction residual with a true measure of life satisfaction MFP.

Recommended indicator

- Multifactor productivity

Additional indicator

- Life satisfaction residual

4.4 Net claims on rest of world

While the capital stocks provide a measure of the productive resources available in New Zealand, in themselves they do not necessarily provide an accurate measure of the productive resources available to New Zealand. Financial capital represents a claim over productive resources and net financial capital therefore captures information about the degree to which New Zealand has a claim over resources elsewhere in the world or vice versa. In principle, although denominated in dollars, financial capital can be converted into any of the four capitals. Hence the net financial position of New Zealand conveys crucial information about how the wellbeing of New Zealanders influences and is influenced by the rest of the world.

Beyond this, many elements of natural capital potentially have spill-overs to the rest of the world. Use of these global commons in excess of a level proportionate to New Zealand's size has negative effects on wellbeing in other parts of the world as people either suffer the impact of environmental degradation or are forced to restrain their own use of natural capital in order that total global usage remains within planetary boundaries.

Recommended indicator

- Financial net worth of the total economy

Future development

- Ratio of ecological footprint to biocapacity

4.5 Timeliness and scope of picture

New Zealand is generally well positioned to monitor intergenerational wellbeing. The Social Statistics Programme led by Statistics New Zealand represented a major investment in deepening New Zealand's information base with respect to measuring wellbeing. This programme, launched in 2005, was explicitly structured around the *Social Report* outcomes framework, and thus aligns well with the OECD and Living Standards frameworks (see Box 1). In particular, many of the key measures needed to fill out the proposed indicators that are not available from the standard body of economic, population and labour market statistics can be sourced from the NZGSS. The NZGSS is a biannual household survey of approximately 8,500 respondents and allows for consistent measurement of a wide range of wellbeing outcomes at a national and disaggregated level every two years. The use of the NZGSS in this way is consistent with international advice on supporting the measurement of wellbeing and sees New Zealand relatively well placed compared with many other OECD countries (Fleischer, Smith, & Viac, 2016).

Despite this, New Zealand does face some significant limitations. Although the content of the NZGSS is generally very good, its biannual nature means that the most recent available information may be more than two years out of date compared with when the survey was in the field. This represents a major constraint on the timeliness of the available information. Equally significantly, the sample size of 8,500 is relatively small when assessed against the need to examine the distribution of outcomes – particularly outcomes with a relatively low prevalence. The Household Labour Force Survey (HLFS) by comparison has a sample of 20,000 respondents and is conducted quarterly. While it does not necessarily follow that the NZGSS needs to be the same size and frequency as the HLFS, there is a strong case to reconsider the size and frequency of the survey.

A more significant gap relates to natural capital. As discussed above, the range of measures required will be quite diverse, and not all of these are currently available. In some cases it may simply be that, although the raw data are available, the relevant indicator is not calculated and published. In other cases, however, there are genuine gaps in the data. Beyond this, the publication cycle for many aspects of natural capital is relatively slow. The current proposed schedule for environmental reporting envisages cycling through six topics, one every six months (Ministry for the Environment & Statistics New Zealand, 2016). This is a relatively slow production cycle, which means that up-to-date information is available on many core environmental topics only every three years. Clearly, obtaining timely measures of natural capital will require an investment in both collecting additional data and publication.

5 MEASUREMENT PROPOSAL

Simply choosing a suite of indicators does not constitute a way to measure intergenerational wellbeing. It is equally important that the measures are presented in a way that is consistent with the underlying conceptual framework and which users can readily interpret. A good example here is the System of National Accounts. Presenting all the raw numbers that go into the national accounts would not, in itself, tell us much about the New Zealand economy. It matters that some of the information is added together and presented as private consumption, while other pieces of data are grouped together as investment. Beyond these conceptual issues, there is also an important point relating to communication. Too much information can be as bad as too little. Unless it is possible for people to make sense of the information they are seeing and to understand the stories that it presents, monitoring intergenerational wellbeing will be of little use for policy-making.

A tiered approach

Doing justice to the conceptual model while managing the tension between comprehensiveness and comprehensibility is a challenge for measurement. This is particularly the case where there is a strong need for the information to be useful in a policy context: policy-makers will only use information if they understand it, but omitting relevant information can have important consequences for the decisions made. To manage these issues a tiered approach to reporting is proposed. This involves presenting a slightly different cut of the information for different purposes, while grounding each presentation in the same underlying conceptual model and broad indicator set. For the Treasury *Living Standards Dashboard*, three tiers are identified:

- ***Living Standards Database*** (wide and deep, includes all measures)
- ***Living Standards Overview*** (wide but not deep, presents an overview of the full model in two or three charts)
- ***Living Standards Themes*** (deep but not wide, highlights three or four key themes that are of high policy relevance).

These three tiers cover the full scope of the Living Standards Framework and are aimed to meet the needs of the Treasury. Although each tier is discussed separately, they are all collectively part of the *Living Standards Dashboard* and do not necessarily represent distinct "products" as such. Instead, they should be thought of as the essential elements that need to be present in order to produce a *Living Standards Dashboard* that is useful to the Treasury, able to be produced on an ongoing basis and which does justice to the conceptual model that underpins the Living Standards Framework.

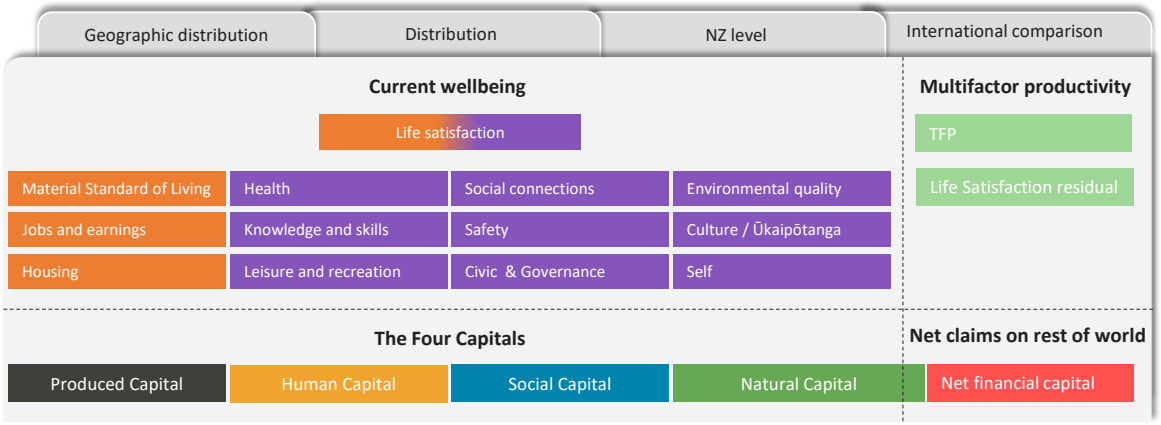
5.1 The *Living Standards Dashboard*

The *Living Standards Dashboard* is a way of presenting information on intergenerational wellbeing that is intended to be of use to Treasury decision-makers, particularly in the context of medium-term strategy and planning. As discussed above, there are three tiers to the *Living Standards Dashboard*.

Living Standards Database

The Living Standards Database consists of the full suite of indicators needed to measure the intergenerational wellbeing of New Zealanders. It is, in other words, an attempt to provide a measure of each dimension of the Living Standards Framework. Even with a relatively parsimonious selection of indicators, however, this still represents a large volume of information. Figure 7 below illustrates all of the elements that need to be included in the Living Standards Database.

Figure 7. The Living Standards Database



It is immediately evident from Figure 7 that the full database will have a large number of indicators. Even with only one indicator per element, this would involve a minimum of 21 indicators (13 for current wellbeing, two for multifactor productivity, four for the capital sticks and two for net claims on the rest of the world). In fact, the reality is much more complex than this. Some of the elements are themselves multidimensional and will need more than one indicator to capture them adequately. Natural capital, in particular, has many dimensions and is difficult to reduce to a single number. It may end up with as many indicators on its own as all of current wellbeing.

Beyond the number of elements that need to be measured, the picture is made more complex by the need to examine the measures in different contexts. While – in the best case – it may be possible to use a single indicator to provide both an international comparison and trends in New Zealand over time, this will not be possible for distribution. Dealing with distributional issues properly will require breakdowns by age, sex and ethnicity at a minimum. Any regional breakdowns add yet another layer of reporting. When all the required breakdowns are considered beside each other, the database outlined in Figure 7 might easily run to hundreds of specific measures.

Although potentially capturing a large number of different measures, the Living Standards Database would not need to be produced as a single document. Rather, it represents the source of information for the Living Standards Overview and Living Standards Themes, and would consist of a resource that could be queried with respect to specific issues. It is also important to note that the Living Standards Database would have value well beyond the Treasury. In fact, to produce a Measuring New Zealand's Progress report using the UNECE/Council of European Statisticians capital stocks framework, Statistics New Zealand will need access to essentially the same underlying database. This raises the possibility that the Treasury does not necessarily need to be the agency responsible for assembling and maintaining the Living Standards Database.

Key requirements for the Living Standards Database are that:

- values for New Zealand over time are available for all indicators in Section 4
- values for OECD countries, the OECD average and the OECD upper and lower quartiles are available for as many indicators in Section 4 as possible
- values for all indicators in Section 4 are available for male and female New Zealanders
- values for all indicators in Section 4 are available for the main ethnic groups (New Zealand European/Pākehā, Māori, Pacific Island, Asian and other)
- values for all indicators in Section 4 are available by age group (at a minimum: youth 15–24, adult 25–64, older 65+), and
- values for as many indicators in Section 4 as possible are available at a regional level and, ideally, at more detailed levels of geographic coverage.

Living Standards Overview

Where the Living Standards Database focuses on the full suite of indicators relevant to intergenerational wellbeing, the Living Standards Overview aims to provide a picture of intergenerational wellbeing to support the Treasury's policy advice and medium-term strategy. To do this, the Overview provides a "wide but not deep" view of intergenerational living standards

drawn from the indicators contained in the Living Standards Database. The intent is not to provide a detailed analytical treatment of every dimension of wellbeing for all parts of New Zealand society, but instead to provide an overview of the resources available to New Zealand, how New Zealanders are doing in terms of current wellbeing and any areas where issues appear to be emerging. This document would form the basis of wellbeing reporting in the Investment Statement or in key Budget and accountability documents such as the *Budget Economic and Fiscal Update* (BEFU) or *Pre-election Economic and Fiscal Update* (PREFU).

Given these goals, the Living Standards Overview could be organised into four parts as follows:

- ***Resources.*** What is the state of New Zealand's productive resources?
    - In a table, the level of each capital stock indicator, the per capita level of each capital stock indicator and the change in the per capita level of each capital stock indicator (four tables).
    - In a table, the level of net claims on the rest of the world for each indicator: total, per capita and change (one table).
    - In a table, the level and change in each productivity indicator (one table).
    - In a chart, per capita levels for all capital stock indicators relative to the OECD mean, lower and upper quartiles (one chart).
    - In a chart, change in per capita levels for all capital stock indicators expressed in standard deviations with respect to the OECD distribution (one chart).
    - A descriptive commentary summarising the picture presented by the data and identifying any issues of particular relevance to the Treasury. The commentary should also serve to make the connection between the change measures contained in the tables/charts (one, two or three years), long-term trends and the likely significance of these changes.
- ***Wellbeing.*** How are New Zealanders doing now? Are there any obvious areas where outcomes are getting worse or poorer than they should be?
    - In a chart, the level and change for each indicator in standard deviations with respect to the OECD distribution (including statistical significance) and performance relative to the OECD mean (one or two charts).
    - A descriptive commentary identifying areas of strength or weakness for New Zealand and how well this aligns with changes in wellbeing indicators: Is New Zealand making progress in the areas that it is doing worst in? The commentary will also discuss the connection between short-term (one-, two- or three-year) changes in the chart and longer-term trends.
- ***Distribution.*** Where are poor wellbeing outcomes a problem? How do these relate to the distribution of capital stocks?
    - Wheel chart of wellbeing indicators by ethnicity and/or sex with a value of 1 normalised to the New Zealand average and significant differences for each ethnic group highlighted (one to two charts).
    - Chart of 10 indicators with highest inequality (sex, age, ethnic, geographic or long tailed distribution) showing current New Zealand average level and level for disadvantaged groups plus change in New Zealand level and change in level for disadvantaged groups.
    - A descriptive commentary outlining the main story presented by the data and discussing why the specific tables included were selected for each edition of the Living Standards Overview.
- ***Discussion.*** What are the most important points to take from an analysis of the Living Standards indicators? How has the picture changed since the last update? What key risks does New Zealand face in terms of the capital stocks or current wellbeing outcomes?

A key constraint in producing the Overview will be the need to ensure that the indicators are not over-interpreted. In particular, the indicators will be most meaningful as measures of the direction of change rather than the overall level. This is particularly the case for capital stocks, where there may be a temptation to interpret the measure as providing some indication of the overall size of the capital stock (see Box 4 also). While there is no way to absolutely prevent users of the Overview from drawing incorrect conclusions from the data, the discussion provides a useful vehicle for the Overview authors to provide some guidance around what conclusions can and cannot be validly drawn from the available data, and this should be a core part of the narrative.

In practice, the exact content of the Overview will vary from year to year. This is because the range of possible distributional outcomes that could be reported is so great that it is not possible to provide meaningful analysis of them all in a relatively succinct format. Instead, the process of preparing the Living Standards Overview will need to involve informed decisions by the authors about what information to present, particularly with respect to the analysis of distributions. This is an essential part of the process of producing the Overview, and should be linked to a robust consultation process with external experts and stakeholders relevant to the different indicators.

Living Standards Themes

Although the exact content of the Overview will vary a little each time it is updated, the broad outlines will remain largely consistent. In contrast, the Living Standards Themes represent a chance to deal with issues that are particularly topical in greater depth than is possible with the Overview. The Living Standards Themes will be "deep but not wide", in that they will focus in on between two and four issues that are of high policy relevance and provide a more detailed analysis of them. The detailed analysis will involve assembling the relevant indicators from the Living Standards Database, but may also involve including more contextual and policy-related information. It may be useful to have more information on the population groups affected by the issue, relevant government programmes or the main drivers of the outcome in question.

It is envisaged that the process of identifying the themes would be iterative in nature, and would include input both from the analysts responsible for updating the *Living Standards Dashboard* and senior decision-makers. The aim here would be to bring together both bottom-up insights based on the data in the Living Standards Database and the wider research literature with top-down views from decision-makers about priorities and the risks facing New Zealand. After consultation and discussion, between two and four themes would be identified that would then form the focus for the thematic section of the *Living Standards Dashboard*.

Less guidance is given here on the content of the Themes than is the case for the Overview simply because the subject matter will vary. However, it is important that the themes are not simply orthogonal to the Living Standards Framework and are able to be linked at the high level to one part of the model: current wellbeing, the capital stocks, productivity or claims on the rest of the world. Similarly, within current wellbeing and/or the capital stocks it should be possible to link each of the themes to one or more of the capital stocks or dimensions of current wellbeing. Alternatively, it might be possible to identify cross-cutting themes related to particular parts of the New Zealand population (eg, disadvantaged regions), in which case the thematic analysis would draw on the full range of indicators in the Living Standards Framework to look at current wellbeing, capital stocks, productivity and the rest of the world with respect to the focal group for the theme.

5.2 Producing the *Living Standards Dashboard*

The process of producing the *Living Standards Dashboard* has the potential to absorb considerable resource. It is therefore useful to at least consider some of the practical issues involved in producing the *Living Standards Dashboard*. These can be broken down into two broad issues: who should produce different elements of the *Living Standards Dashboard* and how the work can be organised in order to support an ongoing production process with minimal risk.

In terms of allocating the workload for different elements of the *Living Standards Dashboard*, there are several observations that can be made. As noted in Section 5.1, the content of the Living Standards Database is likely to be substantially the same as Statistics New Zealand's "pantry" that will underpin *Measuring New Zealand's Progress*. There is little to be gained from the Treasury duplicating Statistics New Zealand in this case, which suggests that managing the Living Standards Database could be effectively delegated to Statistics New Zealand. This would align well with Statistics New Zealand's core work, and would provide a useful provider/user link for wellbeing statistics in the same way that the Statistics New Zealand national accounts team provides much of the statistical infrastructure for both the Treasury and the Reserve Bank's macroeconomic forecasting. In addition, having the indicators prepared by Statistics New Zealand would add significantly to the indicators' credibility.

The Living Standards Overview and Living Standards Themes are more difficult to delegate. Of particular relevance here is the fact that the production of both requires insight into the issues that matter for Treasury decision-making. This suggests that both documents should be produced internally by the Treasury. However, it is also important to note that producing both documents will require an in-depth understanding of the picture painted by the full set of indicators in the Living Standards Database. This is essential, as the key job in preparing the Overview and the Themes involves making an informed decision about what the relevant picture that emerges from a consideration of the full database is, and then presenting that story through the more limited format offered by these reports.

The need for the staff involved in preparing the Overview and Themes to have an in-depth understanding of the full picture has implications for how the process of producing the reports is organised within the Treasury. While the core process of producing the Overview and Themes will not occupy the relevant analysts for a full year, there would be value in building the work programme for those analysts involved in the reports around analysis of the Living Standards Database. In the run-up to the release of the Overview and Themes these would obviously be the main priority. This part of the production process should involve extensive consultation with subject matter experts on the relevant individual elements of the *Living Standards Dashboard* (eg, health, social capital) to ensure that any recent developments in the area are available to the Overview authors. During the rest of the year (perhaps a period of roughly six months) the analytical team would work on medium-term research using the database. While this could cover a range of different issues – the drivers of different wellbeing outcomes, methodological issues in measurement, valuing the capital stocks or different aspects of current wellbeing – the main value would be to ensure that the analysts involved in preparing the Overview and Theme reports maintained an in-depth understanding of the broader data.

5.3 A review of the *Living Standards Dashboard*

The proposal for the *Living Standards Dashboard* set out in this report is consistent with both international best practice (OECD, 2011–2017) and grounded in a New Zealand approach (Ministry of Social Development, 2001–2016). However, it is important to acknowledge that the state of best practice evolves with time, and that procedural issues matter for the legitimacy of a report such as the *Living Standards Dashboard*. Both these considerations suggest that it would be valuable to formally review the *Living Standards Dashboard* after its implementation.

A review of the *Living Standards Dashboard* would need to cover three main areas. These are: (1) the measurement framework; (2) the indicators; and (3) the presentation of the *Living Standards Dashboard*. The review of the framework would involve looking at the conceptual framework that underpins the *Living Standards Dashboard*. Key questions to cover might include:

- How well is the capital stocks model working in terms of helping to identify and frame the discussion round the policy issues that the Treasury and wider government deal with?
- Are the dimensions of current wellbeing appropriate in a New Zealand context?
- Are there important elements missing from the conceptual framework?
- Can the framework better integrate te ao Māori?
- How well does the framework align with those used by other government agencies and non-governmental groups in New Zealand?

The focus for the review of the framework would be a consultation with a wide group of stakeholders. Some of the questions – such as whether the dimensions of current wellbeing are appropriate in a New Zealand context or the role of Te ao Māori in the Living Standards Framework – require engagement with groups from New Zealand society rather than with technical experts. Managing this process well and ensuring its credibility will be important for the perceived future legitimacy of the *Living Standards Dashboard*.

Reviewing the indicators used in the *Living Standards Dashboard* would involve consulting with technical and subject matter experts, with a focus on two issues. First, are there any scientific developments that suggest that there are better indicators available to capture any of the various dimensions of the Living Standards Framework? As evidence accumulates over time the preferred choice of indicator for a particular dimension may change. Second, are there new data available

that would alter the choice of indicator? In many cases the indicators proposed in this report represent a pragmatic compromise with available data, and new sources of information might allow the adoption of better measures.

The final element of the review should look at the presentation of the information in the *Living Standards Dashboard*. This would cover the makeup of the different elements set out in Section 5.1 of this report. The main point here would be consultation with the users of the *Living Standards Dashboard* to establish whether the way in which the data were presented was effective from a user perspective.

The timing of any review of the *Living Standards Dashboard* is also important. Too early, and there will have been insufficient time to absorb lessons from producing the *Living Standards Dashboard* in practice. However, delaying a review for too long runs the risk of undermining the perceived legitimacy of the *Living Standards Dashboard*. Although the development of the *Living Standards Dashboard* has been relatively open and transparent, it is likely that adopting and using the *Living Standards Dashboard* in practice will bring it to the attention of a wider audience who have not yet had any input. With this in mind, it is suggested that 2020 or 2021 would be roughly the right timeframe for a review of the *Living Standards Dashboard*.

6 NEXT STEPS

This report presents a proposal for a dashboard measure of intergenerational wellbeing and the conceptual framework underlying it. The proposed dashboard – the *Living Standards Dashboard* – builds on the existing work in developing the Living Standards Framework already undertaken by the Treasury, but extends this and fleshes it out using the OECD *How's Life?* framework as a standard to ensure the proposed *Living Standards Dashboard*'s scientific integrity. However, moving from a proposal to impact on policy depends on the actions taken in response to the proposal. This includes both any actions taken to use the framework and *Living Standards Dashboard* to support decision-making at a macro-level, but also identifying how the framework can be translated into micro-evidence of the impact of specific policy initiatives.

Moving forward from this report should not be thought of simply as implementing the ideas contained herein: the proposals set out here need extensive testing for robustness both within the Treasury and with respect to the wider New Zealand community. While the report aims to provide a proposal based on the best available evidence, international standards and prior New Zealand work, it is freely acknowledged that the proposal set out here represents a particular view, and is not in any sense an authoritative statement of the meaning of wellbeing in New Zealand or for all New Zealand communities.

With this in mind, it is nonetheless possible to identify a set of specific recommendations for the Treasury, Statistics New Zealand, other government agencies and researchers that could be considered. These include:

- The Treasury
  - ***A Treasury response.*** While this paper sets out a proposal for a *Living Standards Dashboard* and the conceptual model that underpins the Living Standards Framework, it is not itself a formal Treasury document. For the purposes of clarity it would be valuable for the Treasury to produce a response to this paper indicating what elements of the paper it agrees with and setting out clearly a formal statement of the Living Standards Framework.
  - ***A clear visual statement of the Living Standards Framework.*** The current presentation of the Living Standards Framework focuses almost exclusively on the capital stocks and omits any reference to current wellbeing, productivity and net claims on the rest of the world despite being explicitly based on a capital stocks model. A clear visual presentation of the full model would be a useful tool in communicating the Living Standards Framework internally and externally.
  - ***A review of the Living Standards Dashboard***. As discussed in Section 5.3, a review of the *Living Standards Dashboard* is desirable once the Treasury has had some experience in producing it.
  - ***Revise the "physical and financial capital" domain to "produced capital"***. As discussed in Section 4.2, physical capital is misleading and financial capital belongs under net claims on the rest of the world, not as a capital stock.
  - ***Support the development of an evidence base on the impacts of specific policy initiatives on wellbeing***. While the *Living Standards Dashboard* presents a macro-level proposal for measuring the various stocks and flows that matter for intergenerational wellbeing, a high-level picture of this sort can only provide so much information. Actually using the Living Standards Framework to guide policy will necessarily require robust and credible information linking specific policy proposals to the wellbeing domains and capital stocks set out in the framework. While this can be done, both through robust evaluation design and through effective joint use of the Integrated Data Infrastructure (IDI) linked to Statistics New Zealand Household Survey data, this will require support and coordination from the Treasury. The information supporting budget bids for the 2019 Wellbeing Budget will be particularly important here.
  - ***Revise Treasury advice on cost-benefit analysis (CBA).*** The Treasury's current CBA advice places heavy weight on quantifying the fiscal and market economy outcomes of government interventions. To implement the Living Standards Framework effectively

this will need to be supported by much more effective and detailed advice on valuing non-market outcomes and capital stocks that are not traded. This advice should take into account recent developments in valuing non-market outcomes (Benjamin et al., 2014; Fujiwara, 2013; OECD, 2013a), but should also place more weight on evaluating the robustness of such estimates on the basis of the number of different methodologies used to derive a value and level of sensitivity testing rather than picking a single preferred method.

- Statistics New Zealand
  - ***Commence systematic reporting on the elements of intergenerational wellbeing.*** The emergence of a widely accepted framework for measuring intergenerational wellbeing as reflected in the CES/UNECE Guidelines and OECD *How's Life?* framework opens the way to incorporate the key measures of human wellbeing and the underlying capital stocks into Statistics New Zealand's set of core official statistics. This should be viewed, not as a series of descriptive "progress" reports, but as more analogous to the System of National Accounts (although very different in content and measures) in that it involves producing measures within a clearly defined economic framework. Such measures should align with those used by the Treasury and elsewhere in the same way (and for the same reasons) that both Statistics New Zealand and the Treasury report in terms of the same System of National Accounts.
  - ***Consider the size and frequency of the New Zealand General Social Survey.*** The NZGSS is the primary source for many of the indicators used in the *Living Standards Dashboard* to capture dimensions of current wellbeing and also some of the capital stocks. It is currently collected every two years from a sample of 8,500 respondents. In order to provide timely information for the *Living Standards Dashboard*, the survey would be needed annually. In addition, a larger sample size would significantly improve the ability of the *Living Standards Dashboard* to examine the distribution of outcomes as well as having additional benefits in terms of supporting building micro-level evidence of the wellbeing impact of policies when used in conjunction with data from the IDI. The timing, sample size and structure of the HLFS might provide a useful starting point for thinking about the scope of the NZGSS in that the HLFS is continually in the field, collects c.30,000 observations per wave and also allows some very limited longitudinal analysis of year-on-year transitions for individuals.
  - ***Time use data are essential for several indicators in the Living Standards Framework.*** The lack of indicators for the leisure and recreation outcome domain and, to a lesser degree, for social connections and social capital reflect a shortage of time use data. Estimates of the impact of unpaid work on material standard of living are also affected by a lack of regular time use data. Two issues have historically been particularly important here. First, the long gap between time use surveys (c.10 years) combined with uncertainty over whether time use surveys will continue to take place in the future has tended to discourage the use of time use survey data to *Living Standards Dashboard* wellbeing outcomes. In addition, many of the potential uses of time use data (eg, an indicator of positive social contact), although straightforward in principle, have yet to be produced.
- Ministry of Social Development
  - ***Consider re-focusing the Social Report.*** As designed, the *Social Report* (2001–2016) has been the primary government vehicle for reporting on current wellbeing in New Zealand. Although sometimes seen as a sectoral report, the methodological section and content of the *Social Report* clearly place it as providing a picture of current wellbeing in New Zealand, and the content of the report maps exceptionally closely to the recommended approach to measuring current wellbeing adopted here. If Statistics New Zealand and/or the Treasury commence producing measures of current wellbeing regularly, the ongoing production of the *Social Report* in its original format would represent an unnecessary duplication of effort. There is therefore a case for considering the future of the *Social Report*, including whether there would be value in a more sectoral report with a stronger policy focus.

- Wider research agenda
  - ***Natural capital.*** Natural capital is currently under-defined and lacks a clear conceptual framework that would serve to identify the full scope of elements of natural capital that need to be measured and would enable a proposed environmental issue to be located clearly within the framework. Additional work to flesh out natural capital in greater depth would fill a major gap in the proposed *Living Standards Dashboard*.
  - ***Productivity.*** In addition to the levels of the capital stocks, the efficiency with which they are used has a crucial impact on the sustainable level of wellbeing in New Zealand. While there is extensive research around levels of productivity for market goods, much less is known about how productive New Zealand is with respect to other dimensions of current wellbeing.
  - ***GIS-based indicators.*** There are a number of areas of wellbeing where better indicators could be developed from existing data with relatively little effort if greater use was made of GIS (geographical information systems). Two key examples include risk of victimisation and access to natural capital. In both cases, indicators combining GIS data (eg, levels of crime by locality, land cover) with a person's address allow for the creation of individual wellbeing indicators capturing exposure to locality-based good and bad outcomes.
  - ***Ecological footprint.*** There is a strong need for measures capturing the impact of New Zealand's use of natural capital on the rest of the world (and vice versa), particularly for those elements of natural capital relating to core ecosystem services. While the concept of an ecological footprint fits very closely to the needed indicator (particularly the ratio of ecological footprint to biocapacity), current execution of the measure is not of sufficient quality to guide policy effectively. Improvements to the ecological footprint and measures of biocapacity would therefore be of high value.
  - ***Ongoing development of the wellbeing framework.*** Just as the System of National Accounts did not emerge, fully formed, from Simon Kuznet's mind, the wellbeing framework proposed here can be expected to evolve over time as more evidence becomes available and as various issues are teased out and standardised. However, this will only happen if measures are produced and used for policy, creating a virtuous feedback cycle. Creating and supporting this cycle should be a goal in and of itself, in that it is essential to the future use the Living Standards Framework and similar wellbeing models to support better decision-making.

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ANNEX 1

EVALUATION OF INDICATORS

Current wellbeing

Life satisfaction

Indicator	Mean life satisfaction
Definition	The mean score (0–10) on overall life satisfaction (OECD, 2013a, core question A1).
Relevance	Life satisfaction is a measure of people's overall judgement of their level of wellbeing and complements the picture provided by other measures.
Comparability	***Good.*** The measure adheres to an international standard (OECD, 2013a) and can be compared across the majority of OECD countries using official sources.
Sensitivity	***Fair.*** Significant changes in life satisfaction follow policy interventions and changes in life circumstances. At the national level, however, only large shocks are likely to result in significant changes. This should be thought of as a feature, not a bug, as small policy shocks are unlikely to result in significant changes to national wellbeing.
Disaggregation	***Good.*** The NZGSS allows detailed distributional analysis. Increased sample size in the NZGSS would improve this still further.
Timeliness	***Fair.*** The NZGSS is currently available every two years. The most recent data are from 2016 and the next wave is currently in the field.
Data availability	Data on life satisfaction can be sourced from the NZGSS. The first three waves of the NZGSS use an older question that is not fully internationally comparable, but from 2014 onwards the NZGSS adheres to the international standard.

Indicator	Mean Cantril Ladder score
Definition	The mean score (0–10) on the Cantril Ladder (OECD life evaluation question B1).
Relevance	The Cantril Ladder is an alternative evaluative measure of subjective wellbeing capturing essentially the same information as questions on life satisfaction.
Comparability	***Good.*** Data are available for almost all countries in the world from the Gallup World Poll, and are used in the Better Life Index.
Sensitivity	***Fair.*** As a subjective measure of wellbeing, the Cantril Ladder has the same strengths and weaknesses as life satisfaction. Because it is drawn from a smaller sample survey, differences between points are less likely to be significant.
Disaggregation	***Poor.*** The Gallup World Poll has a small sample size, few reliable questions on issues relevant to New Zealand such as ethnicity and the micro-data are expensive to obtain.
Timeliness	***Good.*** Information on the Cantril Ladder is available annually from the Gallup World Poll.
Data availability	The main source of information on the Cantril Ladder is the Gallup World Poll. As this is a commercial survey, there is a cost to obtaining the data. Aggregate-level statistics are reasonably cost-effective, but access to the micro-data is more difficult to obtain.

Market outcomes

Material standard of living

Indicator	Household net adjusted disposable income per capita
Definition	The sum of people's gross income (earnings from self-employment and capital income as well as transfers from other sectors) and social transfers in kind from government (such as education and health services) less taxes on income and wealth paid by households, social security contributions by households and depreciation of capital goods consumed by households.
Relevance	Household net adjusted disposable income provides a robust measure of the average level of economic resources able to be used for consumption by a household.
Comparability	***Good.*** Available for the majority of OECD countries and based on the System of National Accounts.
Sensitivity	***Good.*** Will reflect not just changes in levels of national income, but also relevant changes in the tax/transfer system.
Disaggregation	***Poor.*** As it is based on national account data it is not possible to disaggregate the measure.
Timeliness	***Good.*** In principle, data should be available annually and potentially more frequently in line with updates to the System of National Accounts.
Data availability	Data are derived from the System of National Accounts combined with additional information from OECD databases on government services. Recent editions of *How's Life?* have not included data on this indicator for New Zealand. This largely represents hold-ups in passing on the relevant information to the OECD at the New Zealand end.

Indicator	Mean equivalised household disposable income
Definition	The average disposable household income from the New Zealand Economic Survey or equivalent data source equivalised on the basis of the OECD equivalence scale.
Relevance	Mean equivalised household disposable income provides a direct measure of the average level of economic resources able to be used in consumption. Equivalisation ensures that the measure reflects consumption opportunities per head rather than household composition.
Comparability	***Good.*** Can be calculated for the majority of OECD countries from Luxembourg Income Study data.
Sensitivity	***Good.*** Will reflect changes in income at the household level and to the tax/transfer system, although not changes in services in kind.
Disaggregation	***Fair.*** Can be readily disaggregated.
Timeliness	***Good.*** Data are available annually.
Data availability	Currently the Household Economic Survey (HES) is the best available data source for this indicator. The HES has a relatively small sample size and is available yearly. If it is possible to sufficiently improve household composition information in the IDI it may be possible to source this indicator from Inland Revenue data.

Housing

Indicator	Number of rooms per person
Definition	The number of rooms in a dwelling (excluding kitchen and bathrooms) divided by the number of persons living in the dwelling.
Relevance	Household crowding is associated with poor health outcomes and impacts on people's need for privacy and the degree to which the home is a pleasant place to live.
Comparability	***Good.*** Rooms per person can be calculated for the majority of OECD countries from EU-SILC, and similar data are available from other developed countries including New Zealand through official statistics.
Sensitivity	***Good.*** Meaningful changes occur over time and across countries.
Disaggregation	***Good.*** Information for New Zealand is sourced from survey data and from the census.
Timeliness	***Fair.*** Detailed information is available from the census every five years. The NZGSS has slightly less detailed information (bedrooms only) but is available every two years.
Data availability	The two main data sources for New Zealand are the census and the NZGSS. NZGSS data are not entirely compatible with the OECD indicator but could be easily revised to accommodate it.

Indicator	Housing cost overburden
Definition	Proportion of households with total housing expenditure in excess of 40% of equivalised disposable household income.
Relevance	Affordable housing is an important factor in people's wellbeing, particularly for low-income families where housing costs may represent a relatively high proportion of total income. High housing costs relative to income are an important signal of an inadequate housing supply.
Comparability	***Good.*** Housing cost overburden can be calculated for the majority of OECD countries. A New Zealand equivalent can easily be calculated from HES data.
Sensitivity	***Good.*** Changes in housing cost are readily identifiable in the data.
Disaggregation	***Good.*** If calculated from HES data, analysis of the distribution of outcomes in New Zealand is readily possible, although sample sizes may be too small for any geographic analysis.
Timeliness	***Good.*** Timeliness depends on the frequency with which the HES is updated.
Data availability	The main New Zealand data source is the HES. This has a small sample size, but should be available annually. If a move was made to source income data from the IDI, an alternative source of information on housing expenditure would be required.

Indicator	Housing quality
Definition	Proportion of households reporting a major problem with dampness or mould, or that the house is in need of immediate or immediate and extensive repairs and maintenance.
Relevance	The physical quality of housing is of direct relevance to wellbeing, both in terms of health spill-overs and also broader issues around enjoyment of the dwelling. Dampness and mould are particular issues with the New Zealand housing stock.
Comparability	***Poor.*** Data are available for New Zealand only. No international standard exists.
Sensitivity	***Fair.*** There is currently little evidence of how survey-based indicators of housing quality respond to policy changes. However, there is good evidence that the indicators behave in an intuitive way across the New Zealand population.
Disaggregation	***Good.*** Data are derived from the NZGSS and can be disaggregated as needed, with some limitations on geographical analysis.
Timeliness	***Fair.*** The NZGSS is updated every two years.
Data availability	Data are sourced from the NZGSS and are thus available on a two-yearly basis. The questionnaire was amended in 2014, limiting analysis of time series over the period 2008 to 2012, but allowing for meaningful monitoring from 2014 onwards.

Jobs and earnings

Indicator	Unemployment rate
Definition	The unemployment rate is the number of people aged 15 years and over who are not employed and who are actively seeking and available for paid work, expressed as a percentage of the total labour force (the population aged 15 and over who are either employed or unemployed).
Relevance	The unemployment rate captures information on the risk of being excluded from paid work. Being unemployed has both large financial and non-pecuniary costs, while a high unemployment rate also raises the perceived insecurity of workers with a job.
Comparability	***Good.*** Information on unemployment rates is available on a consistent basis for all OECD countries, and is produced by national statistical offices according to a set of international standards.
Sensitivity	***Good.*** The unemployment rate is sensitive to changes in the economic cycle and to labour market policy.
Disaggregation	***Good.*** Unemployment data can be disaggregated in New Zealand by age, sex and ethnicity. The Household Labour Force Survey (HLFS) is also large enough to allow for some regional disaggregation.
Timeliness	***Good.*** Data are available quarterly from Statistics New Zealand.
Data availability	***Good.*** Information on the harmonised unemployment rates for all OECD countries is released monthly by the OECD.

Indicator	Employment rate
Definition	The proportion of the population aged 15 to 64 years who are in paid employment.
Relevance	Information on the employment rate complements the unemployment rate as an indicator of exclusion from paid work. In particular, the unemployment rate provides no information on discouraged workers who are not employed but who are no longer actively seeking employment.
Comparability	***Good.*** Information on employment rates is available on a consistent basis for all OECD countries, and is produced by national statistical offices according to a set of international standards.
Sensitivity	***Good.*** The employment rate is sensitive to changes in the economic cycle and to labour market policy.
Disaggregation	***Good.*** Employment data can be disaggregated in New Zealand by age, sex and ethnicity. The HLFS is also large enough to allow for some regional disaggregation.
Timeliness	***Good.*** Data are available quarterly from Statistics New Zealand.
Data availability	***Good.*** Information on the employment rates for all OECD countries is released monthly by the OECD.

Indicator	Median hourly earnings
Definition	Real median hourly earnings from all wages and salaries for employees earning income from wages and salary jobs.
Relevance	Median hourly earnings provides an indicator of the financial return from paid employment independent of the number of hours worked. It is thus a key measure of one dimension of job quality.
Comparability	***Fair.*** Conceptually similar measures are available for other countries but obtaining directly comparable statistics may be difficult.
Sensitivity	***Good.*** Changes in median hourly earnings reflect changes in the New Zealand labour market, and meaningful changes occur on a year-to-year basis.
Disaggregation	***Good.*** Median hourly earnings can be disaggregated by age, sex and ethnicity. It may be possible to improve the measure using IDI data which would also allow for detailed geographic disaggregation.
Timeliness	***Good.*** Data are available on an annual basis.
Data availability	***Good.*** Data are available from Statistics New Zealand via the income module on the HLFS. Using the IDI it may be possible to develop an equivalent measure from Inland Revenue data that has universal coverage.

Indicator	Workplace injury claims
Definition	The number of workplace accident insurance claims reported to the Accident Compensation Corporation (ACC) per 1,000 full-time equivalent employees, excluding those employees who received accident and emergency treatment only.
Relevance	The ability to work without risk of significant injury is a core component of job quality. Information from the ACC database represents the best available information on the risk of workplace injury in New Zealand.
Comparability	***Poor.*** Because the indicator is based on ACC records, international comparability is poor. There is some International Labour Organization (ILO) information on workplace injuries, but this has poor comparability and relatively little New Zealand data, so is not an effective alternative.
Sensitivity	***Good.*** The ACC data capture year-on-year changes in the injury rate well, and will reflect the impact of policy. There is some risk that changes to ACC policy on recording or classifying claims could create bias over time if this were to change significantly.
Disaggregation	***Good.*** It is possible to disaggregate outcomes by age, sex, ethnicity, region and industry.
Timeliness	***Fair.*** Data are available annually, but there may be a lag of up to two years between the current date and the most recent available data.
Data availability	***Fair.*** Information should be readily available either from ACC or Statistics New Zealand. Some data processing may be required.

Indicator	Job strain
Definition	Job strain is defined as jobs where workers face more job demands than the number of resources they have at their disposal based on self-reported questions about demands and resources at work (OECD, 2017c).
Relevance	Job strain is a measure of the quality of the working environment, which captures the non-pecuniary characteristics of employment. There are strong links from a poor working environment to poor outcomes in other aspects of workers' lives – such as mental health – and a poor working environment itself implies lower wellbeing if not offset by some other characteristic of job quality such as higher earnings.
Comparability	***Good.*** The OECD released Guidelines on Measuring Job Quality in 2017 (OECD, 2017c) that provide a framework for meaningful international comparisons. Where data are available, valid comparisons are possible.
Sensitivity	***Good.*** Evidence from existing data sources shows the expected empirical relationships between different workplace characteristics and job strain.
Disaggregation	***Poor.*** Available New Zealand data can be obtained only from the International Social Survey Programme (ISSP) which has a small sample size which does not support extensive disaggregation.
Timeliness	***Poor.*** Data are available for New Zealand only from the 2005 and 2015 waves of the ISSP. The availability of data in the future is unclear and depends on ongoing academic engagement in the ISSP by New Zealand universities.
Data availability	***Fair.*** Data are available from the ISSP for New Zealand in 2005 and 2015, and the results of this can also be obtained from the OECD. From 2018 a measure of job strain will be available every 4 to 6 years from the Survey of Working Life, collected as a supplement to the HLFS.

Non-market outcomes

Health

Indicator	Life expectancy at birth
Definition	Life expectancy at birth indicates the total number of years a person could expect to live, based on the mortality rates of the population at each age in a given year or period.
Relevance	Life expectancy summarises the fatal health outcomes of the population. It thus captures the impact of both mental and physical health on the survival experience of the population.
Comparability	***Good.*** Life expectancy at birth is one of the most widely available measures used to compare outcomes across countries and is available for all OECD countries.
Sensitivity	***Fair.*** As a measure of the survival experience of the population, life expectancy changes relatively slowly and changes in measured life expectancy may take some time to reflect changes in the lives of the population.
Disaggregation	***Fair.*** Life expectancy in New Zealand can be readily disaggregated by age and sex, and to some degree by ethnicity (Māori/non-Māori comparisons are possible – for other ethnic groups data are not necessarily available). NZDEP provides estimates of life expectancy at the meshblock level allowing for good geographic disaggregation.
Timeliness	***Fair.*** Data are updated regularly by Statistics New Zealand.
Data availability	***Good.*** Official measures of life expectancy are produced by Statistics New Zealand and international measures are available from the OECD and World Health Organization (WHO).

Indicator	Self-reported health status
Definition	The number of people aged 18+ reporting being in good or very good health as a proportion of the total population aged 18+.
Relevance	Self-assessed health status is one of the few measures of morbidity that is available for a wide range of countries. The measure captures information on the distribution of non-fatal health outcomes across the population.
Comparability	***Fair.*** There is no international standard for collecting information on self-reported health status, but information is available from most OECD countries using very similar question wording and in some areas – such as the EU – the collection of data has been harmonised. There are some concerns about cross-country comparisons based on self-assessed health status as the results are sometimes inconsistent with other evidence, but within-country comparisons are thought to be broadly valid, if noisy.
Sensitivity	***Fair.*** While self-reported health status captures variation in non-fatal health states within the population, the measure does not vary much and has a relatively high level of noise, limiting its sensitivity to changes over time.
Disaggregation	***Good.*** Self-assessed health status is available from the NZGSS and can be disaggregated by age, sex and ethnicity. The ability to undertake regional disaggregation is more limited owing to the NZGSS sample size.
Timeliness	***Good.*** Data are available every two years from the NZGSS, and can also be drawn from the New Zealand Health Survey.
Data availability	***Good.*** New Zealand data are produced by Statistics New Zealand on a regular basis. Data for international comparisons can be sourced from the OECD.

Indicator	Limitations in daily activities
Definition	The proportion of people reporting "a lot of difficulty" or "cannot do at all" on at least one of the Washington Group short set of questions on functioning.
Relevance	The Washington Group short set of questions on functioning are a well-validated survey instrument for collecting information on people's day-to-day functioning, and thus capture the impact of both mental and physical health conditions.
Comparability	***Fair.*** The questions are based on a widely recognised international standard, but data sources that implement the standard are not available for all OECD countries.
Sensitivity	***Good.*** The Washington Group questions have been thoroughly tested as a measure of functioning.
Disaggregation	***Good.*** New Zealand data can be disaggregated by age, sex and ethnicity.
Timeliness	***Good.*** Data are available every two years from the NZGSS, and can also be drawn from the New Zealand Health Survey.
Data availability	***Fair.*** New Zealand data are produced by Statistics New Zealand on a regular basis.

Indicator	Proportion of the population reporting poor mental health
Definition	The proportion of the population below a fixed cut-off on the SF-12 mental health scale.
Relevance	The SF-12 mental health scale is a validated survey instrument designed to measure mental health in a household survey. Mental health is a key dimension of health overall and is difficult to capture through traditional population health metrics.
Comparability	***Fair.*** In theory, comparability for the SF-12 is good as it is a widely used and well-validated international scale. In practice, the scale is not widely used by national statistical offices (most use is within the medical sector) which means that internationally comparable data may not be available.
Sensitivity	***Good.*** The SF-12 has been widely tested against diagnosis-based measures of mental health and performs well.
Disaggregation	***Good.*** The SF-12 mental health scale can be disaggregated by age, sex and ethnicity from NZGSS data. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS.
Timeliness	***Fair.*** Data are available every two years.
Data availability	***Good.*** The SF-12 mental health scale is available from the NZGSS. However, future waves of the NZGSS will replace the SF-12 with a new measure of health status.

Knowledge and skills

Indicator	Educational attainment of the adult population (upper secondary)
Definition	The proportion of adults aged 25–64 years with educational attainment of at least upper secondary education.
Relevance	This is the most widely used international indicator of educational attainment. It provides a proxy measure of the average skill level of the adult population.
Comparability	***Good.*** Can be compared internationally and is used by the OECD in *How's Life?*
Sensitivity	***Good.*** Picks up changes on an annual level in the time series and is suitable for comparison across countries. Tends to change slowly over time.
Disaggregation	***Good.*** Can be readily disaggregated by age, sex, ethnicity and potentially region.
Timeliness	***Good.*** Data are available quarterly.
Data availability	***Good.*** The primary data source is the HLFS, which is available on a quarterly basis.

Indicator	Educational attainment of the adult population (tertiary)
Definition	The proportion of adults aged 25–64 years with educational attainment of at least a Bachelor's degree or higher qualification.
Relevance	This measure complements upper secondary school attainment as a measure of the formal skills of the population. Because secondary school attainment rates are already at high levels, tertiary qualifications provide a more sensitive measure of changes in skill levels at the upper end of the tail.
Comparability	***Good.*** Can be compared internationally using the same data sources as for upper secondary qualifications.
Sensitivity	***Good.*** More sensitive to changes than upper secondary education as tertiary qualification rates are changing more rapidly than secondary qualification rates.
Disaggregation	***Good.*** Can be readily disaggregated by age, sex, ethnicity and potentially region.
Timeliness	***Good.*** Data are available quarterly.
Data availability	***Good.*** The primary data source is the HLFS, which is available on a quarterly basis.

Indicator:	Cognitive skills at age 15.
Definition:	Students' average score in reading, mathematics and science as collected in the Programme on International Student Assessment (PISA).
Relevance:	PISA scores provide a measure of the quality of the educational system and the skills achieved rather than the level of qualification attained. Because education systems vary between countries, equivalent qualifications in different countries may not represent exactly the same level of knowledge and skills.
Comparability:	***Good.*** PISA is conducted by the OECD and most OECD countries participate. Data are explicitly designed to be comparable across countries.
Sensitivity:	***Fair.*** PISA scores vary across countries and change over time. There is some debate around the reason for changes in New Zealand scores over time that may make interpreting changes more difficult than would otherwise be the case.
Disaggregation:	***Fair.*** There are some constraints on the ability to disaggregate PISA data owing to both the way the data were collected and the sample size.
Timeliness:	***Fair.*** PISA is run every three years.
Data availability:	***Fair.*** Data collection is organised with the OECD and aggregate results are publicly available for all participating countries. Looking at the distribution of outcomes beyond pre-selected aggregate scores may require access to the micro-data that New Zealand holds only for itself.

Leisure and recreation

Indicator	Proportion of the population working long hours.
Definition	The proportion of the employed population working 50 or more hours per week.
Relevance	People's time budget in a week is fixed at a maximum of 168 hours. Long work hours therefore place pressure on the amount of time available for other activities. In the absence of high-quality data on available free time, data on long work hours are a proxy indicator for time pressure.
Comparability	***Good.*** Information on long work hours is available for most OECD countries from labour force surveys, and is collected according to international standards.
Sensitivity	***Fair.*** As a proxy measure, the proportion of the population working long hours misses the impact of changes to work hours below or above the threshold, and does not capture the allocation of time between unpaid work and free time. Nonetheless, it does capture important variation in work pressure across countries and population groups.
Disaggregation	***Fair.*** The HLFS allows for disaggregation by age, sex and ethnicity as well as some regional analysis. However, it is not possible to examine joint work allocation decisions at a household or family level which may be of high interest for this topic.
Timeliness	***Good.*** The HLFS is available quarterly.
Data availability	***Good.*** High-quality official data are available from the HLFS.

Indicator	Time in leisure and personal care
Definition	Mean hours per day devoted to leisure and personal care as measured in diary data from time use surveys.
Relevance	Leisure and personal care are essential for people's mental and physical wellbeing and provide a good measure of time available to individuals to do the things they want to do.
Comparability	***Fair.*** Time use data are only collected sporadically by many OECD countries and different time use classification schemes are in use between Europe, Australia/New Zealand and the US. However, where data are available, international comparisons can be made with some precision and comparisons between different classification systems are possible at a high level.
Sensitivity	***Good.*** Because of the data quality and measurement unit (hours), the indicator is sensitive to relatively small changes in the level of free time available to people.
Disaggregation	***Good.*** Data from the New Zealand Time Use Survey can be disaggregated by age, sex and ethnicity.
Timeliness	***Poor.*** The indicator depends on time use data that are collected only once every 10 years on average in New Zealand. The last time use survey was in 2008/09 and Statistics New Zealand is currently considering running another such survey.
Data availability	***Poor.*** Only two time use surveys have been run in New Zealand (1999 and 2008/09) which is not frequent enough to monitor trends over time with any degree of accuracy.

Indicator:	Satisfaction with free time
Definition:	The mean score (0–10) on overall life satisfaction (OECD, 2013a, core question E8).
Relevance:	People's satisfaction with their free time provides an indicator of the overall quality and quantity of free time available to them. It complements measures of the quantity of free time and is both easier and cheaper to collect.
Comparability:	***Fair.*** The OECD (2013a) provides an international standard for collecting information on satisfaction with free time, but is not widely implemented.
Sensitivity:	***Fair.*** There is little evidence on the sensitivity of this particular measure but it is likely to be in line with other subjective measures.
Disaggregation:	***Good.*** If collected as a survey measure through the NZGSS the measure would be able to be disaggregated by age, sex and ethnicity.
Timeliness:	***Poor.*** Currently, data are not available and there would be a two-year lead-in on collecting such information through the NZGSS.
Data availability:	***Poor.*** Currently, data are not available.

Cultural identity/Ūkaipōtanga

Indicator	Proportion of the population feeling a strong sense of belonging in New Zealand
Definition	The mean score (0–10) for the question "How would you describe your sense of belonging to New Zealand?"
Relevance	A feeling of belonging is a core element of cultural identity. Part of being a New Zealander is feeling a sense of belonging to New Zealand as a whole alongside other identities. The measure obtains a subjective view from respondents on the strength of their sense of belonging in New Zealand.
Comparability	***Poor.*** There are no official sources of data using a comparable question, or even with broadly comparable content. The European Social Survey core question C9 on emotional attachment to the country where the respondent lives is somewhat similar, but not close enough for meaningful comparison.
Sensitivity	***Fair.*** There is little evidence on the sensitivity of this particular measure but it is likely to be in line with other subjective measures.
Disaggregation	***Good.*** It can be disaggregated by age, sex and ethnicity from NZGSS data. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS.
Timeliness	***Fair.*** Data are available every two years.
Data availability	***Fair.*** Data are available from the NZGSS in 2016, but it is not clear if the question will be repeated in future waves of the NZGSS as it was not included in 2014.

Indicator	Proportion of the population able to be themselves in New Zealand
Definition	The proportion of the population aged 15+ reporting that it is easy or very easy to be themselves in New Zealand.
Relevance	In addition to feeling a sense of belonging to New Zealand, it is also critical to people's wellbeing that they feel able to express their cultural identity and be themselves rather than conforming to a national norm. The measure provides an indication of the respondent's own perception of their ability to be themselves.
Comparability	***Poor.*** There are no official sources of data using a comparable question, or even with broadly comparable content.
Sensitivity	***Fair.*** There is little evidence on the sensitivity of this particular measure but it is likely to be in line with other subjective measures.
Disaggregation	***Good.*** It can be disaggregated by age, sex and ethnicity from NZGSS data. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS.
Timeliness	***Fair.*** Data are available every two years.
Data availability	***Good.*** Data are available from the NZGSS and is part of the NZGSS core content.

Indicator	Māori language speakers
Definition	The number of Māori who report that they can hold a conversation about everyday things in te reo Māori as a proportion of the Māori population.
Relevance	Māori language is a central component of Māori culture and is an important part of the broader cultural identity and heritage of New Zealand.
Comparability	***Poor.*** While some other countries collect information on indigenous languages, there has been little or no work across countries on developing common methodologies or indicators.
Sensitivity	***Fair.*** While data are derived from a survey question and are relatively limited, they do show meaningful variation over time and across age groups.
Disaggregation	***Good.*** Information is derived from the census allowing for an excellent level of disaggregation.
Timeliness	***Poor.*** Information is available only every five years.
Data availability	***Good.*** The New Zealand Census is the data source.

Indicator	Māori language speakers
Definition	The number of people who report that they can hold a conversation about everyday things in te reo Māori as a proportion of the New Zealand population.
Relevance	Māori language is a central component of Māori culture and is an important part of the broader cultural identity and heritage of New Zealand.
Comparability	***Poor.*** While some other countries collect information on indigenous languages, there has been little or no work across countries on developing common methodologies or indicators.
Sensitivity	***Fair.*** While data are derived from a survey question and are relatively limited, they do show meaningful variation over time and across age groups.
Disaggregation	***Good.*** Information is derived from the census allowing for an excellent level of disaggregation.
Timeliness	***Poor.*** Information is available only every five years.
Data availability	***Good.*** The New Zealand Census is the data source.

Safety

Indicator	Intentional homicide rate per 100,000
Definition	The number of people who have died as a result of an assault or intentional injury, per 100,000 population.
Relevance	Loss of life represents the ultimate loss of wellbeing, and is also widely accepted as a proxy indicator for levels of violence more widely.
Comparability	***Good.*** Intentional homicide data are available for all OECD countries and are generally highly comparable. Information is collected and published according to international standards.
Sensitivity	***Fair.*** While the intentional homicide rate captures variations in extreme violence well, it has two main limitations. First, owing to small numbers, the measure may fluctuate significantly from year to year. Second, it does not capture changes in less severe forms of violence.
Disaggregation	***Fair.*** While data can be disaggregated in New Zealand by age, sex and ethnicity, the small number of intentional deaths each year means that it may be necessary to pool data from several years in order to get a sufficiently large number of observations to produce meaningful results.
Timeliness	***Good.*** Data are available annually.
Data availability	***Good.*** Information on intentional homicides is available from the Health Information System.

Indicator	Self-reported victimisation
Definition	The proportion of the population aged 18 years and older who have been victims of one or more incidents of criminal offending in the past year.
Relevance	The criminal victimisation rate provides a broad measure of personal safety and wellbeing. Survey measures of victimisation are generally considered less likely to be affected by reporting bias and changes in policy procedure than official crime figures.
Comparability	***Fair.*** While there are international standards for collecting victimisation data, these are not widely used and international information from victimisation surveys is patchy at best. The Gallup World Poll collects information from a question very similar to that used in the NZGSS, but focusing only on violent crime.
Sensitivity	***Fair.*** Victimisation information from a general household survey such as the NZGSS or Gallup World Poll is known to be less accurate than information from a full victimisation survey. However, it shows the main expected patterns across different population groups.
Disaggregation	***Good.*** It can be disaggregated by age, sex and ethnicity from NZGSS data. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS. Data from the Gallup World Poll would have poor disaggregation.
Timeliness	***Fair.*** Data are available every two years. Information from the Gallup World Poll is available annually.
Data availability	***Good.*** Data are available from the NZGSS and are part of the NZGSS core content. Internationally comparable information is available from the Gallup World Poll.

Indicator	Feelings of safety
Definition	Percentage of the population aged 18 years and over who report feeling safe walking alone in their neighbourhood after dark.
Relevance	Anxiety and worries about safety directly affect people's wellbeing and, for the part of the population who are not victimised in any given period of time, represent the main way that victimisation impacts on their wellbeing.
Comparability	***Fair.*** There is a widely used question that is asked, with small variations in a large number of official and unofficial surveys.
Sensitivity	***Fair.*** As a subjective measure, movements in the indicator tend to be smaller relative to survey noise. However, the question has sufficient validity to provide meaningful information.
Disaggregation	***Good.*** It can be disaggregated by age, sex and ethnicity from NZGSS data. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS. Data from the Gallup World Poll would have poor disaggregation.
Timeliness	***Fair.*** Data are available every two years. Information from the Gallup World Poll is available annually.
Data availability	***Good.*** Data are available from the NZGSS and are part of the NZGSS core content. Internationally comparable information is available from the Gallup World Poll.

Environmental quality

Indicator	Air quality (PM10 concentrations per cubic metre)
Definition	The average annual PM10 concentrations in $\mu g/m^3$ for cities with a population of 100,000 or greater.
Relevance	Good air quality has an important direct effect on health and affects both premature mortality and morbidity as well as being unpleasant in and of itself.
Comparability	***Fair.*** Air quality is measured according to well-understood scientific methods. There may be some limitations in generalising from measurement in specific localities to the experience of the population more widely.
Sensitivity	***Fair.*** While the measures used are of high quality, they are intrinsically local and therefore may not accurately reflect the experience of the total population.
Disaggregation	***Poor.*** Air quality is an aggregate measure and it is difficult to associate with individuals for the purposes of disaggregating impacts. It might be possible to develop some measures of distribution by looking at geographic information on where people live and work.
Timeliness	***Good.*** Information is available annually.
Data availability	***Good.*** Information is available both from national (Ministry for the Environment) and international (World Bank) sources.

Indicator	Air quality (PM2.5 concentrations per cubic metre)
Definition	The population weighted average annual PM2.5 exposure in µg/m^3.
Relevance	Good air quality has an important direct effect on health and affects both premature mortality and morbidity as well as being unpleasant in and of itself. Particles of 2.5 microns or less in diameter are known to be a vehicle for a range of harmful chemicals to reach the human bloodstream.
Comparability	***Fair.*** Air quality is measured according to well-understood scientific methods. There may be some limitations in generalising from measurement in specific localities to the experience of the population more widely.
Sensitivity	***Good.*** Information is available on the exposure of the whole population and how this varies over time.
Disaggregation	***Fair.*** Air quality is an aggregate measure and it is difficult to associate with individuals for the purposes of disaggregating impacts. The OECD air quality database allows for disaggregation on a regional basis.
Timeliness	***Good.*** Information is available annually.
Data availability	***Good.*** Information is available from the OECD exposure to air pollution database.

Indicator	Satisfaction with water quality
Definition	The proportion of the population aged 15 years or older responding that they are satisfied with the water quality in the city or area in which they live in the Gallup World Poll.
Relevance	Water quality is important to wellbeing both for health reasons and for aesthetic and recreational reasons. Satisfaction with water quality captures not just the measured quality of drinking water, but also the impact of poor water quality in beaches, rivers and other local sources.
Comparability	***Good.*** Data are available for almost all countries in the world from the Gallup World Poll, and is used by the OECD in *How's Life?*
Sensitivity	***Fair.*** As a subjective measure, satisfaction with drinking water quality has the same issues as other subjective measures. Because it is drawn from a smaller sample survey, differences between points are less likely to be significant.
Disaggregation	***Poor.*** The Gallup World Poll has a small sample size, few reliable questions on issues relevant to New Zealand such as ethnicity and the micro-data are expensive to obtain.
Timeliness	***Good.*** Information on the satisfaction with drinking water quality is available annually from the Gallup World Poll.
Data availability	***Fair.*** The main source of information on satisfaction with drinking water quality is the Gallup World Poll. As this is a commercial survey, there is a cost to obtaining the data. Aggregate-level statistics are reasonably cost effective, but access to the micro-data is more difficult to obtain.

Indicator	Natural space footprint within a 1km radius of dwelling
Definition	The percentage of land cover within 1km of the respondent's residential address that is land classes 2, 14, 15, 20, 21, 22, 43, 45, 46, 47, 50, 52, 54, 55, 69, 70, 80 or 81 in the New Zealand Land Cover Database.
Relevance	Access to natural areas is of direct importance to people's wellbeing and is also important for recreation and other activities. The indicator provides a direct measure of people's ability to access such spaces near their place of residence.
Comparability	***Fair.*** Although indicators of this sort are not currently in wide use and there exist no international standards for the indicator, the data to make such comparisons exist for most OECD countries and comparisons would, in principle, be possible.
Sensitivity	***Good.*** The measure is directly based on land cover and residential patterns and will reflect movement in either.
Disaggregation	***Good.*** Such a measure could be disaggregated at a high level of detail by age, sex, ethnicity, education or other dimensions.
Timeliness	***Fair.*** The land cover data are updated only every five years, but residential data are updated more frequently and could be used to produce annual measures.
Data availability	***Fair.*** The indicator is not currently produced, but would be relatively straightforward to develop from the existing Land Cover Database and IDI residential data.

Civic engagement and governance

Indicator	Voter turnout
Definition	The proportion of the estimated voting-age population who cast a vote in general elections.
Relevance	Political participation is crucial for democracies, and voting provides a measure of the willingness of the population to incur a cost (in terms of time and becoming informed) in order to pursue a public good. Although only a proxy for the underlying pro-social norm, voting behaviour is readily comparable across countries and good time series exist.
Comparability	***Fair.*** Data are available for all OECD countries and meaningful cross-country comparisons are possible with some exceptions. A few countries, such as Australia, require voting by law, which makes comparisons with these countries problematic. There is also debate over whether the correct denominator is the voting-age population (which may cause bias in countries with large resident non-citizen populations) or registered voters (which may cause problems in countries where voter registration rates are very low such as the US).
Sensitivity	***Fair.*** Voting rates vary from election to election in ways that appear meaningful on a qualitative level, and it is possible to connect cross-country differences in voting rates with broader questions of trust in governing institutions and collective action.
Disaggregation	***Poor.*** Generally speaking, voting rates cannot be disaggregated because of the nature of the secret ballot. It may be possible to undertake some regional disaggregation on the basis of local government elections.
Timeliness	***Fair.*** Data are only available following elections.
Data availability	***Good.*** Data are available for New Zealand and for other OECD countries from official sources.

Indicator	Proportion of the population reporting discrimination
Definition	The proportion of the population aged 15 or older reporting having experienced discrimination in the previous 12 months.
Relevance	The freedom from unlawful discrimination is a core principle of democratic societies and represents a key element in procedural fairness. Experienced discrimination provides a measure of the level of discrimination in New Zealand.
Comparability	***Poor.*** There are no official sources of data from other countries using a comparable question, or even with broadly comparable content. Some data are available for European countries from the European Social Survey core questionnaire.
Sensitivity	***Fair.*** There is little evidence on the sensitivity of this particular measure but it is likely to be in line with other subjective measures.
Disaggregation	***Good.*** It can be disaggregated by age, sex and ethnicity from NZGSS data. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS.
Timeliness	***Fair.*** Data are available every two years.
Data availability	***Good.*** Data are available from the NZGSS and are part of the NZGSS core content.

Social connections

Indicator	Social network support
Definition	The proportion of the population aged 15 or older indicating that they have someone to count on in times of need.
Relevance	While close personal relationships have intrinsic value, they can also provide emotional and material support and underpin resilience at the individual and family level. The proportion of people reporting having someone to count on in time of need provides a widely used measure of perceived availability of social support.
Comparability	***Good.*** Comparable data are available for all OECD countries from the Gallup World Poll. The NZGSS also collects a similar measure.
Sensitivity	***Fair.*** As a subjective measure, movements in the indicator tend to be smaller relative to survey noise. However, the question has sufficient validity to provide meaningful information.
Disaggregation	***Fair.*** Data from the Gallup World Poll allow for very little disaggregation. However, information from the NZGSS can be disaggregated by age, sex and ethnicity. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS.
Timeliness	***Fair.*** Information from the Gallup World Poll is available annually and the NZGSS every two years.
Data availability	***Good.*** Internationally comparable information is available from the Gallup World Poll. Data are available from the NZGSS and are part of the NZGSS core content.

Indicator	Loneliness
Definition	The proportion of people aged 15 years and over who reported feeling lonely most of the time or all of the time in the NZGSS.
Relevance	Social contact is fundamentally important to people: humans are social creatures. Self-assessed loneliness is a proxy indicator of whether people are happy with the quantity and quality of social contact they have.
Comparability	***Poor.*** There is no international standard for measuring loneliness and comparable data are not available for most countries. The European Quality of Life Survey collects similar information for EU countries using a slightly different question.
Sensitivity	***Fair.*** As a subjective measure, movements in the indicator tend to be smaller relative to survey noise. However, the question has sufficient validity to provide meaningful information.
Disaggregation	***Good.*** It can be disaggregated by age, sex and ethnicity from NZGSS data. The ability to disaggregate at the geographic level is more limited owing to sample size issues with the NZGSS.
Timeliness	***Fair.*** Data are available every two years.
Data availability	***Good.*** Data are available from the NZGSS and are part of the NZGSS core content.

Indicator	Time spent in positive social activities
Definition	Mean hours per day spent in positive social activities as measured in diary data from time use surveys. Positive social activities are defined as activities where another person was recorded as present in the time use diary and for which experienced wellbeing was in the upper quartile of results when classified by activity type.
Relevance	Humans are social creatures and positive social contact is a fundamental aspect of wellbeing. Time spent in positive social contact provides a direct, scalar measure of social contact and avoids the subjectivity inherent in measures of loneliness or social network support.
Comparability	***Fair.*** Time use data are only collected sporadically by many OECD countries and different time use classification schemes are in use between Europe, Australia/New Zealand and the US. However, where data are available, international comparisons can be made with some precision and comparisons between different classification systems are possible at a high level.
Sensitivity	***Good.*** Because of the data quality and measurement unit (hours), the indicator is sensitive to relatively small changes in the level of free time available to people.
Disaggregation	***Good.*** Data from the New Zealand Time Use Survey can be disaggregated by age, sex and ethnicity.
Timeliness	***Poor.*** The indicator depends on time use data that are collected only once every 10 years on average in New Zealand. The last time use survey was in 2008/09 and Statistics New Zealand is currently considering running another such survey.
Data availability	***Poor.*** Only two time use surveys have been run in New Zealand (1999 and 2008/09) which is not frequent enough to monitor trends over time with any degree of accuracy. To construct the indicator would also require information on experienced wellbeing which is not available from either of the two existing New Zealand time use surveys although information from overseas (France, US) could be used to assign weights to activity types and the next New Zealand time use survey provides an opportunity to collect time use data.

Self and aspirations

Indicator	Proportion of the population expecting future wellbeing to be higher than the present
Definition	Proportion of the population aged 15+ reporting a higher score (0–10) for expected wellbeing in five years' time to their current score on the Cantril Ladder in the Gallup World Poll.
Relevance	Optimism is one of the key elements of personality associated with high wellbeing – both subjective and objective. The proposed measure provides a proxy for optimism at the individual level that can be calculated from existing data.
Comparability	***Good.*** Data are available for almost all countries in the world from the Gallup World Poll.
Sensitivity	***Fair.*** As a subjective measure, the indicator proposed here has the same issues as other subjective measures. Because it is drawn from a smaller sample survey, differences between points are less likely to be significant.
Disaggregation	***Poor.*** The Gallup World Poll has a small sample size, few reliable questions on issues relevant to New Zealand such as ethnicity and the micro-data are expensive to obtain.
Timeliness	***Good.*** Information on future wellbeing and on the Cantril Ladder is available annually from the Gallup World Poll.
Data availability	***Fair.*** Information on expected future wellbeing and the Cantril Ladder is available in the Gallup World Poll, but the proposed measure would involve analysing the micro-data to develop a synthetic indicator based on a comparison of the two individual measures. As this is a commercial survey, there is a cost to obtaining the data. Aggregate-level statistics are reasonably cost effective, but access to the micro-data is more difficult to obtain.

Indicator	Proportion of the population reporting a high level of control over their own life
Definition	The mean score (0–10) for how much control respondents feel they have over how their life turns out.
Relevance	Locus of control is a key element of psychological functioning and individual flourishing. The proposed indicator is a single question subjective measure that can be used as an indicator for locus of control.
Comparability	***Poor.*** There is no international standard for questions around locus of control. The European Quality of Life Survey has some questions that collect information on locus of control, but these are not strictly comparable to the proposed question.
Sensitivity	***Fair.*** The question is subjective and has many of the same strengths and weaknesses as other subjective measures.
Disaggregation	***Fair.*** Currently, the question is only available from Te Kupenga and is therefore available only for Māori. Within this limit it can be disaggregated by age, sex and by region to a limited degree.
Timeliness	***Poor.*** Currently available as a one-off from Te Kupenga 2013.
Data availability	***Poor.*** There is not currently a source of data for the full New Zealand population.

Capital stocks

Produced capital

Indicator	Net fixed assets per capita
Definition	Net fixed assets for the total economy as defined by the System of National Accounts divided by the New Zealand population.
Relevance	Produced capital is mostly traded in the market sector, so meaningful prices exist and the System of National Accounts is able to use these to provide a total value for the produced asset stock in New Zealand. The value of net fixed assets is directly related to the use of those assets as a productive resource.
Comparability	***Good.*** The indicator is derived from the System of National Accounts and is therefore produced to international standards and is readily comparable.
Sensitivity	***Good.*** While annual changes are likely to be relatively small, the System of National Accounts is designed to produce results that are meaningful for year-to-year changes.
Disaggregation	***Poor.*** The indicator is derived from the System of National Accounts and is thus an aggregate measure only.
Timeliness	***Good.*** The System of National Accounts is updated quarterly.
Data availability	***Fair.*** In principle, net fixed assets per capita could be produced by Statistics New Zealand from existing data fairly easily, but it is currently not one of the standard outputs from the System of National Accounts.

Indicator	Expanded net fixed assets per capita
Definition	Net fixed assets for the total economy as defined by the System of National Accounts plus the value of consumer durables, divided by the total population.
Relevance	Expanded net fixed assets per capita give a measure of the value of the produced asset stock available for use in both the market sector and non-market production and consumption by households. Non-market production and consumption represent a significant proportion of total production and consumption.
Comparability	***Fair.*** The indicator is derived from the System of National Accounts. Although there is no international standard for including consumer durables in the System of National Accounts, the general principles are well understood and guidance is available from international bodies.
Sensitivity	***Good.*** Changes may be smaller with the inclusion of consumer durables, but the System of National Accounts is designed to provide meaningful estimates of change on an annual basis.
Disaggregation	***Poor.*** The indicator is derived from the System of National Accounts and is thus an aggregate measure only.
Timeliness	***Fair.*** The System of National Accounts is updated quarterly. However, data on consumer durable ownership are available less frequently and may be possible to only update every three years from the HES.
Data availability	***Fair.*** In principle, net fixed assets per capita could be produced by Statistics New Zealand from existing data fairly easily, but it is currently not one of the standard outputs from the System of National Accounts. Data on consumer durables are available only from the expenditure data in the HES which is updated every three years.

Indicator	Household net worth
Definition	The value of a household's assets minus its liabilities.
Relevance	Household net worth provides a picture of the proportion of the produced capital stock owned by a household, and can thus be used to measure the distribution of produced capital across the population. The measure has no relevance for the level of produced capital in New Zealand.
Comparability	***Good.*** Household net worth is calculated according to international standards and is produced by Statistics New Zealand.
Sensitivity	***Good.*** The measure is in dollars and will respond to changes in the distribution of assets across the New Zealand population.
Disaggregation	***Good.*** Household net worth can be disaggregated at the household level as well as to look at sub-populations of interest.
Timeliness	***Fair.*** Data are available from the HES every three years.
Data availability	***Fair.*** Data are available from the HES every three years from 2015. Point estimates for earlier time periods may be available from the two Household Savings Surveys.

Natural capital

Specific indicators of natural capital are not evaluated here owing to the scope of work involved in moving from the available data to specific indicators.

Human capital

Indicator	Health expectancy
Definition	The number of years a person can be expected to live without any self-reported functional limitation requiring the assistance of another person or complex assistive device.
Relevance	Health expectancy captures two important elements of human capital. First, it captures how long a person will stay alive and, second, it captures the length of time during which the person is able to function unaided. It thus provides a measure of the time period over which a person will be able to use their skills and knowledge, and hence of the stock of human capital associated with a person.
Comparability	***Good.*** Health expectancy is a widely used and well-developed indicator. Healthy life expectancy (HALE) – a related indicator is used by the WHO.
Sensitivity	***Good.*** Health expectancy changes in line with improvements in population health.
Disaggregation	***Fair.*** Health expectancy can be disaggregated in New Zealand by sex, age and ethnicity. However, metrics of the overall inequality of distribution of health expectancy are not commonly used.
Timeliness	***Fair.*** Health expectancy can only be updated every five years from census data. However, population health states change slowly, so this is probably not a major shortcoming.
Data availability	***Fair.*** Data are available for New Zealand from the census. With additional information and work it would be possible to calculate HALE for New Zealand which would have wider international comparability.

Indicator	Educational attainment of the adult population (upper secondary)
Definition	The proportion of adults aged 25–64 years with educational attainment of at least upper secondary education.
Relevance	This is the most widely used international indicator of educational attainment. It provides a proxy measure of the average skill level of the adult population.
Comparability	***Good.*** Can be compared internationally and is used by the OECD in *How's Life?*
Sensitivity	***Good.*** Picks up changes on an annual level in the time series and is suitable for comparison across countries. Tends to change slowly over time.
Disaggregation	***Good.*** Can be readily disaggregated by age, sex, ethnicity and potentially region.
Timeliness	***Good.*** Data are available quarterly.
Data availability	***Good.*** The primary data source is the HLFS, which is available on a quarterly basis.

Indicator	Educational attainment of the adult population (tertiary)
Definition	The proportion of adults aged 25-64 years with educational attainment of at least a Bachelor's degree or higher qualification.
Relevance	This measure complements upper secondary school attainment as a measure of the formal skills of the population. Because secondary school attainment rates are already at high levels, tertiary qualifications provide a more sensitive measure of changes in skill levels at the upper end of the tail.
Comparability	***Good.*** Can be compared internationally using the same data sources as for upper secondary qualifications.
Sensitivity	***Good.*** More sensitive to changes than upper secondary education as tertiary qualification rates are changing more rapidly than secondary qualification rates.
Disaggregation	***Good.*** Can be readily disaggregated by age, sex, ethnicity and potentially region.
Timeliness	***Good.*** Data are available quarterly.
Data availability	***Good.*** The primary data source is the HLFS, which is available on a quarterly basis.

Indicator	Educational expectancy
Definition	The number of years of schooling that youth aged 15 today may expect to undertake while aged 15 to 29 based on the current enrolment of people aged 15 to 29.
Relevance	Educational expectancy is an informative proxy of the stock of human capital embodied in young people who have not yet completed their education. Current educational attainment will not provide information on the final level of education this group will attain, and thus it is useful to have a forward-looking measure.
Comparability	***Good.*** Data are available from the OECD for all OECD countries.
Sensitivity	***Good.*** Educational expectancy will alter in line with changes to the educational attainment of the population aged 15 to 29.
Disaggregation	***Poor.*** The indicator is sourced from the OECD and cannot be disaggregated at the micro-data level.
Timeliness	***Fair.*** The indicator is derived from OECD databases but is not part of the current Education at a Glance indicator set.
Data availability	***Fair.*** The indicator is derived from OECD databases but is not part of the current Education at a Glance indicator set.

Indicator	Human capital stock index
Definition	Mean years of education by age band weighted by age band health expectancy and size, summed across all age bands and divided by the total population.
Relevance	Provides a direct measure of the total stock of human capital available to a country at a particular point in time taking into account both quantity (health expectancy and age distribution) and quality (education).
Comparability	***Poor.*** While the data required are potentially available and standardised, the index is highly experimental. It might be possible to construct measures for countries other than New Zealand with some effort.
Sensitivity	***Fair.*** In principle, such an index should have good sensitivity, but the measure remains untested.
Disaggregation	***Fair.*** The data requirements already make quite extensive use of the available information and it might not be possible to disaggregate further with existing data sources.
Timeliness	***Poor.*** Timeliness depends entirely on the availability of information on mean years of education.
Data availability	***Poor.*** Data on health expectancy are available from the census, but information on mean years of education in the New Zealand population is not readily available from any existing data source, although it may be possible to calculate from the IDI and HLFS.

Social capital

Indicator	Mean generalised trust
Definition	The mean score (0–10) on generalised trust (OECD, 2017b, question A1).
Relevance	Generalised trust is a well-validated measure of pro-social norms. It has been shown to have a causal effect on both economic outcomes and broader wellbeing outcomes across countries, and is supported by a good understanding of how trust might drive these outcomes.
Comparability	***Good.*** Generalised trust is used by the OECD (2017a) in monitoring wellbeing as a measure of social capital. International guidelines (OECD, 2017b) exist for measuring generalised trust in official statistics.
Sensitivity	***Fair.*** Trust changes slowly, although trends are observable over time and do appear to change in response to changes in circumstances. Given that social capital probably changes only slowly, excessive year-to-year volatility would be incompatible with the measure performing well.
Disaggregation	***Fair.*** In New Zealand, generalised trust is available from the NZGSS and can be broken down by age, sex, ethnicity and region (to a more limited degree). A limitation is that, from a wellbeing perspective, it is the trust levels of those around a person that are more relevant than whether the person themselves is trusting. Existing NZGSS data are not sufficient to provide neighbourhood/meshblock or even city-level estimates of average trust.
Timeliness	***Fair.*** The NZGSS is available every two years.
Data availability	***Good.*** High-quality official statistics are available from the NZGSS.

Indicator	Voter turnout
Definition	The proportion of the estimated voting-age population who cast a vote in general elections.
Relevance	Political participation is crucial for democracies, and voting provides a measure of the willingness of the population to incur a cost (in terms of time and becoming informed) in order to pursue a public good. Although only a proxy for the underlying pro-social norm, voting behaviour is readily comparable across countries and good time series exist.
Comparability	***Fair.*** Data are available for all OECD countries and meaningful cross-country comparisons are possible with some exceptions. A few countries, such as Australia, require voting by law, which makes comparisons with these countries problematic. There is also debate over whether the correct denominator is the voting-age population (which may cause bias in countries with large resident non-citizen populations) or registered voters (which may cause problems in countries where voter registration rates are very low such as the US).
Sensitivity	***Fair.*** Voting rates vary from election to election in ways that appear meaningful on a qualitative level, and it is possible to connect cross-country differences in voting rates with broader questions of trust in governing institutions and collective action.
Disaggregation	***Poor.*** Generally speaking, voting rates cannot be disaggregated because of the nature of the secret ballot. It may be possible to undertake some regional disaggregation on the basis of local government elections.
Timeliness	***Fair.*** Data are only available following elections.
Data availability	***Good.*** Data are available for New Zealand and for other OECD countries from official sources.

Indicator	Mean trust in police
Definition	The mean score (0–10) on trust in the police (OECD, 2017b, question A4).
Relevance	The police are one of the mostly widely recognised government institutions and play a crucial role in supporting public order. Confidence in the efficiency and integrity of the police is a key foundation for broader pro-social norms such as generalised trust, and there is evidence supporting the validity of institutional trust measures of this sort.
Comparability	***Good.*** Trust in police is used as an indicator by the OECD (2017a) in monitoring wellbeing as a measure of social capital. International guidelines (OECD, 2017b) exist for measuring trust in police in official statistics.
Sensitivity	***Fair.*** There is relatively little evidence on the sensitivity of institutional trust measures of this sort to changes in performance (OECD, 2013b).
Disaggregation	***Good.*** In New Zealand, trust in police is available from the NZGSS and can be broken down by age, sex, ethnicity and region (to a more limited degree).
Timeliness	***Fair.*** The NZGSS is available every two years.
Data availability	***Good.*** High-quality official statistics are available from the NZGSS.

Indicator	Mean trust in Parliament
Definition	The mean score (0–10) on trust in Parliament (OECD, 2017b, question A3).
Relevance	Trust in parliament captures information on people's attitudes to Parliament, and to the New Zealand Government more generally. Although analysis shows that the measure does not provide robust information on Parliament specifically compared with people's views of government more generally, overall attitudes to government are still important in forming people's expectations around interactions with others.
Comparability	***Fair.*** The OECD uses a related indicator – trust in the national government – in *How's Life?* (OECD, 2017a). However, trust in Parliament is one of the recommended measures in the OECD *Guidelines on Measuring Trust* (OECD, 2017b) and comparability should rise over time.
Sensitivity	***Fair.*** There is relatively little evidence on the sensitivity of institutional trust measures of this sort to changes in performance (OECD, 2013b).
Disaggregation	***Good.*** In New Zealand, trust in Parliament is available from the NZGSS and can be broken down by age, sex, ethnicity and region (to a more limited degree).
Timeliness	***Fair.*** The NZGSS is available every two years.
Data availability	***Good.*** High-quality official statistics are available from the NZGSS.

Indicator	Proportion of the population volunteering
Definition	Mean hours spent volunteering.
Relevance	Civic engagement is hypothesised to help build pro-social norms and values. Volunteering is a key fork of civic engagement and involves contact with others in a way that may contribute to building trust. Time spent volunteering provides a continuous measure of actual effort involved, and is less likely to be biased by social desirability and recall issues than retrospective questions.
Comparability	***Fair.*** Time spent volunteering is used by the OECD as an indicator in *How's Life?* (OECD, 2011) and international standards exist for time use surveys. However, data of this sort are typically only available at irregular intervals for many countries.
Sensitivity	***Good.*** As a high-quality continuous variable, time spent volunteering will reflect changes in how people allocate their time well, and will be sensitive to quite small effects from policy. This is particularly the case if the data can be disaggregated.
Disaggregation	***Good.*** The New Zealand Time Use Survey is able to provide detailed breakdowns on the basis of age, sex, family type and ethnicity. Owing to sample size issues it is less useful for regional analysis.
Timeliness	***Poor.*** Only two time use surveys have been run in New Zealand and these were 10 years apart.
Data availability	***Poor.*** Statistics New Zealand does not appear to have another time use survey as part of its survey programme.

Indicator	Perceived corruption
Definition	The perceived level of corruption – defined as "the abuse of public office for private gain" – among politicians and public officials, on a scale of 0 (highly corrupt) to 10 (highly clean) as measured by Transparency International through the Corruption Perceptions Index.
Relevance	Corruption undermines confidence in the fair operation of public institutions (OECD, 2013b) and decreases people's confidence in their interactions with others in market and non-market settings.
Comparability	***Good.*** Data are available for most world countries on an annual basis.
Sensitivity	***Fair.*** The Corruption Perceptions Index is driven by changes in people's perceptions. It is not overly sensitive, although may be affected to some degree by media events.
Disaggregation	***Poor.*** The Index provides a single value for the country as a whole. No disaggregation is possible.
Timeliness	***Good.*** Updated annually.
Data availability	***Fair.*** Data are freely available and are of adequate quality. However, they are sourced from a non-governmental organisation rather than from official statistics and are based on perceptions data with a tilt towards business respondents so may not be an unbiased representation of beliefs about corruption.

Multifactor productivity

Indicator	Multifactor productivity
Definition	Multifactor productivity (MFP) reflects the overall efficiency with which labour and capital inputs are used together in the production process. Changes in MFP reflect the effects of changes in management practices, brand names, organisational change, general knowledge, network effects, spill-overs from production factors, adjustment costs, economies of scale, the effects of imperfect competition and measurement errors. Growth in MFP is measured as a residual (ie, that part of GDP growth that cannot be explained by changes in labour and capital inputs).
Relevance	MFP captures the level of economic output per unit of capital used, and is therefore a measure of the efficiency with which capital resources can be used to produce material living standards.
Comparability	***Fair.*** Measures of MFP are produced by the OECD and are available for comparisons across the majority of OECD countries. Because MFP is calculated as a residual, unobserved differences at the country level may bias measured MFP.
Sensitivity	***Fair.*** Changes in the level of MFP and the rate of growth occur over meaningful timeframes. However, it can be difficult to distinguish between genuine change and measurement error owing to the residual nature of MFP estimates.
Disaggregation	***Poor.*** MFP is an aggregate statistic and cannot meaningfully be disaggregated by age, sex or ethnicity. There are some firm-level studies of MFP, but these do not provide the required evidence base for meaningful monitoring.
Timeliness	***Fair.*** MFP data are regularly updated by the OECD, but there is a significant time lag involved. The most recent data tend to be about three years out of date.
Data availability	***Good.*** Available time series can be freely downloaded from the OECD.

Indicator	Life satisfaction residual
Definition	The life satisfaction residual reflects cross-country differences in the mean level of life satisfaction not accounted for by variance in the observable drivers of life satisfaction. It is calculated as the residual from the life satisfaction regressions in the World Happiness Report, based on the Cantril Ladder question in the Gallup World Poll.
Relevance	The life satisfaction residual provides a measure of the degree to which countries do better or worse in producing wellbeing for their population than could be expected from observable differences in cross-country characteristics. It thus captures the impact of differences in the efficiency by which a country converts its capital stocks into wellbeing.
Comparability	***Fair.*** The life satisfaction residual can be calculated from the data annex of the annual World Happiness Report. It is based on data from the Gallup World Poll, which is not sourced from national statistical offices, but which is collected in a consistent way over time and – with some minor caveats – across all countries in the sample. As a residual, the measure cannot distinguish between differences in wellbeing productivity or other unobserved differences at the country level.
Sensitivity	***Poor.*** There is little information on how the life satisfaction residual varies over time in response to policy shifts. Including the measure is, in this sense, largely experimental.
Disaggregation	***Poor.*** The life satisfaction residual is an aggregate statistic and cannot meaningfully be disaggregated by age, sex or ethnicity. It would be possible to calculate a similar statistic for sub-groups of the New Zealand population along the lines of age, sex or ethnicity from the NZGSS, but the results would not be directly comparable with international estimates.
Timeliness	***Good.*** The World Happiness Report is released annually, and data are relatively up to date.
Data availability	***Fair.*** The required information can be obtained from the data annexes of the World Happiness Report, but some calculation is required to obtain the residual value.

Net claims on the rest of the world

Indicator	Financial net worth of the total economy
Definition	Total financial assets minus total financial liabilities from the System of National Accounts, expressed in per capita terms.
Relevance	As domestic assets and liabilities cancel each other out, the financial net worth of the total economy measures the net foreign asset position of the country with respect to the rest of the world. This indicates the degree to which New Zealand has a claim over other countries' capital stocks or other countries have a claim of New Zealand's capital stocks.
Comparability	***Good.*** The indicator is derived from the System of National Accounts and is therefore produced to international standards and is readily comparable.
Sensitivity	***Good.*** While annual changes are likely to be relatively small, the System of National Accounts is designed to produce results that are meaningful for year-to-year changes.
Disaggregation	***Poor.*** The indicator is derived from the System of National Accounts and is thus an aggregate measure only.
Timeliness	***Good.*** The System of National Accounts is updated quarterly.
Data availability	***Good.*** The indicator can be obtained from the System of National Accounts.

Indicator	Ratio of ecological footprint to biocapacity
Definition	The ratio of ecological footprint (the ecological assets that New Zealand requires to produce the natural resources it consumes) to the nation's biocapacity (which represents the productivity of its ecological assets).
Relevance	This indicator captures the degree to which New Zealand uses a greater or lesser share of the planet's resources than can be accommodated by New Zealand's land area and ecosystems. Any excess footprint indicates a negative spill-over from New Zealand to the rest of the world in terms of the burden placed on the planet's ecosystem services.
Comparability	***Fair.*** While the methodology for both calculating the ecological footprint and biocapacity have significant limitations, standardised measures are available for the majority of the world's countries.
Sensitivity	***Poor.*** Changes to New Zealand's use of a number of important resources are not well reflected in measures of the ecological footprint. Further development of the methodology would be needed for it to be of sufficient quality to warrant use in the *Living Standards Dashboard*.
Disaggregation	***Poor.*** The ecological footprint is an aggregate measure that allows relatively little disaggregation.
Timeliness	***Poor.*** The most recent available data are for 2013.
Data availability	***Fair.*** Data are available from the Global Footprint Network, an international non-profit organisation.