



# **TE AU RANGAHAU**

Māori Business Research

## **Understanding the economic value of Māori taonga: a scoping study**

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## Abstract

In te ao Māori, taonga include a wide range of resources such as the natural environment, indigenous fauna and flora, toi Māori, mātauranga Māori and emerging Māori innovative products and processes. Most of these resources cannot be easily valued from an economics perspective. This results in their roles often being overlooked in economic decision making. This report sets out a rationale and framework for measuring the economic value of taonga, particularly in the context of estimating the impact of implementing the Ko Aotearoa Tēnei recommendations.

**JEL codes:** K00, Q50, Z11

**Keywords:** Māori, Ko Aotearoa Tēnei recommendations, Wai 262, theory of value, total economic value, non-market valuations

# Abbreviations

DOC	Department of Conservation
DR	Discount rate
GDP	Gross domestic product
IC	Indifference curve
IP	Intellectual property
IPA	Indigenous protected area
IPR	Intellectual property right
ISW	Intergenerational social welfare
PPF	Production possibility frontier
PV	Present value
TEV	Total economic value
Wai 262	Waitangi Tribunal inquiry into Māori culture and identity
WTA	Willingness to accept
WTP	Willingness to pay

# Glossary

Disclaimer: These interpretations are used for the purpose of the report and may not be the universal definitions. Te reo Māori is a metaphorical language which means not all words cannot be succinctly translated to English.

Hapū	Kinship group or subtribe, “primary political unit in traditional Māori society” (Moorfield, 2022)
Hau	A “spiritual force impelling ... an ethic of reciprocity” (Nicolson, 2019, p.138)
Iwi	Large Māori kinship group, or tribe
Kaitiaki	“Custodian, guardian, caregiver, steward” (Moorfield, 2022) especially in relation to the environment
Kaitiakitanga	Custodianship, guardianship, stewardship (Moorfield, 2022) the practice of being in a reciprocal relationship with the environment
Kotahitanga	“Unity, togetherness, solidarity, collective action” (Moorfield, 2022), collectively
Mahinga kai	“garden, cultivation, food-gathering place” (Moorfield, 2022)
Mana	“a cosmic power, pertaining to authority and dignity” (Rout et al. 2021)
Manaakitanga	The process of showing “hospitality, kindness, generosity and support for others” (Moorfield, 2022)
Mātauranga Māori	Māori knowledge, and the Māori way of knowing
Mauri	“Life principle or life force” (Moorfield, 2022)
Mokopuna	Descendants
Rongoā Māori	Māori medicine
Taonga	Commonly translated as treasured property or goods, expanded upon in report below
Tāngata whenua	“The people of the land”. Refers to Māori people as a whole
Tauutuutu	Reciprocity
Te ao Māori	The Māori world, or the Māori world view
Te kore	Nothingness, the void which existed before the creation of the universe
Te reo Māori	The Māori language
Te tikanga kanorau	Diverse ways
Tikanga Māori	“The Māori customary system of values and practices” (Moorfield, 2022)
Tika	Correct/true/right. Often used in the context of being in alignment with Māori values and traditions.
Tūpuna	Ancestors
Utu	“The practice of reciprocal relations” Mika et al. (2022, p.447)
Wairuatanga	Spirituality
Whakapapa	Commonly translated as genealogy but denotes the relationships and connections between all living things since the beginning of time
Whānau	Extended family
Whanaungatanga	To be in relation, kinship

# Executive summary

## Background

Taonga are a major focus of the Ko Aotearoa Tēnei report on the Wai 262 treaty claim, a Waitangi Tribunal claim lodged in 1991 relating to Aotearoa New Zealand's law and policy affecting Māori culture and identity. In the Ko Aotearoa Tēnei report, the Waitangi Tribunal (2011a, p.749) defines taonga as “a treasured possession, including property, resources, and abstract concepts such as language, cultural knowledge and relationships” and makes a number of recommendations in relation to taonga including that Māori relationships to taonga should be recognised in law and policy. This report sets out a framework for measuring taonga, specifically in the context of estimating the impact of implementing the Ko Aotearoa Tēnei recommendations.

## Ko Aotearoa Tēnei recommendations

The Ko Aotearoa Tēnei recommendations cover a wide range of issues, which can be grouped into eight categories:

- taonga works and intellectual property (IP)
- genetic and biological resources of taonga species
- the environment
- taonga and the conservation estate
- te reo Māori
- Crown control of mātauranga Māori
- rongoā Māori (traditional Māori medicine/healing)
- international instruments relevant to the management, use and protection of taonga.

In general, the recommendations seek to better enable Māori to discharge their cultural obligations as kaitiaki (guardians) of the relevant taonga. They also afford greater recognition and acknowledgement of matters important to Māori in decision-making affecting the relevant taonga.

## Potential economic impact of Ko Aotearoa Tēnei recommendations

Implementing the Ko Aotearoa Tēnei recommendations is a type of institutional change that could give rise to two broad types of economic impact: wellbeing and productivity gains. The wellbeing gains to Māori can be achieved by using, managing and protecting taonga more in accordance with the preferences of Māori<sup>1</sup>. The potential productivity gains come from a variety of sources. These include making it 'safer' for Māori and others to include taonga in the production of more, or better products or services. By 'safer' for Māori it is meant with less risk of appropriation by third parties, or misuse or abuse. For non-Māori it means that by better enabling Māori to control how taonga are included, non-Māori who use taonga can be offered greater certainty that they can do so legitimately, E.g., with clearer (property) rights, control/use rights, processes for resolving disputes over rights. Relatedly, reducing the transaction costs Māori incur in exercising collective choices over the use of shared taonga, and non-Māori incur in securing taonga use rights, are also sources of gain.

### **Māori conceptualisations of value**

The literature on Māori conceptualisations of value has four main themes: whakapapa, taonga, the economy of mana, and manahau. Whakapapa denotes a timeline of relationships and also acts as a knowledge framework that holds information about the intimate and reciprocal relations and connections between all living things, not only between humans but also between humans and non-humans. Taonga represent beings, possessions, resources and concepts that are highly valued. The third theme is 'the economy of mana', which represents a Māori way of economy, an 'economy of affection', a mode of business that prioritises four dimensions of wellbeing (spiritual, cultural, environmental, and economic). Lastly, manahau highlights the importance of the enhancement and reciprocity of mana within exchanges in the Māori economy.

### **Economic valuation: theories and methods**

In economics, value is derived from things that give people utility. The total economic value (TEV) framework recognises the fact that many goods have value beyond their tangible uses. TEV distinguishes two types of value: use and non-use. Use value can

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<sup>1</sup> In this report, we use the term 'Māori preferences' to refer to the economic concept of preferences held individually and collectively by Māori

be disaggregated into direct use value, indirect use value and option value. Non-use value can be disaggregated into value for others and existence value.

Utility depends on personal preferences (i.e. different people might value the same thing differently) and utility cannot be directly measured. Nevertheless, the utilitarian approach seeks to convert all benefits into monetary terms so as to provide a common metric in which to express the benefits of a wide variety of resources and to facilitate comparison with other activities that also contribute to wellbeing.

There are four approaches to economic valuation:

- a) determining the value of the total flow of benefits from an asset.
- b) determining the net benefits of interventions that alter the asset's conditions.
- c) examining how the costs and benefits of an asset are distributed; and
- d) identifying potential financing sources for conservation.

Since most of TEV components are not directly observed in the market, they rely on non-market methods for valuation. Common non-market valuation methods can be divided into three groups: revealed preference methods, stated preference methods, and the subjective wellbeing method, each of which has its own strengths and limitations.

### **Bridging modern economics and te ao Māori**

Applying modern economic techniques to measuring indigenous values is not always straightforward and some scholars have questioned the usefulness or validity of applying economic valuation techniques to indigenous values. However, these techniques are capable of incorporating Māori ideas about what constitutes economy and value. Should these techniques be adjusted to incorporate kaupapa Māori principles, they will be better suited to provide an economic valuation of taonga.

### **Knowledge gaps**

Very few non-market valuations in Aotearoa have focussed on sites or issues of significance to tāngata whenua. Given the existing research gaps, the empirical literature on the economic value of taonga could be extended in several ways. First, future research in the area should attempt to examine whether Māori value certain outcomes differently compared to other people. Second, more research is required for sites or issues of significance to tāngata whenua. Third, more economic valuations

should be conducted in areas that currently have little or no research, such as toi Māori, mātauranga Māori and emerging Māori innovative products and processes. Furthermore, future valuations of taonga should address issues of national scale and significance and where possible estimating different types of value separately. Such research extensions will not only contribute to the evidence base for Aotearoa policymaking, but also enrich the growing international literature on the economic value of indigenous resources.

### **Recommended research**

Various economic frameworks can be used to value the implementation of the Ko Aotearoa Tēnei recommendations. Research is needed to accurately define and estimate economic impact to help guide decision makers and planners into achieving desired socio-economic outcomes. We recommend a three-stage research programme. Stage 1 (foundational research) will conduct dialogue with kaupapa Māori research. Subject to outcome of the dialogue, technology development and refinement will be finalised, and selected pilot research will be carried out. The second stage (exploratory studies) will comprise case studies on Ko Aotearoa Tēnei recommendations and based on government and stakeholder priorities and resourcing. Stage 3 (follow-up studies) will be devoted to more nuanced understanding of the impact of the recommendations. Recommended research will provide a direct contribution of enabling understanding and valuing of Ko Aotearoa Tēnei recommendations. It will also create a number of spillover effects including knowledge creation, capability building and better decision making.

# 1 Introduction

Taonga are a major topic in the Ko Aotearoa Tēnei report on the Wai 262 treaty claim, a Waitangi Tribunal claim lodged in 1991 relating to Aotearoa New Zealand's law and policy affecting Māori culture and identity. In the report, the Waitangi Tribunal (2011a, p.749) defines taonga as “a treasured possession, including property, resources, and abstract concepts such as language, cultural knowledge and relationships” and makes a number of recommendations in relation to taonga including that Māori relationships to taonga should be recognised in law and policy.

This report sets out a framework for measuring taonga, specifically in the context of estimating the impact of implementing the Ko Aotearoa Tēnei recommendations. Mātauranga Māori has developed over centuries through the relationship with the environment and all that exists within it, including people. It is something that is unique to Aotearoa and a taonga to Māori. Within the environment is a wide range of endemic flora and fauna that, given their relationship with Māori, are taonga. This uniqueness, coupled with Aotearoa's geographical isolation, provides the opportunity to create economic benefits globally with goods and services through the use of mātauranga Māori and other taonga. More effective protection, preservation and tika promotion of mātauranga Māori also has significant cultural, social, and environmental benefits that can be realised, primarily for Māori but also for Aotearoa as part of our national identity.

Aotearoa's political and economic institutions often fall short in presenting a te ao Māori tirohanga (Māori outlook). Hyslop et al., (2022), argue this is due to existing institutions often being conceived from a Eurocentric perspective which did not consider mātauranga Māori in their design. One consequence of this is a lack of consideration, monitoring and reporting of Māori values which has in turn resulted in a lack of data and economic techniques which makes it challenging to measure the economic impacts of implementing the Ko Aotearoa Tēnei recommendations. This in turn limits the capacity for Māori to carry out their duty as kaitiaki and better protect their taonga.

To bridge this knowledge gap, it may be possible to look to modern economic techniques which can account for diverse perspectives of value that go beyond the financial. However, the challenge will be to synthesise and reconcile these two

approaches, so that modern economic techniques, if they are used, are clearly founded in te ao Maori.

Novel economic methods that are capable of adopting a te ao Māori tirohanga to a certain extent are required if Aotearoa is to fully understand the economic impacts of implementing the Ko Aotearoa Tēnei recommendations. The purpose of this report therefore is to start exploring some of these modern economic methods and bridge the gap between modern economics and te ao Māori so we can start to think about the economic impacts of implementing such recommendations.

This report points to a number of significant economic possibilities to do with affording Māori better protection of taonga. Our framework illustrates that the Ko Aotearoa Tēnei recommendations seek to enable Māori to discharge their cultural obligations as kaitiaki/guardians and afford greater recognition and acknowledgement of matters important to Māori decision making affecting their taonga. We expect that implementing the Ko Aotearoa Tēnei recommendations could bring two broad types of economic impact: one in the form of wellbeing which comes from Māori being able to use, manage and protect taonga in their own way, and another in the form of productivity gains which come from a variety of sources.

We find that six main kaupapa Māori themes drawn from the literature on Māori conceptualisations of value can be applied to modern economic techniques to make them better suited for valuing Māori entities, such as taonga. These themes are: Intrinsic value, Whakapapa, Whānau, Te tikanga kanorau, Kotahitanga, and Tauutuutu.

We find that there is a significant literature gap when it comes to non-market valuation focused on Māori entities in Aotearoa. This literature can be expanded in several ways including research examining whether Māori value certain outcomes differently to others and that more economic valuations should be conducted in areas that currently have little to no research such as toi Māori, mātauranga and emerging Māori innovation products and processes. Drawing on previous main findings the discussion explores how each of the main classes of the Ko Aotearoa Tēnei recommendations might be valued and finds that non-market valuation and techniques for valuing IP and IPR commercialisation among other techniques will be useful in this area.

The rest of the report proceeds as follows. Section 2 provides an overview of the Ko Aotearoa Tēnei recommendations and uses some simple economic tools to examine the economic impacts of affording Māori better protection of taonga in Aotearoa. Section 3 summarises conceptualisations of a Māori theory of value before discussing some of the opportunities and challenges around bridging te ao Māori and modern economics. Section 4 presents modern economic valuation theories and methods and reviews how these approaches have been and/or can be used to value taonga. We then bring each section together in a cohesive discussion, starting by looking at how specific types of changes associated with better recognition and protection of taonga discussed throughout the report might be valued. The report ends by recommending a programme of research aimed towards estimating the economic impact of implementing the Ko Aotearoa Tēnei recommendations.

## 2 The Ko Aotearoa Tēnei recommendations as a case study on the economic impacts of better protecting Māori taonga

### 2.1 Introduction

This section sets the stage for the study by providing a more focused discussion of the possible economic impacts of better protecting taonga, taking as a starting point Ko Aotearoa Tēnei recommendations (the Recommendations) released in 2011 (Waitangi Tribunal, 2011), hereafter ‘Ko Aotearoa Tēnei report’). Despite covering a very wide range of taonga, it provides a useful starting point for a more focused analysis. It is important to recognise that much has changed in the decade since the Ko Aotearoa Tēnei report publication. Hence in Section 5.3 we will also discuss more contemporary issues arising with the digital economy, such as the economic impacts of providing for Māori data sovereignty.

This section starts with a brief overview and economic characterisation of the Ko Aotearoa Tēnei recommendations. It then sets out a framework for assessing those impacts. Finally, it outlines the requirements of any approaches for measuring the economic impacts of the Recommendations, as a prelude to the discussions in later sections.

By way of summary:

- The Ko Aotearoa Tēnei recommendations include fundamental changes to key institutions governing the use, management and protection of taonga.
- At their heart the Recommendations do two essential things:
  - They seek to ensure that public and private decision-making regarding taonga better aligns with Māori cultural values, directly improving the wellbeing of Māori and others living in Aotearoa who have similar values; and

- They add to Aotearoa's productive capabilities, by enabling mātauranga Māori<sup>2</sup> and other taonga to be used to their full potential, without fear of misuse or misappropriation.
- Adoption and implementation of these Recommendations is likely to have a significant impact on the Aotearoa economy, including shifting the balance of benefit as well as expanding potential benefits for Aotearoa as a whole.
- Research is needed to accurately define and estimate economic impact to help guide decision makers and planners into achieving desired socio-economic outcomes.

## 2.2 Overview of Ko Aotearoa Tēnei recommendations

The Ko Aotearoa Tēnei recommendations cover the following eight wide-ranging key headings:

- Taonga works and intellectual property (IP);
- Genetic and biological resources of taonga species;
- The environment;
- Taonga and the Conservation Estate;
- Te reo Māori;
- Crown control of mātauranga Māori;
- Rongoā Māori (traditional Māori medicine/healing); and
- International instruments relevant to the management, use and protection of taonga.

Specific recommendations are made in respect of each, but those recommendations can be categorised along a number of broad lines. In general terms, the Recommendations seek to better enable Māori to discharge their cultural obligations as kaitiaki (guardians) of the relevant taonga. They also afford greater recognition and acknowledgement of matters important to Māori – and hence of their mana – in decision-making affecting the relevant taonga (ensuring that decision-making better aligns with Māori values).

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<sup>2</sup> The Waitangi Tribunal (2011b, p. 22) determined that 'mātauranga' encompasses not only *what* is known but also *how* it is known, therefore mātauranga Māori is both Māori knowledge and a Māori way of knowing.

In some specific cases, the Recommendations involve explicitly creating new property/use rights (including a right to remedies for breaches of Māori rights), and more clearly defining/clarifying intellectual property rights (IPRs). They also include reducing transaction costs for enforcing existing rights (including through resourcing for capacity building and process participation, and statutory recognition of certain Treaty and other rights). Preferential Māori access/use rights in relation to certain taonga is also proposed.

Relatedly, in some instances, mechanisms to adjudicate disputes in relation to Māori rights are proposed. So too are mechanisms to avoid disputes, e.g., through information provision, promulgation of principles, registers of interests, shifting public sector culture. In other cases, the Recommendations involve providing certain Māori with rights to either be:

- Informed/consulted about the use, management, and protection of specific taonga; or
- Able to control (i.e., via consent/veto rights) such things, e.g., prohibiting offensive/derogatory public uses, or uses disturbing kaitiaki relationships with taonga, etc.

More generally, the Ko Aotearoa Tēnei recommendations include affording Māori with a 'seat at the table' in international forums where decisions are taken which affect Māori interests in taonga. This could be especially important in exporting institutional changes in Aotearoa to benefit other indigenous peoples, and also to avoid international 'leakage' (i.e., imposing restrictions on how those within Aotearoa are able to use taonga, with the result that only those outside Aotearoa who are not subject to those restrictions use it instead).

In some instances, the Recommendations propose that Māori enjoy either delegated control, or joint decision-making or joint management rights with relevant Crown partners (albeit not always with equal power). This is sometimes with electoral colleges proposed to help to coalesce Māori interests (i.e., quicker, at less cost, and with less dispute).

Creating new special purpose and expert forums/agencies to determine or protect Māori interests in taonga is also proposed, as well as enhancing the powers of existing agencies (e.g., Te Taura Whiri, the Māori Language Commission). Dedicated funding

is proposed for capacity building, research, taonga preservation, finding modern applications for traditional knowledge ('commercialisation', and non-commercial uses), and participation in international forums on matters affecting taonga interests (including potential direct negotiations).

## 2.3 Potential economic impact of Ko Aotearoa Tēnei recommendations

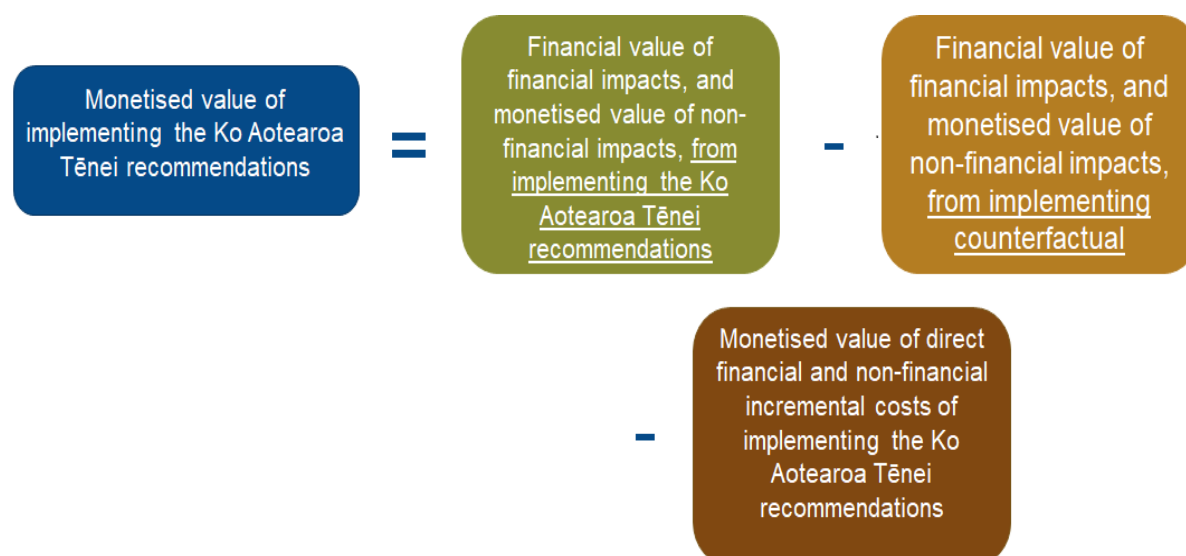
### Economic impacts in general terms

In general terms, the economic impact of implementing the Ko Aotearoa Tēnei recommendations can be measured as the difference between the net benefits achieved:

- With the Recommendations implemented, net of implementation costs; and
- Through counterfactual 'business as usual' institutions regarding taonga use, management and protection.

This is illustrated in Figure 1 below.

Figure 1: Economic Impact of Implementing Ko Aotearoa Tēnei Recommendations



Source: The authors

In any valuation exercise it is critical to define the ‘commodity’ that is being valued. The Ko Aotearoa Tēnei recommendations typically do not relate to readily identifiable ‘commodities’ for valuation, not least because they were not directed at valuation questions per se. Hence the Ko Aotearoa Tēnei recommendations need to be translated into terms amenable to economic valuation. This requires ‘anchoring’ the Ko Aotearoa Tēnei recommendations in terms familiar to economists, which can then be valued using existing economic valuation tools. The following discussion provides further framing, distilling the Recommendations into two principal sources of value.

### **Wellbeing gains and productivity gains – more than just GDP impacts**

A comprehensive assessment of the economic impact of implementing the Recommendations requires looking well beyond – though definitely not neglecting – their profitability, employment and other GDP impacts. Indeed, implementing the Ko Aotearoa Tēnei recommendations to give greater priority to Māori preferences<sup>3</sup> regarding the use, management and protection of taonga has the potential to directly increase Māori wellbeing. This is because doing so helps Māori to better discharge cultural obligations of kaitiakitanga towards taonga, both enhancing Māori wellbeing in a positive sense, and relieving wellbeing losses due to not being able to do so absent the Recommendations being implemented.<sup>4</sup>

If implementing the Recommendations also sufficiently increases Aotearoa’s productivity, that could enable wellbeing gains for non-Māori as well. This is because productivity gains increase the resources available for all people living in Aotearoa to achieve a higher level of wellbeing.

In theory, even if those productivity gains are not sufficient to ensure wellbeing gains for all people living in Aotearoa, implementing the Ko Aotearoa Tēnei recommendations could still be justified if the wellbeing gains to Māori outweigh declines to non-Māori. However, research is needed to understand these trade-offs, and to maximise any benefits arising from implementation.

More specifically, implementing the Ko Aotearoa Tēnei recommendations gives rise to two principal sources of value:

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<sup>3</sup> In this report, we use the term ‘Māori preferences’ to refer to the economic concept of preferences held individually or collectively by Māori.

<sup>4</sup> The wellbeing benefits of being true to one’s ‘identity’, a related idea, is discussed in Akerlof and Kranton (2005).

- **Demand-side sources of value** refer to the potential for directly enhancing the wellbeing of Māori, and possibly also for other people living in Aotearoa, by better aligning decision-making in relation to the relevant taonga with Māori preferences for how those taonga should be managed, used and protected.
- **Supply-side sources of value** refer to the potential for enhancing the productive output of Māori, and possibly all people living in Aotearoa, by both better protecting innovative uses of the relevant taonga and enhancing the range of technologies that can be deployed to produce both healthier and more sustainable taonga, and other goods and services as well. This then enables indirect increases in Māori and non-Māori wellbeing.

The former represents ‘Māori getting more of what they like’ through Māori preferences being given greater priority in decision-making, while the latter represents ‘everyone possibly being able to get more of what they like’ through increased productivity.

### **Using standard economic tools to characterise supply-side impacts**

Standard economic tools can be used to depict these demand- and supply-side effects. The first such tool, representing supply-side effects, is the ‘production possibility frontier’ (PPF), as depicted in Figure 2. A production possibility frontier shows all feasible combinations of outputs that can be achieved in an economy with given production technology and resources. In this case, it depicts all feasible combinations of taonga outputs and other kinds of outputs that can be achieved in the Aotearoa economy, given the technologies available for producing either of those two types of output. In this stylised example, taonga outputs include things like a thriving Māori language, or healthy native flora and fauna. Other outputs refer to things that currently have no taonga input into production such as digital services or some manufacturing<sup>5</sup>. Implicit in Figure 2 is the idea that there may be trade-offs (i.e., movements along the curve) in achieving each of these different types of outputs. At the simplest level this could arise due to how productive resources are allocated to produce each type of output.

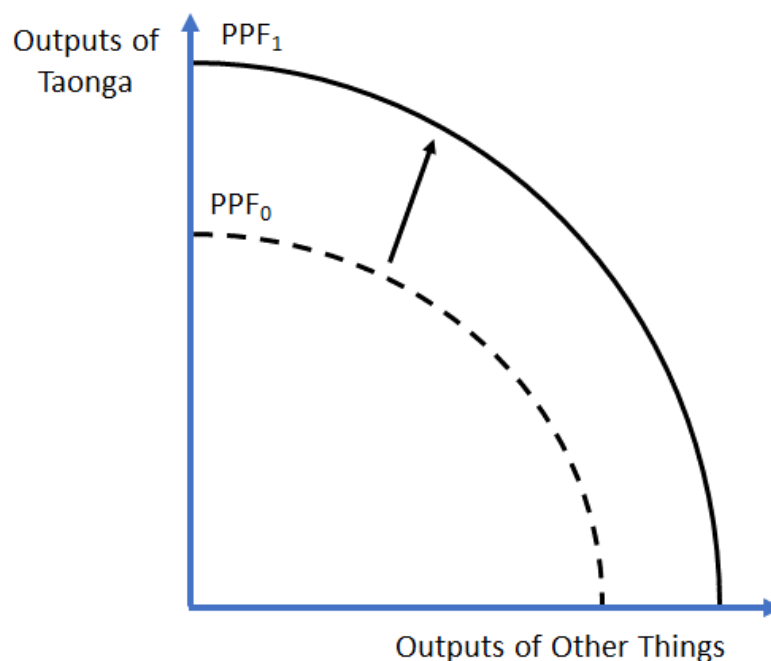
Figure 2 also shows that the PPF curve can shift if the set of production technologies and resources available to Aotearoa changes. If those technologies improve, the

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<sup>5</sup> We acknowledge that almost if not all activity in Aotearoa will include taonga in some part of production but simplify for demonstration purposes.

country can produce more of one output without having to reduce how much it produces of the other, all other things (e.g. availability of resources) remaining equal. The inner frontier ( $PPF_0$ ) represents the possibilities for producing taonga and other outputs with a given set of production technologies and resources. The outer frontier ( $PPF_1$ ) represents how more of both of each type of output might be produced with access to better production technologies. The way these particular curves have been drawn suggests that the production technologies enabling  $PPF_1$  are relatively better at expanding taonga outputs than they are at expanding other outputs relative to  $PPF_0$  (since its vertical intercept moves outwards more than its horizontal intercept does), but other possibilities arise.

Figure 2: Production Possibility Frontier Between Taonga and Other Outputs



Source: The authors

### Using standard economic tools to characterise demand-side impacts

Depicting the demand-side of the Ko Aotearoa Tēnei recommendations requires a different economic tool – the so-called ‘indifference curve’ (IC), as depicted in Figure 3. An IC represents preferences, depicting all possible combinations of goods or services providing a particular individual or collective decision-maker with a given level

of 'wellbeing'.<sup>6</sup> In this case, it depicts all possible combinations of taonga outputs and other outputs that provide someone a given level of wellbeing. A higher IC represents combinations of taonga and other outputs delivering a higher level of wellbeing. Different people or collectives with different preferences will have different ICs, hence Māori individuals or collectives might have different ICs to non-Māori ones (and different Māori individuals or collectives might also have different preferences to those of other Māori individuals or collectives).

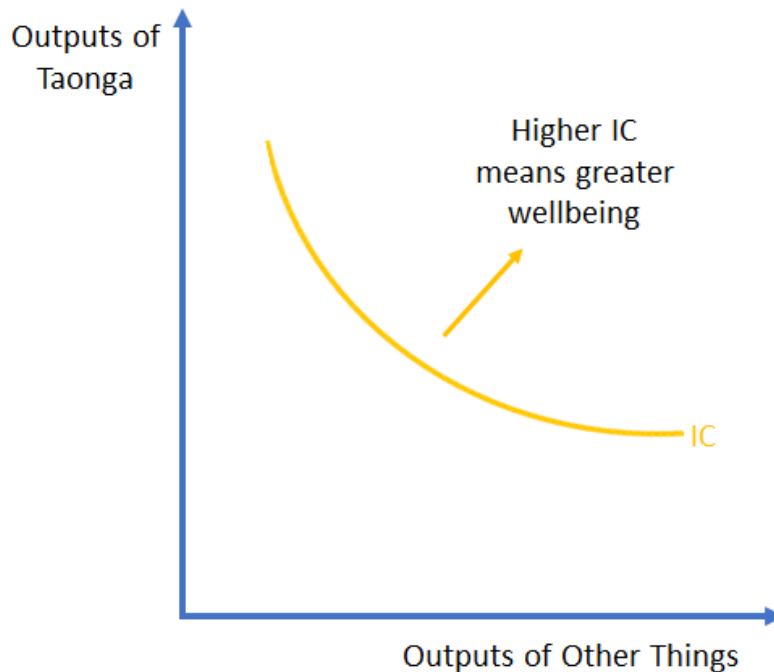
Implicit in ICs is the idea that people, individually or collectively, make trade-offs between taonga and other goods and services. In other words, a lower level of taonga output might be acceptable provided a sufficient amount of other goods and services can be enjoyed, and vice versa. Conversely, for example, current generations might be prepared to enjoy fewer goods and services now if that means they can provide a healthier natural environment (i.e., an environmental taonga) to future generations.

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<sup>6</sup> Economists would more commonly say 'utility', see also Section 4.1. Economic sub-disciplines like public economics and social choice theory routinely consider how collectives make decisions, and how collectives' wellbeing (i.e. utility) can be represented and measured. This means that while collective decision-making, or decisions being made in the best interests of the collective (rather than of individuals), might be particularly relevant to Māori, this is not unique to Māori, and well-established economic tools exist to deal with such issues. An obvious example of such tools being applied is climate change policy, where current generations make decisions about how much climate change to mitigate, trading off their own wellbeing against that of future generations when doing so.

Figure 3: Indifference Curve Showing Different Combinations of Taonga Outputs and Other Outputs Delivering a Given Person a Particular Level of Wellbeing

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Source: The authors

### **Using these standard economic tools to represent the economic impacts of implementing the Ko Aotearoa Tēnei recommendations**

Having described these tools, we can make a start on examining the impacts of implementing the Ko Aotearoa Tēnei recommendations. We consider two scenarios:

- Scenario 1 (demand-side effects only): In this scenario we suppose that implementing the Recommendations does not improve Aotearoa's production technologies (i.e., the country's PPF remains unchanged), and only affects the ICs that can be reached by Māori and other people living in Aotearoa (supposing, for illustrative purposes, that we can represent collective Māori and non-Māori preferences in respective indifference curves);
- Scenario 2 (both supply-side and demand-side effects): In this scenario we allow for the possibility that implementing the Recommendations also expands the range of production technologies available to Aotearoa, and hence shifts the national PPF outward (enabling higher ICs – or higher levels of wellbeing – to be reached, thus indirectly increasing wellbeing).

Panel (a) of Figure 4 depicts our starting position for Scenario 1. The production possibilities for taonga and other outputs are represented by PPF. Supposing that existing rules for how Aotearoa's resources are used, managed and protected reflect the preferences of non-Māori rather than those of Māori, the level of taonga and other outputs enjoyed by the country are given by point A. Further supposing that Māori and non-Māori have different preferences for taonga and other outputs (and hence different ICs), at point A the highest level of wellbeing enjoyed by non-Māori is given by their Non-Māori  $IC_0$ , while the highest level of wellbeing achievable by Māori is given by Māori  $IC_0$ .

Panel (b) of Figure 4 depicts what changes if we implement the Ko Aotearoa Tēnei recommendations, supposing they affect only the level of wellbeing that can be achieved by Māori and non-Māori, but not the production possibilities for taonga and other outputs (i.e. our assumed Scenario 1). In this case:

- Māori enjoy increased wellbeing by ending up on a higher IC – i.e., Māori  $IC_1$  is higher than Māori  $IC_0$ ;
- But non-Māori end up with lower wellbeing – i.e., Non-Māori  $IC_1$  is lower than Non-Māori  $IC_0$ .

In effect, in this scenario, implementing the Recommendations simply reallocates wellbeing in favour of Māori, by ensuring that the rules for how Aotearoa's resources are used, managed and protected better reflect Māori preferences than they have in the past. Aotearoa produces more taonga outputs than previously, but fewer non-taonga outputs. This implies a sacrifice of non-Māori wellbeing to enable higher Māori wellbeing. However, Aotearoa's overall welfare might rise or fall, depending on how Māori wellbeing is weighted relative to non-Māori wellbeing (which might differ, for example, due to differences in Māori and non-Māori incomes and other factors).<sup>7</sup>

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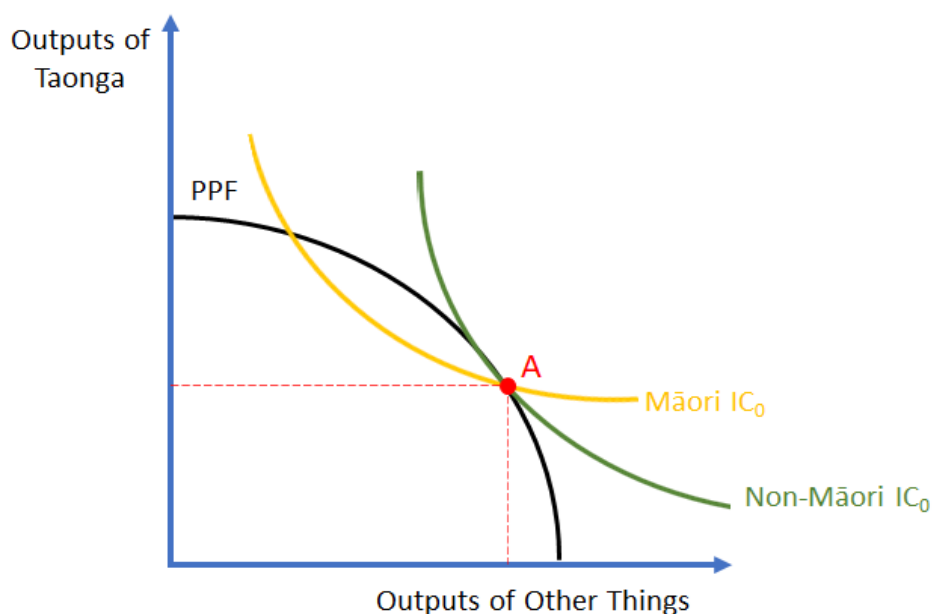
<sup>7</sup> Relatedly, to the extent that better protecting Māori taonga enables increased exports of Māori culture, this might shift the preference of overseas consumers in favour of Aotearoa's goods and services exports – increasing demand for Aotearoa products, and enabling higher returns to be realised by local goods and services producers. Exports of Korean culture have been associated with gains in other Korean exports, tourism, and foreign student flows (e.g. see Lien et al., 2022).

Scenario 2 further assumes that implementing the Ko Aotearoa Tēnei recommendations enhances Aotearoa's ability to produce taonga and other outputs. This could be the case, for example, if better protecting Māori IP in natural flora and fauna and/or mātauranga Māori facilitates the commercialisation of new bioactives – e.g., with medical or other applications. Sources of such gains are discussed more below.

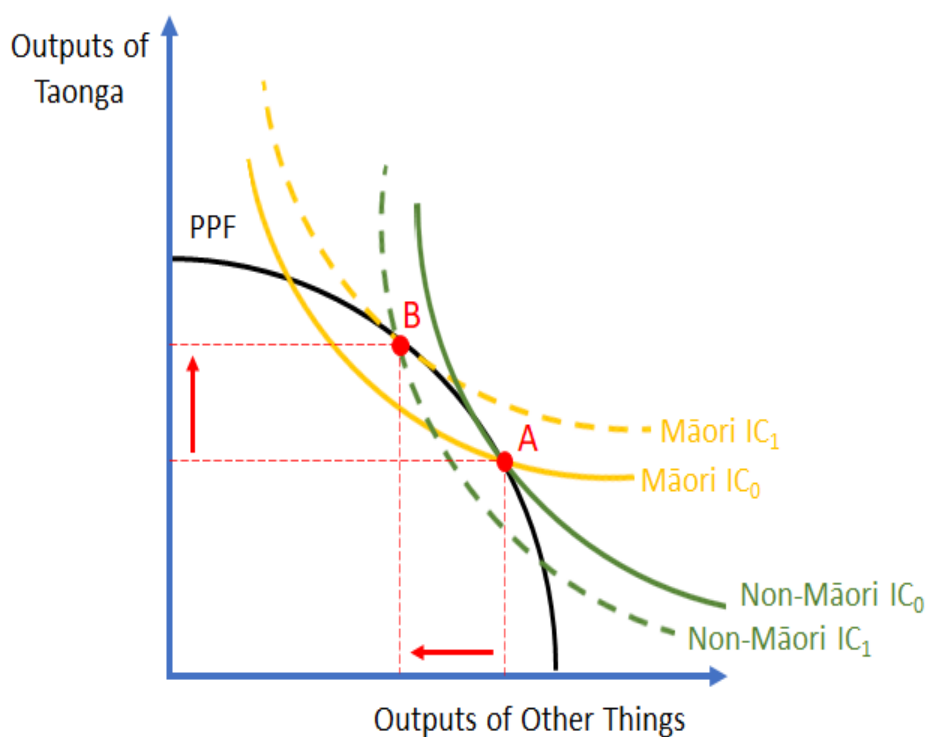
Figure 4: Implementation Scenario 1

*Scenario 1 – Implementing the Ko Aotearoa Tēnei recommendations affects Māori and Non-Māori wellbeing, but not production possibilities for taonga and other things (causing a shift from point A to point B)*

Panel (a) – Position before implementing Ko Aotearoa Tēnei recommendations



Panel (b) – Position after implementing Ko Aotearoa Tēnei recommendations

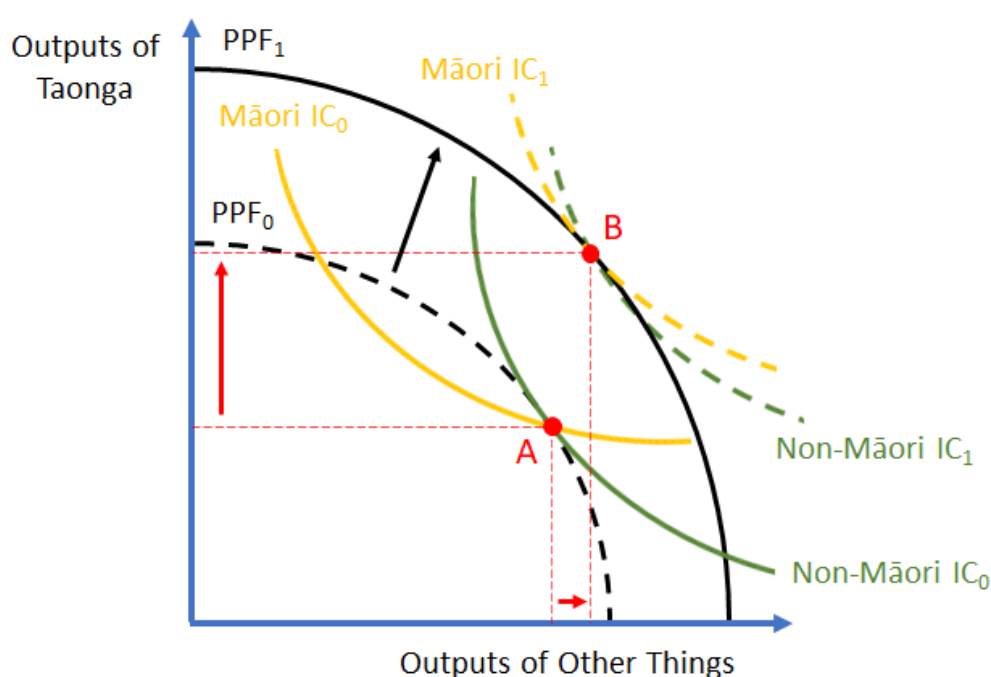


Source: The authors

Figure 5 illustrates the impacts of allowing for such improvements in productive possibilities. Again, our starting point is point A: prior to implementing the Recommendations, Māori achieve the level of wellbeing afforded by Māori  $IC_0$ , while non-Māori enjoy that afforded by Non-Māori  $IC_0$ .

Figure 5: Implementation Scenario 2

*Scenario 2 – Implementing the Ko Aotearoa Tēnei recommendations affects Māori and Non-Māori Wellbeing, but also increases production possibilities for taonga and other things (causing a shift from point A to point B)*



Source: The authors

Since we now assume that implementing the Recommendations improves Aotearoa's productive possibilities, this means a higher production possibility frontier can be achieved. This is depicted by a shift from  $PPF_0$  to  $PPF_1$  in Figure 5. The new equilibrium is point B, where both Māori and non-Māori achieve higher levels of wellbeing (i.e.,  $IC_1$  is higher than  $IC_0$  for both groups in this case). In short, in Scenario 2, both Māori and non-Māori can be unequivocally better off from implementing the Ko Aotearoa Tēnei recommendations – with both groups enjoying increased taonga and other outputs. Increased productive possibilities through implementing the

Recommendations can create a ‘win-win’ in which higher wellbeing is enjoyed by all. Other scenarios are possible (e.g., Non-Māori IC increases due to better kaitiaki of taonga), but this illustration highlights the key effects.

**Box 1 – How material might productivity gains be?**

Improving how Māori taonga are recognised and protected increases the prospect of traditional knowledge being able to be more widely used and enjoyed. Examples of such knowledge include the use of native flora and fauna for traditional medicine. Aotearoa’s experience with the significant repricing of mānuka honey after research revealed its medicinal properties to non-traditional audiences demonstrates just how valuable such recognition and protection might be. In fact, the value potential could be even greater, since in the case of mānuka honey the knowledge of its potential was not protected, and producers beyond Aotearoa have been able to exploit its potential without recourse to the traditional holders of that knowledge.

This illustrates that even if better recognition and protection of Māori taonga results in just one additional bioactive ingredient like that in mānuka honey being able to be shared with the world, with the value generated by this better captured by the kaitiaki of that taonga, this could generate significant economic benefits.

Such better recognition and protection can be considered an improvement in ‘economic institutions’ (e.g. like improving other protections for intellectual property rights). In Section 5.4, research on the economic importance of improved institutions is used to provide a crude estimate of the potential economic gains, putting them in the order of \$34m to \$340m each year, for an all-up value impact of almost \$700m to \$7 billion.

In some instances, implementing the Ko Aotearoa Tēnei recommendations might reduce overall production possibilities (e.g., reduce the ability to produce outputs using taonga by reducing the resources available for production of non-taonga outputs) despite better aligning taonga decision-making with Māori preferences. In this case, non-Māori might experience decreased wellbeing due to reduced production possibilities, but overall wellbeing could be increased. For example, stopping inappropriate commercial concessions on Department of Conservation (DOC) land might lead to reduced profits on such concessions and associated indirect declines in wellbeing, but directly improved wellbeing for Māori by better protecting the associated taonga.

Conversely, implementing the Recommendations might enhance production possibilities as in Scenario 2, but not enough for non-Māori to also enjoy higher

wellbeing. However, as for Scenario 1, whether Aotearoa's overall wellbeing rises or falls in this case hinges on whether the gains to Māori are disproportionate relative to the losses to non-Māori (and how the wellbeing of Māori and non-Māori are weighted).

Appendix A translates these graphical illustrations into terms more commonly applied in cost-benefit analyses. Ultimately it is a matter for research and analysis to establish (where possible) precisely which of these scenarios is applicable. Possible research to do so is discussed further in Section 5.

### **Where might Ko Aotearoa Tēnei recommendations implementation productivity gains come from?**

The *wellbeing* gains to Māori of better recognising Māori preferences regarding taonga use, management and protection are relatively direct and clear. By using, managing and protecting taonga more in accordance with Māori preferences, Māori are able to reach a higher IC, as illustrated in Figures 4-5. Section 4 will provide more details on how to value these gains.

The potential *productivity* gains from implementing Ko Aotearoa Tēnei recommendations come from a variety of sources. These include making it 'safer' for Māori and others to use taonga to produce more or better – and more commercially 'differentiated' – products or services (commercially or otherwise). By 'safer' for Māori it is meant with less risk of appropriation by third parties, or misuse or abuse. For non-Māori it means that by better enabling Māori to control how taonga are used, non-Māori who use taonga can be offered greater certainty that they can do so legitimately, etc – e.g. with clearer (property) rights, control/use rights, processes for resolving disputes over rights, etc. Relatedly, reducing the transaction costs Māori incur in exercising collective choices over the use of shared taonga, and non-Māori incur in securing taonga use rights, are also sources of gain.

These gains might be attenuated by international 'leakage' if the Ko Aotearoa Tēnei recommendations are implemented only in Aotearoa, and overseas parties can continue to exploit taonga (while local producers are precluded or hindered from doing

so). Extending the Recommendations globally via international agreements will be key to addressing any such potential ‘leakage’ effects.<sup>8</sup>

Broadly speaking, these sources of gain can be characterised as improvements in ‘economic institutions’. Economics has an established literature on the benefits of things like the rule of law, effective contract enforcement, secure private property rights (collective or individual), judicial independence, etc. One famous contributor to institutional economics, Nobel economist Douglass North, described institutions and their importance as follows (North, 1991, p.97):

Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights). Throughout history, *institutions have been devised by human beings to create order and reduce uncertainty in exchange*. Together with the standard constraints of economics they define the choice set and therefore *determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity*. They evolve incrementally, connecting the past with the present and the future; history in consequence is largely a story of institutional evolution in which the historical performance of economies can only be understood as a part of a sequential story. Institutions provide the incentive structure of an economy; as that structure evolves, it shapes the direction of economic change towards growth, stagnation, or decline. [emphases added]

In this light, it can be seen that the Ko Aotearoa Tēnei recommendations represent changes in institutions – formal or informal – which in turn affect productive possibilities. With this interpretation, it is possible to see how studies on the value of institutional changes are relevant to valuing the productive impacts of the Recommendations.

Māori preferences regarding taonga use, management and protection can also be seen as drivers of changes in productive possibilities from implementing the Ko Aotearoa Tēnei recommendations. The quote from North indicates that ‘sanctions, taboos, customs, traditions, and codes of conduct’ are important components of the suite of institutions governing economic exchange. To the extent that Māori

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<sup>8</sup> For a summary of developments in the international recognition and protection of indigenous knowledge, and better preservation of its value to the traditional holders of such knowledge, see Section 3 of Tuffrey-Huria and Gibson (2020).

preferences regarding taonga use, management and protection reflect ‘sanctions, taboos, customs, traditions, and codes of conduct’, better recognising those preferences amounts to giving those particular institutions greater weight in decision-making regarding taonga, and hence their productive potential (in terms of both commercial and non-commercial outputs). This indicates a potential third pathway through which implementing the Ko Aotearoa Tēnei recommendations can affect productive possibilities, and hence wellbeing indirectly (not just directly).

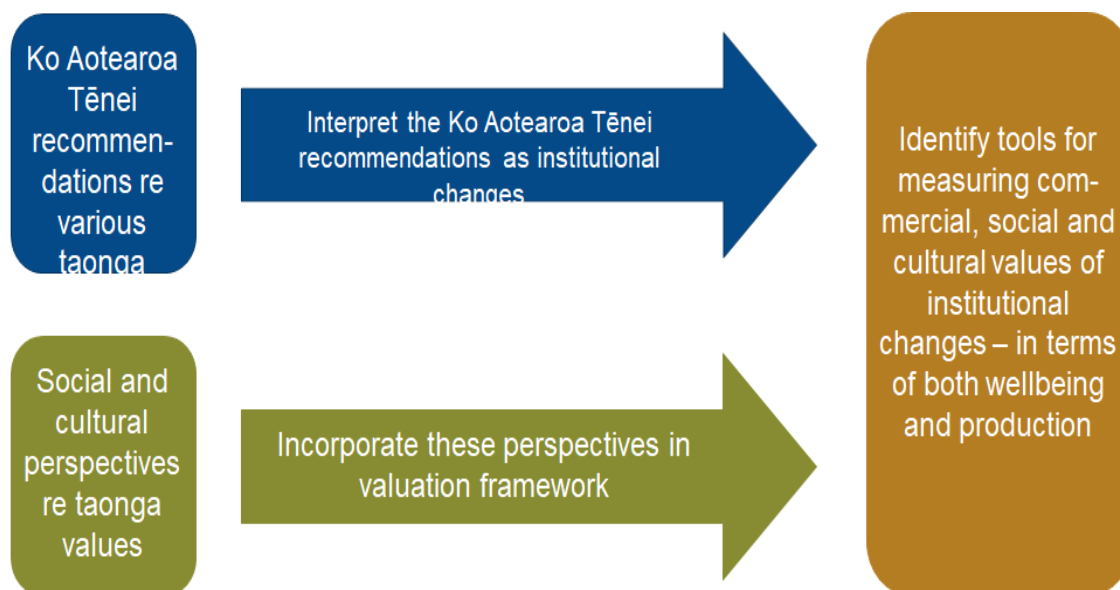
In summary, improving productive possibilities through improved institutions and better access to novel productive technologies, founded in mātauranga Māori or using other taonga, has two effects.

Firstly, it changes how resources are allocated to achieve the values attaching to taonga and other things, shifting in favour of greater Māori wellbeing and possibly also greater Māori profits. As above, even if this came at the cost of non-Māori wellbeing and profits, overall wellbeing could still increase.

Secondly, it possibly also increases non-Māori wellbeing and profits, despite reallocating resources towards things that better reflect Māori preferences, provided the improved productive possibilities are sufficiently great.

Figure 6 captures how both changing productive possibilities through institutional changes, and better reflection of Māori preferences regarding the use, management and protection of taonga, might begin to be valued.

Figure 6: From Ko Aotearoa Tēnei Recommendations to Comprehensive Values



Source: The authors

### **A closer look at economics literature on the impacts of changing institutions with cultural dimensions**

Looking more deeply at the possible value that can be achieved by changing institutions with cultural dimensions, a range of economics literatures are relevant. These include:

- Impact of culture on economic outcomes: e.g., Guiso et al. (2006), Tabellini (2010), Maridal (2013), Lopez-Claros and Perotti (2014), Kapás (2017), and at organisational level (e.g., Kreps (1996), Crémer (1993));
- Importance of good institutions and secure property rights in supporting investment, and economic development and performance: e.g., Besley (1995), Knack and Keefer (1995), Hall and Jones (1999), Acemoglu et al. (2001), Rodrik (2004), Besley and Ghatak (2010), Acemoglu and Robinson (2012), Meade (2021a);

- Economic value of IPRs: e.g., Maskus (2000), Shapiro and Hassett (2005), Greenhalgh and Rogers (2007), World Intellectual Property Organization (2009), Glachant and Ménière (2013);
- Socio-economic impacts of IPRs, including for developing economies: e.g., World Intellectual Property Organization (2009), Alikhan (2000), Platteau (2000);
- Control rights and value: e.g., Dyck and Zingales (2004);
- Value of languages/codes/standardisation: e.g., Arrow (1974), Jeon et al. (2021).

A number of key themes emerge from these literatures. Firstly, aspects of culture, like religion and ethnicity are associated with values and beliefs like trust, respect for others, thrift, honesty, self-determination, risk-taking and entrepreneurialism. Such values and beliefs are in turn positively associated with economic development and performance, e.g., through their impacts on beneficial interactions between possible trading parties (via security of property rights, ease of enforcing contracts, etc), and also through their impacts on innovation and production.

Secondly, better property rights definition and security (i.e. freedom from expropriation or appropriation), and contract enforceability – each representing forms of ‘social infrastructure’ – are associated with increased investment (in both physical and human capital), and higher economic growth and development. The diverging growth paths of East and West Germany prior to reunification, and of South and North Korea since the end of the Korean war, are oft-cited examples of how different institutional arrangements can have profound impacts on investment, growth and development in otherwise comparable environments.

Among other things, not having to exert effort to protect property rights frees up resources for more productive activities. This could be especially pertinent if implementing the Ko Aotearoa Tēnei recommendations means that Māori do not need to resort to costly, time-consuming, and uncertain litigation in order to protect against misuse, abuse or appropriation of taonga. More generally, well-defined and secure property rights play a key role in facilitating economic exchange and securing the gains from trade. They can also facilitate better access to capital, e.g. when property rights can be pledged as collateral.

Secure private property rights do not necessarily mean individual private property rights. They can include, for example, collective private property rights, such as can

be more suitable where the resource in question has public good aspects (Besley and Ghatak, 2010). By contrast, the experience of Māori with the operation of the Native Lands Acts in the 19<sup>th</sup> century point to the perils of insecure collective private property rights (Meade, 2021a).

Thirdly, IPRs create a trade-off for economic development. On the one hand, they encourage investments in new technologies by protecting the returns generated by innovators. On the other, they allow innovators to charge monopoly prices for the inventions, and limit imitation. On balance they tend to be positive for innovation and economic growth and development. In part this is because knowledge has public good aspects, so protecting against the misappropriation and misuse/abuse of knowledge better facilitates its creation and sharing). Certainly, imperfections in IPR enforcement can be welfare-reducing.

Relatedly, IPR protections are important for attracting the investment capital required for socio-economic development. This is because capital providers can be reluctant to finance investments in developing or using IP such as Māori taonga if the returns from doing so can be appropriated by others, rather than captured by those making the relevant investments. As Alikhan (2000, p.9) notes “intellectual property protection is not an end in itself but a means to an end, and a catalyst in social, cultural and techno-economic development of developing countries.”

Finally, languages like te reo Māori can give rise to a range of benefits. They can be thought of as a general form of communication, which can facilitate exchange between parties that use a common language. But they are also specialised codes, improving coordination among, and the efficiency of, shared activities (Arrow, 1974). A thriving language is also a direct source of wellbeing to its practitioners, and a potential means of producing differentiated goods and services which can command a value premium (Roskrug et al., 2017).

## 2.4 Measuring the impact of implementing Ko Aotearoa Tēnei recommendations

The literatures summarised in Section 2.3, about the general value of institutions, culture, and specific elements of culture (e.g., language/codes) confirm that improvements in institutions can improve economic outcomes. However, most of

these studies are confined to standard supply-side, macroeconomy-level measures of value (e.g., growth in economic output).

The impacts of implementing the Ko Aotearoa Tēnei recommendations on economic growth are relevant to the questions addressed by this report. However, to comprehensively value the impacts of implementing the Recommendations – especially in a way that more adequately captures values relevant to Māori over and above economic output – a different class of studies is (also) required.

Specifically, more microeconomy-level studies in respect of specific institutional changes for specific taonga are required. They value the demand-side wellbeing gains from better reflecting the preferences of relevant Māori groups in decision-making on the use, management and protection of those taonga. They also value the supply-side productivity gains achieved through better governance, property rights, etc.

This points to four broad classes of valuation tools:

- Non-market valuation techniques for estimating preferences of Māori and non-Māori, which can then be used to estimate changes in wellbeing from implementing specific Ko Aotearoa Tēnei recommendations – borrowing from environmental economics, cultural economics, health economics, transport economics, etc.;
- Productivity and efficiency analysis techniques for estimating the change in production possibilities by being able to access improved or new technologies;
- Intellectual property commercialisation techniques for estimating how IPRs being used internally or licensed to third parties affects the combined returns to innovators and commercialisers; and
- General techniques for assessing changes in organisational performance as a consequence of changes in governance, incentives, productivity and competition – including for social enterprises/collectives as much as for for-profit firms.

Key techniques are discussed in further detail in Section 4. Then, in Section 5, we return to the Ko Aotearoa Tēnei recommendations, using them in this section as a motivating case study of possible institutional changes to be valued, and suggesting suitable valuation approaches. More contemporary issues arising in relation to Māori taonga – such as providing for Māori data sovereignty – are also addressed there, as is a high-level indication of the possible ‘size of the prize’ from making institutional changes such as these.

## 3 Māori conceptualisations of value

This section draws on emerging research into Māori theories of value to provide insights into culturally appropriate conceptualisations of Māori wellbeing associated with taonga discussed in the Ko Aotearoa Tēnei report.

### 3.1 Māori conceptualisations of value and wellbeing

The literature that works to conceptualise a Māori theory of value is built around four main themes:

- Whakapapa: emphasising the interconnectedness of all things, whakapapa underpins Māori conceptualisation of value.
- Taonga: commonly directly translated as ‘value’, taonga provides a foundational insight into Māori conceptualisations of value.
- The economy of mana: Manuka Hēnare’s (2011, 2014, 2016) conceptualisation of the Māori economy highlights Māori economic values and provides a foundation for the conceptualisation of manahau (discussed below).
- Manahau: tentative conceptualisation of a Māori theory of value by Dell et al. (2021) and Mika et al. (2021).

#### **Whakapapa**

Whakapapa denotes a timeline of relationships and a descendency from Te Kore. It also acts as a knowledge framework that holds information about the intimate and reciprocal relations and connections between all living things (Roberts et al., 2004). Wehi et al. (2021) state that whakapapa is a vital part of Māori epistemology. Whakapapa knowledge is flexible and accepts various accounts of lines of descendency back to Te Kore (Mikaere, 2011), this allows all Māori groups to have their own creation narratives.

Whakapapa frames all living beings as connected in an intimate web of relationships (Roberts, 2013), and therefore emphasises connections not only between humans, but also between humans and non-humans (Gillet, 2009 as cited in Roberts, 2013). A whakapapa framework adopts a Māori concept of time as circular and event based

(Painting and Burgess, 2020; Lo and Houkamau, 2012), where the past, present and future are not seen as fitting into a linear concept of time, but are instead circular. Time is linked to events, the meaning of these events and how they relate to each other (Whiteford and Barnes, 2002 as cited in Lo and Houkamau, 2012). Whakapapa-based time allows people in the present to be intimately connected to their tūpuna and mokopuna (Painting and Burgess, 2020).

On how whakapapa affects the way nature is valued, Māori philosopher Krushil Watene (2016) argues that Māori values emphasise connections to nature that have a foundation in whakapapa. The author discusses how whakapapa connections allow Māori to value the natural world as 'tūpuna and whānau', and therefore through whakapapa, the natural environment has its own intrinsic value as kin.

Understanding Whakapapa as a kin-based system that links all living beings to each other over time and space is an important step in conceptualising a Māori theory of value.

## **Taonga**

Marsden (2003) suggests that the word 'taonga' is the closest te reo Māori substitute for the English word value. Taonga, therefore, can provide a foundational viewpoint for conceptualising a Māori theory of value. Craig et al. (2012, p.1025) provides an insightful conceptualisation of taonga below:

Taonga includes a sacred regard for the whole of nature and a belief that resources are gifts from the gods and ancestors from which current generations of Māori are responsible stewards. Taonga emphasises guardianship over ownership, collective and cooperative rights over individualism, obligations towards future generations, and the need to manage resources sustainably.

Taonga is often translated as treasures or precious items. However, there are two problems with this definition, firstly many taonga are perceived as living beings rather than inanimate objects, and secondly, as with many other te reo Māori concepts, taonga cannot be succinctly or specifically defined within the confines of the English language.

In general, taonga are defined by their kaitiaki, their guardians whom they have a reciprocal relationship with, as Angela (1996 as cited in Craig et al, 2012) describes; taonga are identified through their relation to people and the value they add. The

Motunui-Waitara Report (1983, as cited in Craig et al. 2012, p. 49-50) reiterates this view stating that “[t]aonga is used in a metaphorical sense to cover a variety of possibilities rather than itemized specifics”.

Taonga are not property to be owned in a western sense. As Craig et al. (2012, p.1034) describe, taonga are “a manifestation of a complex Māori physio-spiritual conception of life and life-forces”, they spur a sense of identity and strength to the kaitiaki to which they connect to, they hold mana and they can also pass on mana to their kaitiaki. Craig et al. note that taonga exist within a relationship of reciprocity with their kaitiaki, and they often provide a sense of identity and strength to the kaitiaki they are related to.

As discussed earlier, taonga are a major topic in the WAI262 treaty claim. In the Ko Aotearoa Tēnei report, the Waitangi Tribunal (2011a, p.749) define taonga as “a treasured possession, including property, resources, and abstract concepts such as language, cultural knowledge and relationships”, contrasting against the English version of the Treaty which translated taonga as “other properties”. They make a number of recommendations in relation to taonga, including that Māori relationships to taonga should be recognised in law and policy.

Taonga themselves are dynamic, they can simultaneously be spiritual and material and can be considered sacred, but also sold and traded. The concept of taonga is itself dynamic, evolving over time to suit changing contexts in Aotearoa (Craig et al., 2012). Taonga are multi-generational and collective, owned by their kaitiaki rather than individuals (Ruru, 2004 as cited in Craig et al., 2012). A whānau, hapū or iwi can act as kaitiaki to a taonga over many generations, and a separation, or relationship breakdown between a Māori group and their taonga does not diminish the taonga, or its status (Craig et al., 2012).

Taonga, although not necessarily a Māori concept of value, is part of the conceptualisation of value and represent beings, possessions, resources and concepts that are highly valued. In exemplifying what is valued and showing how this valuing process works, taonga provide an important foundation for conceptualising a Māori theory of value. Without the existence taonga, Māori concepts and the conceptualisation of value would be vastly different.

### **The economy of mana**

Manuka Hēnare's conceptualisation of the Māori economy as an economy of mana highlights prominent Māori economic values. Inspired by and built on Mauss's (1925) 'gift economies' and Hyden's (1980) 'affective economies', Hēnare (2011) first introduces the concept of the economy of mana to describe the 'purpose of the ancient Māori economy'. He also discusses the importance of the economy of mana within modern-day Māori economies, stating that it brings an integrated approach to modern-day Māori development.

The economy of mana represents a Māori way of economy. It is very much based in te ao Māori and is a mode of business that prioritises the four dimensions of wellbeing (spiritual, cultural, environmental, and economic) (Hēnare, 2011). Hēnare (2014) builds on his notion of the economy of mana, describing it as "an economy of affection" that "prioritises holistic wellbeing and creating value over profit maximisation" where "economic action is embedded in ... spiritual, ecological, social and cultural considerations" (p.65–66).

Reciprocity and underlying Māori social and ecological values shape the economy of mana, and Hēnare (2014) argues that this results in different power dynamics and hierarchical structures, to those that dominate the modern Aotearoa market economy. Unlike the latter, the economy of mana is embedded within, not separated from, social and ecological systems and is therefore shaped by Māori values (Hēnare, 2016). Further, the economy of mana is not limited to traditional Māori economies. Hēnare sees modern-day economies of mana in places where historical Māori institutions still operate; he suggests that economies of mana have the ability to thrive in Aotearoa despite the overwhelming dominance of western economic norms.

Since Hēnare first conceptualised the economy of mana, a handful of other academics have written on the subject, most prominently Dell (2017) in her PhD thesis and Dell et al. (2018). Dell et al. (2018, p.55) define the economy of mana as "an economic system in which decisions regarding investment, production, consumption and wealth distribution are influenced by the inter-play of mana-enhancing interactions between people and the environment".

The economy of mana is centred around values of giving, reciprocity and prosperity (Dell et al., 2018). Dell et al. (2018) discuss six main themes of the economy of mana that echo some of the main points that Hēnare (2016, 2011, 2014) discussed:

- It emanates from a Māori worldview and is informed by traditional Māori economies;
- It is inspired by four dimensions of wellbeing - spiritual, ecological, kinship, economic;
- It is embedded in the ecological system that sustains it;
- It requires a multidisciplinary approach to its research;
- It is a system that is capable of reorganizing itself to create new futures;
- It manifests as a reciprocity and gift exchange.

Manuka Hēnare's (2016, 2014, 2011) economy of mana, later built upon by Dell (2017) and Dell et al. (2018) points to a Māori theory of value that is driven by reciprocity and grounded in spiritual, cultural, environmental and economic wellbeing. Further work by Hēnare on the economy of mana provides much of the inspiration behind the concept of manahau as a tentative Māori theory of value created by Dell et al. (2021) and Mika et al. (2021) and discussed below.

**Box 2 – Exploring the intersection between economies of mana (a Māori way of the economy) and contemporary market economies, three case studies.**

Bargh and colleagues (Bargh 2011; Bargh 2012; Amoamo et al. 2018) have explored the intersection of the economy of mana and market economies through their work positioning Māori economies as diverse. Here Bargh and colleagues' research "seeks to reflect the diversity and complexity of Māori enterprise whereby the dynamics of Māori values and culture overlap with market values and culture in a way that disrupts the capitalist non-capitalist binary in favour of the Māori economy as a complex array of intersecting and diverging coordinates" (Bargh 2011, p.65).

In their study on the intersections between Māori economic institutions and modern economic institutions, Rout et al. (2017) find that the introduction of modern economic institutions to this economy during colonisation removed Ngāi Tahu's authority to regulate mutton bird exchange which in turn constrained the economy and contributed to declining returns. They argue that Ngāi Tahu will benefit from the development of a contemporary executive authority to regulate exchange and market product may reinvigorate entrepreneurial birding activities.

Most recently Scobie and Sturman (2020) have explored Covid-19 impacts and responses at the intersection of the economy of mana and the settler-colonial economy. They find that iwi community checkpoints represent a meeting place of laws, economies and worlds because "at and beyond iwi checkpoints lies economies of mana". These checkpoints represent a Māori duty to protect (Ngata, 2020 as cited in Scobie and Sturman, 2020), they have legal foundations (Hariss and Williams, 2020 as cited in Scobie and Sturman, 2020) and they involve labour.

## **Māori theories of value**

Mika et al. (2021) explore Māori and indigenous conceptualisations of value. They find that from an indigenous perspective, value is intrinsic and exists everywhere within all things. However, the avid trade practices of pre-European Māori communities suggest for some goods values were relative and goods could be exchanged based on these relative values. Mika et al. (2021, p. 8–9) also find that indigenous world views that inform conceptualisation of value hold three main commonalities:

- Interdependency and connectivity: everything has value because through whakapapa it is connected to everything else.
- Balance: expressed in te ao Māori through reciprocity, hau (“spirit of the gift”) and utu (“the practice of reciprocal relations”).
- Immortalisation of physical beings: evident in te ao Māori conceptualisations of time.

Te ao Māori conceptualisations of value derive from Māori cosmological creation narratives and traditions (Mika et al., 2021, Rout et al., 2021). Mika et al. (2021) highlight several values within te ao Māori that reflect a Māori theory of value, including Kotahitanga (unity), Whakapapa (genealogy), Mana (power), Kaitiakitanga (guardianship), Whanaungatanga (kinship), Manaakitanga (generosity) and Wairuatanga (spirituality).

Māori value, values and valuation have recently been an important topic of discussion in academic literature. According to a literature review by Mika et al. (2021), Māori valuation research has been applied in many ways, including the valuation of Māori land, Māori fisheries and Māori economies. They find that the application of non-Māori valuation techniques and methodologies was common, and that many academics were grappling with the challenge of combining indigenous and non-indigenous knowledge to create culturally appropriate Māori valuation methodologies.

In an attempt to conceptualise a tentative Māori theory of value, Dell et al. (2021) develop ‘manahau’, largely inspired by Hēnare’s (2016, 2011, 2014) economy of mana. Manahau is the combination of two concepts that are foundational to a Māori theory of value; ‘mana’ and ‘hau’ are discussed below.

## **Mana**

The ‘mana’ within ‘manahau’ is largely inspired by Hēnare’s conceptualisation of mana in his work on the economy of mana discussed above. Mana, like taonga, is not easily translated to the English language. Within the context of manahau, and inspired by the work of Hēnare on the economy of mana, Mika et al. (2021, p.10) provide the following broad interpretation of mana: “power, authority, prestige, honour, status and influence acquired by divine intercession and collectively favourable human action which along with the principle of tapu regulated social and economic relations in pre- and post-contact Māori society”.

Dell et al. (2021, p.21) see mana as a “predicate for affective economic activity” within the economy of mana. Inspired by various Māori authors who have written on the subject, Dell et al. (2018, p.54) distinguish four different types of mana that together constitute a ‘theory of Māori human potentiality’: Mana atua (authority of the gods), Mana whenua (authority of the land), Mana moana (authority of the sea) and Mana tangata (authority of the people).

Within the context of manahau as a Māori theory of value, mana ensures that entrepreneurs practice value in a way that is consistent with te ao Māori (Mika et al., 2021). An economy built around mana, ensures the prioritisation of the wellbeing of the collective group, it ensures that economy and enterprise are embedded and not separate from culture and ecology (Mika et al., 2021). The Ko Aotearoa Tēnei recommendations seek to restore the mana of Māori by making it easier for them to carry out their cultural obligations as kaitiaki as discussed in Section 2.2.

## **Hau**

Manahau also consists of the ‘hau’ which Hēnare (2018) has also discussed. The concept of hau is usually associated with gift-giving; Henare (2018, p.451) describes hau as “the spirit of the gift exchange or the ethic of generosity and its associated values, including mana”, whereas Mika et al. (2021, p.16) conceptualise hau as a “metaphysical concept interpreted as the vitality of a person, place or object, embodying the spiritual essence and material effect of gift-giving on relations between Māori”.

Hau inspires exchanges that create balance between human, natural and spiritual worlds (Henare, 2003 in Mika et al., 2021). Henare (2018) links hau to taonga and distinguishes two different types of hau that are associated with taonga; the taonga's own intrinsic hau and the hau that the taonga gives to their kaitiaki group. In this way, hau can be thought of as representing the value of taonga as reiterated by Mika et al. (2021, p.18): "Hau represents the metaphysical vitality that coheres in taonga, inclusive of valued natural capital, the augmented value of taonga works and the cultural, physical and intellectual properties of taonga species". In this way, hau is what allows items, places, people and non-tangibles to become taonga, and therefore establish reciprocal relationships with people setting up a system of value exchanges for shared wellbeing between people and the planet (Mika et al., 2021).

### **Manahau**

Combining Henare's (2011, 2014, 2016) notion of mana as economic agent and Nicolson (2019, p.138) conceptualisation of hau "as spiritual force impelling ... an ethic of reciprocity" forms manahau as Māori theory of value which was first introduced by Dell et al. (2021) and built upon further by Mika et al. (2021).

Dell et al. (2021, p.21) theorise manahau as an "agent that aids Māori entrepreneurs in multiple sites, scales, structures and sectors to synergistically negotiate commercial and cultural imperatives", while Mika et al. (2021, p.1) expand on this definition slightly adding that manahau also helps to achieve "multidimensional wellbeing, human potential, and relational balance".

Manahau encourages the pursuit of mana enhancing behaviour in entrepreneurial pursuits and its success relies on the enhancement and reciprocation of mana between exchanging parties. Manahau is a theory for conceptualising the system of Māori values involved in entrepreneurship and commercial exchange (Mika et al., 2021).

Through their research Mika et al. (2022) have seen strong evidence of manahau in Māori institutions including Māori agribusiness and marine-based Māori enterprises. Although still in its initial stages of development as a Māori theory of value, the concept of manahau is paramount to understanding Māori conceptualisations of value.

## Conclusion

Whakapapa, taonga, the economy of mana and manahau are four interlinked concepts that together help to inform a Māori conceptualisation of value. Whakapapa and taonga are foundational concepts in understanding Māori conceptualisation of value. In the context of value, whakapapa highlights the interlinked connections and relations between all living beings who are valued intrinsically and because of their relation to everything else in the universe.

Taonga represent tangible and intangible beings that have value placed upon them. In te ao Māori, value is dynamic, multi-generational and part of a wider reciprocal relationship between taonga and their kaitiaki. Hēnare's economy of mana highlights the values (spiritual, environment, kinship and economic) that shape the Māori economy, and emphasises the importance of reciprocity in this system. Manahau, largely inspired by Hēnare's economy of mana, provides a tentative step towards a Māori theory of value. Manahau introduces mana and hau as essential concepts to a Māori theory of value, and highlights the importance of the enhancement and reciprocity of mana within exchanges in the Māori economy. From these four concepts, we have drawn six main kaupapa Māori themes that together work to inform a Māori conceptualisation of value, these are discussed in Section 3.2 below.

## 3.2 Bridging modern economics and te ao Māori

One of the greater challenges arising in this report is to bridge modern economics and te ao Māori. This bridging is important for finding evidence to support policy and practice that advances the Māori economy, but many of the tools developed in modern economics came from contexts and worldviews that had no exposure to Māori values, and there is a dearth of evidence or practice to support this nexus.

Some scholars (e.g., Awatere, 2005, 2008; Steenstra, 2009; Venn and Quiggin, 2007 in Andersen et al., 2012; Hyslop et al. 2023) have critiqued the usefulness of exploring this nexus. They raise concerns about indigenous values being subjected to monetary reductionism and highlight the challenge of using economic approaches based on trade-offs to value intangible indigenous values that may have no substitutes (Awatere, 2005; Venn and Quiggin, 2007 in Miller et al., 2015). These concerns are

also echoed in many critiques by conventional economists, with research into addressing these issues at the stretch point of the discipline.

To successfully bridge modern economics and te ao Māori, it is important to acknowledge and address these critiques while exploring examples of modern economic techniques being tested in indigenous or heterogenous situations. Many of these studies stress the importance of integrating indigenous frameworks to inform the application of these techniques. In the te ao Māori context, this suggests that if these techniques are adjusted to better incorporate mātauranga Māori such as the six kaupapa themes discussed below they will be better suited to provide an economic valuation of te ao Māori concepts such as taonga and mātauranga.

To achieve this, research is needed that draws on kaupapa Māori principles to explore the intersection of mātauranga and tikanga Māori with modern economic techniques to deliver findings which are meaningful in both te ao Māori and te ao Pākehā.

Drawing from our analysis of Māori conceptualisations of value in the literature above, we have drawn six inter-linked tentative kaupapa Māori themes that should be prioritised in an economic analysis of mātauranga and taonga.

**Theme 1 – Intrinsic value:** value, from a te ao Māori perspective, is intrinsic. This means that things, people, places, concepts and intangibles all have their own intrinsic value outside of the benefits they provide to humans. Mika et al., (2021) found that intrinsic value is a common theme across indigenous conceptualisations of value. Whakapapa (discussed above), a foundational concept for understanding Māori conceptualisations of value, highlights the intrinsic value of all living beings and emphasises the interconnectedness of the universe.

Intrinsic value may sometimes exist in the form of mauri and/or mana. Existence values within a TEV framework discussed in Section 4.2 go some way in measuring levels of intrinsic value in that they measure the value placed on an asset based on its right to exist. However, more work needs to be done here to come up with a way to measure or track intrinsic value in a way that is more conducive to te ao Māori.

**Theme 2 – Whakapapa:** with the use of whakapapa here, we do not refer to genealogical lineages (covered in theme 3 below) but to the whakapapa connections and relationships that exist between all living things that can be traced back to the beginning of time in the cosmos.

Whakapapa, being a foundational concept within a Māori theory of value, runs across the main concepts discussed above, people and taonga are often linked through whakapapa. Mika et al. (2022) also discuss whakapapa as an important part of a Māori theory of value. Several economic concepts reflect the idea of whakapapa, such as autocorrelation (the degree of similarity between the values of the same variable over successive time periods or across space), multicollinearity (the occurrence of high intercorrelations among two or more independent variables in a multiple regression model) and endogeneity (an explanatory variable is correlated with the error term in a regression model). These are long established economic concepts and have been dealt with extensively in the economic literature.

**Theme 3 – Whānau:** translated as family or extended family group, this theme highlights the importance of tūpuna and mokopuna preferences within Māori conceptualisations of value. Intergenerational connectedness is an important theme that runs across the literature discussed above, whakapapa and taonga are intergenerational. Economies of mana ensure the spiritual, cultural, environmental, and economic wellbeing of past and future generations. This theme also motivates the need for future research into discounting and perspectives on intergenerational preferences.

**Theme 4 – Te Tikanga Kanorau:** Te Tikanga Kanorau translates to ‘diverse ways’. This theme highlights the highly contextual nature of Māori conceptualisations of value. Values and principles surrounding mātauranga Māori and taonga vary greatly between different Māori groups. A Māori conceptualisation of value needs to be adaptable and flexible so it can be applied to various contexts. Many of the themes discussed above are flexible and contextual in nature: accounts of whakapapa vary across different Māori groups, the concept of taonga and taonga themselves are dynamic, evolving over time to suit changing contexts. Modern non-market valuation techniques used in economics that allow for heterogeneous preferences can incorporate (to a certain extent) Te Tikanga Kanorau as they allow for non-uniform preferences.

**Theme 5 – Kotahitanga:** translated as “unity, togetherness, solidarity, collective action” (Moorfield, 2022), this theme highlights the importance of the group over the individual when thinking about Māori conceptualisations of value. From a te ao Māori perspective, value exists within the eye of the collective, not the individual. Kotahitanga

is reflected within whakapapa, taonga, the economy of mana and manahau discussed above. As discussed in section 2, modern economic techniques have the ability to incorporate collective preferences and wellbeing, for example, household production models.

**Theme 6 – Tauutuutu:** Tauutuutu can be translated as reciprocity, this theme highlights that from a te ao Māori perspective value is reciprocal. According to Reid et al. (2021, p.2) “tauutuutu entails an obligation to make escalating investments that enhance the mana (dignity) and mauri (vitality) of individuals, human families and related non-human families with the expectation that such investments will be returned with equal or greater value at a later date”. Tauutuutu is highlighted in the literature discussed above; whakapapa consists of reciprocal relations between all living things, taonga and their kaitiaki have reciprocal relationships, the economy of mana is shaped by reciprocity while the hau in manahau is conceptualised as an ethic of reciprocity.

## 4 Economic valuation: theories and methods

This section examines economists' theories of values and various approaches to measuring different types of values. It also reviews how these approaches have been used to value Māori taonga and highlights gaps in the literature.

### 4.1 Theories of value

Different disciplines have different approaches to understanding how humans value things. Moral philosophy distinguishes two types of value. Intrinsic value is the value that an entity has in itself, for what it is, or as an end. Instrumental value is the value that something has as a means to a desired or valued end. This value is a derivative on the value of something else and fluctuates based on changes in the desirability of the end, and whether alternative means are available. For example, a person values a river more on a hot day when they want to go for a swim. The person might value the same river less when they discover a beautiful beach nearby. This value is anthropocentric because it revolves around humans. This contrasts with intrinsic value: a river has value whether it is directly or indirectly of use to humans.

In economics, theories of value have evolved considerably over time. Earlier authors, such as William Petty, Adam Smith, David Ricardo and Karl Marx, proposed different versions of the *labour theory of value*, claiming that the economic value of a good is determined by the total amount of labour required to produce it.<sup>9</sup> Smith (1776) also formalised the two concepts of value introduced by Aristotle, namely value in use and value in exchange. He described value in use as “the utility of some particular object” and value in exchange as “the power of purchasing other goods which the possession of that object conveys”. Value in exchange was equal to or proportional to the labour value of a good.

In the late 19<sup>th</sup> century, William Stanley Jevons, Léon Walras, and Carl Menger<sup>10</sup> independently created the *subjective theory of value*, which postulates that the value

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<sup>9</sup> These authors posited that value was determined by factors of production; since most of the cost of production could be reduced to labour, the cost-of-production approach to value was reduced to the labour theory of value.

<sup>10</sup> The publication of Adam Smith's 'An Inquiry into the Nature and Causes of the Wealth of Nations' in 1776 is widely regarded as the beginning of classical economics. The works of Jevons, Walras, Menger, and Marshall are considered neoclassical.

of a good is not determined by any inherent property of the good, nor by the amount of labour necessary to produce the good, but instead by the *marginal utility*, the additional satisfaction derived from an increase in consumption, it brings to the consumer.

The labour theory of value implies that the value of a good depends on supply, whereas the subjective theory of value suggests that it is determined by demand. Alfred Marshall (1890) combined classical analysis with the new tools of the marginalists in order to explain value in terms of supply and demand. Marshall's scissors analysis, which likens supply and demand as two blades of a pair of scissors, shows that both supply and demand are important in determining value. The value in exchange depends on the point at which supply and demand are in equilibrium. Accordingly, the value of a good in exchange will be determined by all consumers' subjective valuations, which are shaped by their preferences, as well as the cost of supply.

Central to economics is the concept of scarcity, that not enough of a resource is available to meet demand at a price of zero. Due to scarcity, people frequently have to make trade-offs (e.g., we only have funds and personnel to preserve either river X or beach Y, but not both), which necessitates comparing values. Intrinsic values imply all things are equally valuable. Indeed, when one thing is implied to be more valuable than another, it begs the question 'value to whom?' Hence, economists' value is ultimately anthropocentric value.

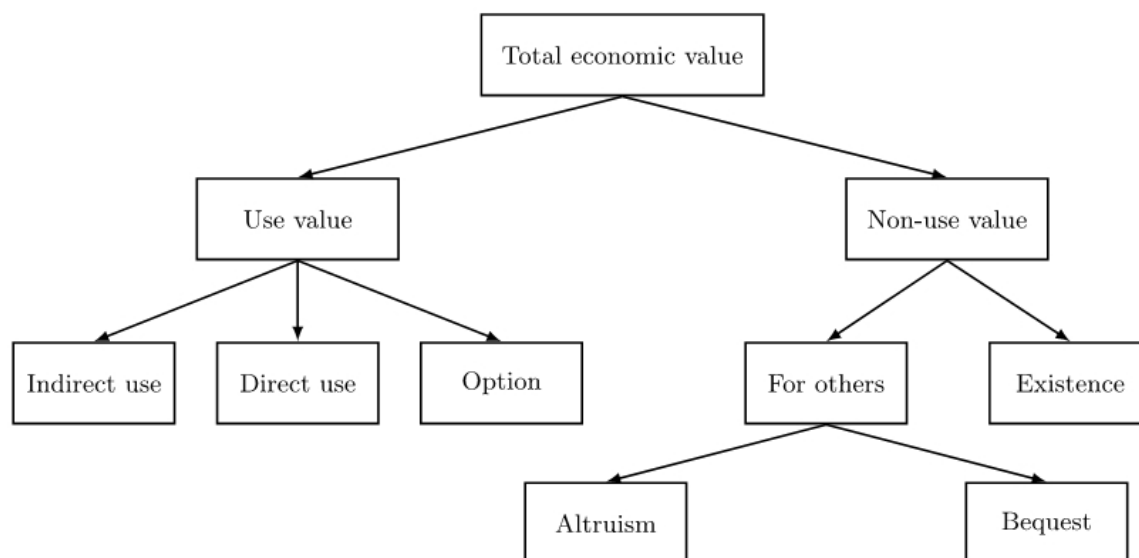
Instead of being concerned with value as an abstract concept, contemporary work in economics focusses on the empirical side, observing what people value and attempting to measure that value.

## 4.2 Total economic value framework

Classical economics recognised two values: value in use and value in exchange. Some goods may have both values, some only one. For example, bitcoins currently have substantial exchange value, but no use value; whereas water from a river has high use value but little exchange value.

The concept of total economic value (TEV) was developed in the 1980s in recognition of the fact that many goods have value beyond their tangible uses. TEV provides an all-encompassing measure of the economic value of an asset. TEV distinguishes two types of value: use and non-use. There are several variations in interpretation and classification of the different values.<sup>11</sup> Figure 7 provides an illustration of the TEV framework.

Figure 7: Total Economic Value Framework



Source: Modified from OECD (2006)

Use value can be disaggregated into direct use value, indirect use value and option value. Direct use can be consumptive (e.g., harvesting timber) or non-consumptive (e.g., swimming in a river). Indirect use value refers to benefits derived outside the asset that creates them, such as the natural water filtration function of wetlands, which often benefits people far downstream. Option value is the value people attach to future use opportunities by themselves.

Non-use value can be disaggregated into value for others and existence value. Value for others is the value people place on enabling an asset to be used by other people, including those alive today (altruism value) or those alive in future (bequest value). Existence value is the value an individual places on preserving an asset based on the belief that it has a right to continued existence, even though the individual does not

<sup>11</sup> NZIER (2018) contains several examples of how analysts differ in the way they categorise TEV components.

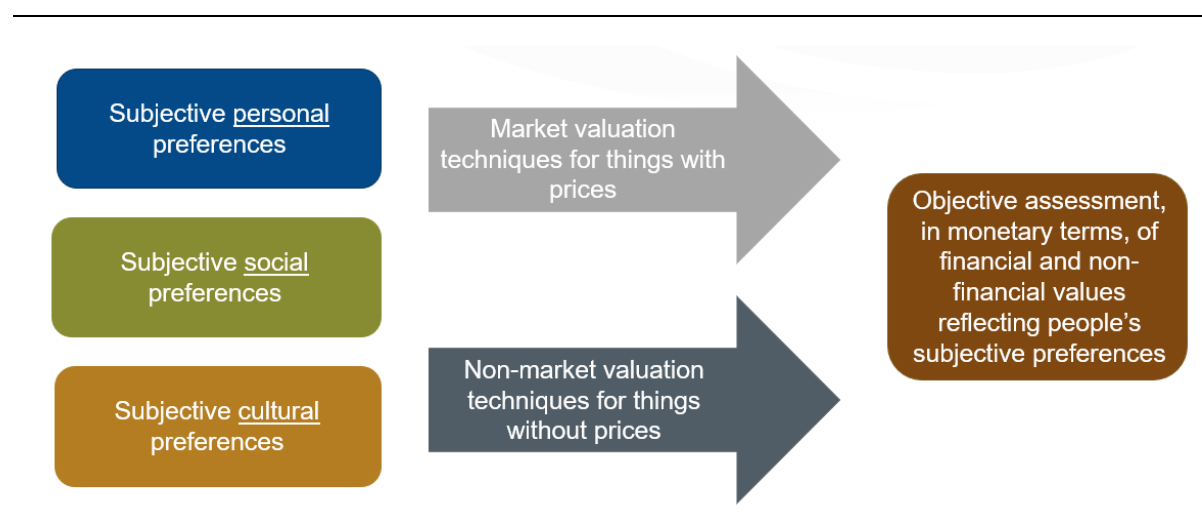
expect they or other humans to ever use them. This value is closest to the intrinsic value mentioned in Section 4.1.

TEV is the sum of all of the values outlined above. Originally developed to value environmental resources, the TEV framework has now been adopted to value man-made heritage resources or infrastructure systems, i.e., goods for which there are no or imperfect markets.<sup>12</sup> This attribute is typical of Māori taonga, so TEV is a suitable framework for valuing them.

### 4.3 Valuation approaches

TEV is utilitarian based, in that value is derived from things that give people utility. Utility depends on personal preferences (i.e. different people might value the same thing differently) and utility cannot be directly measured. Nevertheless, the utilitarian approach seeks to estimate all values in monetary terms. This does not mean that only monetary benefits are recognised. Rather, all benefits are converted into monetary terms so as to provide a common metric in which to express the benefits of a wide variety of resources and to facilitate comparison with other activities that also contribute to wellbeing, as depicted in Figure 8 below.

Figure 8: *Economic Approach to Valuation*



Source: The authors

<sup>12</sup> Many references on economic valuation cited in Section 4.3 were originally written for valuing environmental resources, but they equally apply to cultural resources and other resources with poorly defined property rights.

According to Pagiola et al. (2003), the most common motivations for undertaking economic valuation are to assess the overall contribution of an asset to social and economic wellbeing, to understand how and why an asset is used, and to assess the relative impact of alternative actions in order to help guide decision-making.

Pagiola et al. (2004) identify four approaches to economic valuation:

1. determining the value of the total flow of benefits from an asset,
2. determining the net benefits of interventions that alter the asset's conditions,
3. examining how the costs and benefits of an asset are distributed, and
4. identifying potential financing sources for conservation.

The first two approaches differ in that the former measures the absolute level of TEV, while the latter measures the change in TEV with respect to a policy change. In practice the second approach is the most widely used. For example, we do not value a river per se, but value the change likely caused by a policy (e.g., using it for irrigation).

## 4.4 Valuation methods

Since not all activities that deliver utility generate monetary benefits, the essence of economic valuation is to find ways to place monetary values on non-monetary benefits.

It is relatively straightforward to measure consumptive direct uses, since their prices and quantities can be observed in the market. Non-consumptive direct uses (e.g., swimming in a river) are difficult to measure because they are, to a certain extent, non-rival in consumption, making it hard to establish quantities consumed. Measuring indirect-use value is a challenge because it is not simple to distinguish the benefits provided by an asset (e.g., natural water filtration function of wetlands) from those provided by others (e.g., town water treatment). Besides, many of these services are not traded at all, so their 'price' is not easily determined. Non-use value is the most difficult to measure, since in most cases, it is not reflected in people's behaviour and is thus generally unobservable.

Valuation methods can be divided into those based on observed behaviour and those based on hypothetical behaviour. Observed behaviour can be direct or indirect. A method based on direct observed behaviour measures value as the prices consumers

actually pay in the market in question. This method works in cases where the services from an asset are privately owned and traded in functioning markets. It is thus the most suitable for consumptive use, where goods are extracted from an asset and traded (e.g., timber). This method is called the market valuation method, since it is based on market data, and gives the fairest estimate of what people actually value. However, it is of limited use for measuring other types of value.

Valuation methods based on indirect observed behaviour infer value from the prices consumers pay in a proxy market, which is assumed to have a direct relationship with the market in question. For example, property sale prices and rents reflect not only what people pay for a property, but also its environmental attributes. Property-level data, which contain sale prices or rents, specific property characteristics (property type, age of building, land area, building area, number of bedrooms) and environmental attributes (location, local (dis)amenities, neighbourhood characteristics, etc.) can be analysed to estimate people's willingness to pay (WTP) for clean air or a beach view. These methods are called revealed preference methods because they are based on the assumption that consumers' preferences can be revealed by their purchasing habits. They can be used to measure non-consumptive direct-use value.

Valuation methods based on hypothetical behaviour use people's responses to questions describing hypothetical scenarios to infer value. The hypothetical behaviour in question can also be direct (e.g., asking respondents directly how much they would be willing to pay for specified benefits) or indirect (asking respondents to rank different bundles of goods). These are called stated preference methods because they evaluate preferences based on what people say they would do. These methods can be used to infer any type of value, albeit at varying levels of reliability.

When a range of methods can be used, more direct methods should be preferred to less direct methods. Even though methods based on hypothetical behaviour can be used for any type of value, they should not be used – or at least, used alone – when a more direct method is available (e.g., using the market valuation method to measure consumptive direct-use value). These methods are more suitable to measure non-use values (altruism value, bequest value, existence value).

Both revealed preference and stated preference are non-market valuation methods because they do not use data from the market in question. Another non-market

method which has gained prominence in recent years is the subjective wellbeing valuation method, which uses responses to questions on wellbeing to infer relative values of non-market goods. Table 1 provides a summary of economic valuation methods discussed above.

Even though the market valuation method is preferred, most of TEV components are not directly observed in the market, hence they rely on non-market methods for valuation. The following section goes into more detail on non-market valuation methods.

Table 1: Summary of economic valuation methods

<b>What is the method based on?</b>	<b>Market or non-market?</b>	<b>Type of value that can be measured</b>	<b>Names of specific methods</b>
Observed, direct behaviour	Market	Consumptive direct-use value	Market valuation method
Observed, indirect behaviour	Non-market	Non-consumptive direct-use value	Revealed preference: travel cost method, hedonic pricing method, averting behaviour and defensive expenditures method
Hypothetical, direct behaviour	Non-market	Any value	Stated preference: contingent valuation
Hypothetical, indirect behaviour	Non-market	Any value	Stated preference: choice modelling, conjoint analysis
Wellbeing	Non-market	Any value	Subjective wellbeing valuation method

## 4.5 Non-market valuation methods

Common non-market valuation methods can be divided into three groups: revealed preference methods, stated preference methods, and the subjective wellbeing method.<sup>13</sup>

### Revealed preference methods

<sup>13</sup> Several other non-market valuation methods exist, for example quality-adjusted life years (QALYs) used in health valuation. Those are not the focus of this report, because they are not based on monetary terms, making them less useful for economic valuation purposes.

Revealed preference methods estimate values on the premise that non-market goods affect the price of related market goods and that price differentials in these proxy markets can provide estimates of WTP and willingness to accept (WTA).<sup>14</sup> The most common methods in this category include the hedonic pricing, travel cost, and averting behaviour and defensive expenditures, methods. The hedonic pricing method assumes that the price of a product reflects embodied characteristics valued by some implicit or shadow prices. In the property price example mentioned in Section 4.4, variations in house prices can be related to variations in environmental characteristics to infer what people are willing to pay for an environmental attribute such as clean air. The travel cost method is used to value recreational benefits generated by an asset, assuming that the value of the site or its recreational services is reflected in how much people are willing to pay to get there and how often they visit. The averting behaviour and defensive expenditure method relies on the assumption that people can avert a non-market 'bad' by adopting more costly types of behaviour or by purchasing a market good, the cost of which are known as defensive expenditures. The value of each of these purchases represents an implicit price for the non-market bad in question.

The main merit of the revealed preference methods lies in the fact that they are based on actual market behaviour and it is relatively inexpensive to collect data required for these methods. However, these methods pick up use value only. Furthermore, proxy markets do not always exist. People might be unaware of the non-market good when making the market decision. Market for the market good might be regulated, so the price does not move in accordance with change in the non-market good.

### **Stated preference methods**

Stated preference methods use surveys to elicit how much value people place on something. The contingent valuation method constructs a hypothetical scenario and directly asks people how much they would be willing to pay for a good outcome or willing to accept, contingent on that scenario. A choice modelling method presents respondents with a series of bundles which differ from each other in some attributes.

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<sup>14</sup> WTA (the minimum amount of money that a person is willing to accept to sell a good, or to bear a 'bad') is the flip side of WTP (the maximum amount a consumer is willing to pay to buy a good or avoid a 'bad'). Due to the wealth effect (a person cannot pay more than their total wealth), WTP tends to be lower than WTA.

Cost or price is included in each bundle. By uncovering the trades-offs that respondents make between the attributes and costs of the alternatives, this method can estimate WTP for each attribute. Conjoint analysis is similar to choice modelling, except that it aims to elicit preferences rather than monetary values. Conjoint analysis enables researchers to gauge social preferences and ranking of options when there is no need to monetarise values.

Even though stated preference methods can be used to infer any type of value, they are not based on actual behaviour, and can suffer from biases accordingly. According to Vatn (2005), these biases include part-whole bias (the sum of WTP of parts of a system typically exceeds willingness to pay for the system as a whole), sequence bias (the order in which parts of a system are valued affects WTP), yeah-saying/hypothetical bias (stated WTP exceeds actual WTP as revealed in market transactions), socially contingent preferences (respondents preferences change with the social setting and their roles in those settings, e.g. as consumers or voters), etc.

### **Subjective wellbeing method**

The subjective wellbeing valuation method values a non-market good through its impact on self-reported measures of wellbeing such as life satisfaction. This value is hypothesised to be equivalent to the amount of income required to have the same impact on the wellbeing measure. The strengths of this method include that it is based on how people actually experience the outcomes, it does not rely on market proxies, it overcomes many problems inherent in the stated preference methods, and applying it is relatively cost-effective (Dolan and Fujiwara, 2016). However, this method rests crucially on the assumption that there is a causal relationship between income and wellbeing, and between the non-market good in question and wellbeing. Furthermore, it raises particular empirical challenges, and cannot be used to value future policy changes, and it is more difficult to pick up non-use values than in stated preference methods.<sup>15</sup>

### **Benefit transfer method**

There is another method called ‘benefit transfer’, which is not a method in itself, but a way to estimate the value of an asset by ‘transferring’ the benefit (that has been

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<sup>15</sup> This method also posits that reported subjective wellbeing is equal to utility, which is at odds with modern economics theory that utility cannot be directly measured, as mentioned in Section 4.3.

estimated by any method) of a similar asset from another context. That is, this method adopts existing estimates that have been made for another context (the study context), to make predictions for the current context (the policy context). This transfer can be in the form of the direct monetary value (e.g. when the estimated benefit of freshwater from a river is used to estimate the benefit obtained from freshwater from another river), or of the functional form (e.g. the relationship between the estimated benefit of river A's freshwater and average income of its surrounding population can be used to estimate the benefit obtained from river B's freshwater using data on income of river B's surrounding population).

The appeal of the benefit transfer method is that it is cheap and fast, as it requires almost no data. However, it has been shown to be prone to misuse and thus unreliability. Bennett (2006) suggests that this method should only be adopted when there are similarities between the study context and the policy context in terms of the conditions of the asset in question, the scale of change, the socioeconomic characteristics of the population, and the setting of the valuation and that the study valuation itself must be scientifically sound. Since in practice it is difficult to have a good match between the policy context and the study context, estimates derived by the benefit transfer method are often subject to substantial errors and hence are of questionable usefulness.

## 4.6 Empirical evidence on the economic value of Māori taonga

### **Aotearoa non-market valuations**

A large number of studies have quantified the values of various aspects of non-market resources in Aotearoa.<sup>16</sup> For example, Yao and Kaval (2007) compile 92 non-market valuation studies published between 1974 to 2005 in relation to Aotearoa. NZIER (2018) finds 114 studies in this area for the period 1974-2011 and 11 more for the period 2011-2017. Topics were as diverse as ranging from using contingent valuation and travel cost methods to assess the recreational benefits of the Rakaia River fisheries in the South Island (Gluck, 1974), to hedonic modelling of residential land values in Aotearoa (Kerr, 2005), to using choice modelling to estimate the non-market

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<sup>16</sup> Lincoln University used to host the New Zealand Valuation Database website which recorded all non-market value studies conducted in Aotearoa during 1974-2011.

values from improvement in freshwater quality from changes in livestock exclusion from waterways (Tait et al., 2016). In their review study Marsh and Mkwara (2013) identify 35 studies that measured non-market values associated with freshwater in Aotearoa from the 1990s onwards, including 10 studies for the Waikato region.

### **Māori evidence**

However, only a handful of studies have focussed on sites or issues of significance to tāngata whenua. Marsh and Mkwara (2013) note that even in a relatively well-researched area like freshwater, Māori-specific values including customary use of water ways such as mahinga kai and taonga values had not been studied. An exception to this observation is a later article by Miller et al. (2015) who use choice modelling to estimate the cultural values of freshwater for Māori and non-Māori. They find that Māori had a higher WTP for enhanced cultural attributes of freshwater food gathering, which suggests that culturally important resources could be undervalued if significant cultural elements are omitted. Another attempt to value (a particular aspect of) toi Māori is by Meade (2021b), who uses the travel cost method to estimate the WTP for participation at the 2017 Te Matatini national kapa haka (Māori performing arts) festival. To our knowledge, there have been no economic valuations in the areas of mātauranga Māori and emerging Māori innovative products and processes.

#### **Box 3 – Using non-market valuation techniques to value Māori culture**

Meade (2021b) applies travel cost models to value a particular aspect of Māori culture, specifically, participation at the 2017 Te Matatini national kapa haka festival. The travel cost method stipulates that the value that people derive from attending the kapa haka festival can be inferred from the relationship between attendance cost and attendance numbers. Drawing on survey data on a random sample of visitors to the biennial kapa haka festival held at Hastings in February 2017, and estimates of travel distances and travel times using information on survey respondents' place of residence, as well as sub-regional administrative demographics data, Meade estimates the WTP for festival access was around NZ\$40 to NZ\$52 per visitor group. This estimate captures a one-off non-consumptive direct-use value of the haka, but ignores other use values (including any commercial value), and non-use values like altruism, bequest and existence values.

The lack of a Māori focus in Aotearoa non-market valuation studies could be due to the resistance by some Māori from putting a dollar value on taonga. According to Awatere (2005), Māori view themselves as an intrinsic part of the natural world so

valuing the environment in monetary terms can cause some consternation. Awatere believes it is very difficult to value indigenous concepts in an economic framework.

Nevertheless, a growing number of studies have stressed the importance of valuing aspects of the Māori economy. For example, Roskrug et al. (2017) highlight the importance of measuring the value of the contribution of Māori language and culture to the Aotearoa economy. BERL (2021) values the Māori asset base at \$68.7 billion in 2018, representing annual growth by 10% since 2010 and by 8% since 2013. In 2018, the Māori economy accounted for 6.5% of NZ's production GDP, 8.6% of income GDP and 14.9% of expenditure GDP.<sup>17</sup> NZIER (2018) believes that where Māori represent a significant percentage of the population, it is important to have an appropriate value for how they stand to be affected by resource-use decisions. Due to the growing recognition of the importance of having economic evaluations in policymaking, we expect to see this literature to grow rapidly in the future.

### **International literature on the economic value of indigenous resources**

There is extensive international literature on non-market valuation of environmental resources. The corresponding literature on cultural resources, which adopts methods originally developed for valuing environmental resources, is smaller, yet rapidly expanding. However, as in the case of Aotearoa, very few studies account for indigenous values of these resources.

Most of the international literature on non-market valuation of indigenous resources are for Australia. An example of accounting for indigenous vs. non-indigenous differences is by Rolfe and Windle (2003). Using choice modelling to estimate non-use values for protecting cultural heritage sites in the context of further water resource allocation and irrigation development in central Queensland, they find that indigenous people had higher values for cultural heritage site protection than regional centre and capital city populations. Similarly, Zander and Straton (2010) find that Aboriginal Australians reported higher WTP than other Australians for some river attributes, particularly those related to cultural values.

Focussing on issues or sites of significance to indigenous people, Farr et al. (2016) identify 18 Australian studies that quantify the benefits associated with Indigenous

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<sup>17</sup> We note that these studies do not attempt to measure metaphysical values associated with taonga such as mauri and mana.

Protected Areas (IPAs),<sup>18</sup> few of which are non-market economic evaluations. Blackwell et al. (2019) outline the framework for valuing Australian indigenous knowledge, but the report falls short of actually executing an evaluation.

### **Filling the research gaps**

Given the existing research gaps summarised above, the empirical literature on the economic value of Māori taonga could be extended in several ways. First, future research in the area should attempt to examine whether Māori value certain outcomes differently compared to other people. This would require designing a survey to have a substantial Māori sample size (with a high response rate). Second, more research would be required for sites or issues of significance to tāngata whenua. This would entail identifying culturally significant sites or issues, similar to mahinga kai sites in Miller et al. (2015). Third, more economic valuations should be conducted in areas that currently have little or no research, such as Māori, mātauranga Māori and emerging Māori innovative products and processes.

Furthermore, NZIER (2018) notes a few limitations in existing Aotearoa non-market valuation studies, such as a focus on local issues and the tendency to lump many types of value into one estimate. Localised issues tend to be of interest to only a small audience, are more susceptible to biases (such as locality bias and small sample bias in study design etc) and are too specific to be useful in another context.

Future valuations of Māori taonga should overcome these limitations, addressing issues of national scale and significance and where possible, estimating different types of value separately. Since many important policies are made at the national level, research into issues of national scale and significance is important for informing national policy analysis. Given the gaps in the international literature, such research extensions will not only contribute to the evidence base for Aotearoa policymaking, but also enrich the growing international literature on the economic value of indigenous resources.

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<sup>18</sup> IPAs are key components of Australia's National Reserve System and generate a large and diverse range of benefits – not just environmental and biodiversity benefits, but also social, economic and cultural benefits (Farr et al., 2016).

## 5 Discussion

### 5.1 Value and valuation

Section 2 indicated that institutional changes – such as implementing the Ko Aotearoa Tēnei recommendations – could give rise to two broad types of economic impact: direct wellbeing impacts, by better reflecting Māori preferences in the use, management and protection of Māori taonga; and productivity gains, by improving the productive use of Māori taonga, with consequential indirect wellbeing impacts.

Section 3 elaborated on particular features of Māori culture and world view affecting how Māori wellbeing might differ to non-Māori wellbeing. This highlighted considerations such as the role of Māori as kaitiaki of taonga, with obligations towards past, present and future generations for the care and protection of such taonga; the location of wellbeing at a more collective rather than individual level; and the importance of recognising that in the Māori worldview, taonga have their own inherent value, aside from human preferences over those taonga. It also discussed the challenges encountered by economic valuation techniques in measuring Māori values.

Section 4 discussed a range of economic valuation approaches, recognising that under the TEV framework, Māori taonga might give rise to a wide range of values over and above their GDP or profit impacts.

This section provides a first look at how the specific types of institutional changes associated with better recognising and protecting Māori taonga might be valued, building on those earlier discussions (Section 5.2). As in Section 2, the Ko Aotearoa Tēnei recommendations provide useful, if not exhaustive, case studies of the types of institutional changes that might be implemented to better recognise and protect Māori taonga. Hence the Recommendations are used as motivating examples of the relevant valuation questions and approaches.

More contemporary types of taonga are also considered (Section 5.3), such as emerging Māori innovative products and processes, and Māori data sovereignty. An indication of the possible ‘size of the prize’ in implementing the Recommendations, or making other institutional changes to better recognise and protect Māori taonga, is then provided (Section 5.4). Finally, the section recommends possible future research

for assessing the economic impacts of better recognising and providing for Māori taonga, and discusses the likely benefits of such research (Section 5.5).

## 5.2 Using economic approaches to value impacts of Ko Aotearoa Tēnei recommendations

This section discusses in high-level terms how implementing each of the main classes of the Ko Aotearoa Tēnei recommendations might be valued. Specifically, valuation issues under the following headings are addressed:

- Kaitiakitanga;
- Improved property rights, and reduced costs of rights enforcement;
- Consultation and consent;
- Delegated control and joint decision-making;
- Electoral colleges and specialist tribunals;
- Dedicated funding; and
- Preferential access.

### **Kaitiakitanga**

The first major class of Ko Aotearoa Tēnei recommendation to consider is the value to Māori of being better able to better discharge kaitiaki obligations (which obligations can be considered to be a form of shared ethic). As with many Māori concepts explored in this report, there is not a simple translation or singular interpretation of kaitiaki. Translations of kaitiaki commonly describe a shared ethic or principal of guardianship tied to intergenerational sustainability (E.g., Rout et al. 2021), with this ethic guiding interactions with taonga and manifestation of Māori culture and values in te ao Māori.

While there are many facets of the nexus of kaitiakitanga and dimensions of wellbeing for Māori, one facet is the benefit experienced by Māori being better able to realise cultural values. This aspect can be tied to the economic concept of utility, which has techniques well tested outside of Māori contexts that could be useful in estimating the impacts of the recommendations. This is not to say utility is the only or greatest driver of expressing kaitiaki for Māori, but it is one aspect that has close parallels in existing economic techniques. The recommendations relating to kaitiaki at one level can be described as the ‘resolution of pain’ – specifically, the pain of not having been able to

discharge kaitiaki obligations in line with the shared ethic, with adverse impacts on taonga, as well as past, present and future generations.

Akerlof and Kranton (2005, p. 9) undertook seminal research into the relationship between utility and realisation of values during their investigation of cadet training at the West Point military academy in the U.S., in this context they identified:

The goal of West Point is to change the identity of the cadets, so they will think of themselves, above all else, as officers in the U.S. army. *They will feel bad about themselves – they will lose utility – if they fall short of the ideals of such an officer.* [emphasis added]

The themes arising from this research have parallels to the realisation of kaitiaki of Māori taonga – responsible to past, present, and future generations for the care and protection of those taonga. Drawing on this analogy, kaitiaki might be said to ‘feel bad about themselves’, i.e., to ‘lose utility’ (economists might also say ‘suffer disutility’), if they are unable to realise cultural ideals of stewardship.

This naturally points to the use of non-market valuation techniques applied in specialisations like health economics to value the resolution or avoidance of types of illness causing commensurate (emotional/psychological/spiritual/physical) ‘pain’.

At another, complementary level, better discharging kaitiaki obligations will enable Māori – and non-Māori with aligned preferences – to better protect various taonga. This points to non-market valuation techniques used in environmental economics for valuing the benefits of remedying or avoiding pollution, sustainably managing resources, enhancing amenity values, etc.

An especially important and also related type of value associated with better enabling Māori to discharge kaitiaki obligations is the value of Māori preferences being acknowledged as being important enough to be afforded respect. This can be treated as a form of according Māori greater respect and prestige – i.e. mana.

Non-market valuation techniques from environmental economics can be used to infer the extra wellbeing Māori enjoy from being better able to discharge their kaitiaki obligations. Furthermore, they could be structured (e.g. through appropriate stated choice experiment design) to distinguish how mana enhancement can add to wellbeing independently of how much more able Māori are able to discharge kaitiaki obligations – to separate out the two effects, and to measure their overlap.

## **Improved property rights, and reduced costs of rights enforcement**

Where the Ko Aotearoa Tēnei recommendations involve the creation of more clearly defined and/or more easily enforceable property rights, this enhances the value that can be achieved by those who possess those rights. This is either through:

- Stopping inappropriate uses, or better managing uses across time;
- Being able to make greater use of the underlying IP without fear of misappropriation by third parties (just as patents, etc, do for other IP) – subject to the risk of international leakage if the relevant property rights are not respected outside of Aotearoa;
- Being able to grant third parties the right to make use of the relevant IP, which potentially provides access to better technologies for IP exploitation (and/or scale advantages).

In all cases, relevant decisions could be informed by Māori ethics such as kaitiakitanga – i.e., inappropriate uses discouraged, or better uses (including protection) encouraged, so as to align with kaitiakitanga obligations.

At the same time, creating clearer and better enforced property rights resolves uncertainty for third parties who are reluctant to make use of the relevant IP for fear of reputational harm or legal challenge, thus adding value to those third parties too.

Techniques from the IP commercialisation literature for the optimal exploitation of IP, and the returns this generates for both IP owners and IP licensees, would be relevant to estimating the value of these Recommendations (at both general/macro and specific/micro levels). For examples, see the surveys in Sen and Tauman (2007, footnote 3), Colombo (2014).

## **Consultation and consent**

The Ko Aotearoa Tēnei recommendations for certain taonga range from the relevant kaitiaki being given due consultation by those wishing to affect the relevant taonga, through to their consent being required to affect those taonga, determined on a case-specific basis. A right to be consulted is likely to generate value in the same way that affords Māori preferences with greater respect (i.e., better acknowledging the mana of the relevant Māori) and can be valued – though potentially at varying levels.

Conversely, granting Māori the right to grant or withhold consent over activities affecting relevant taonga – especially if remedies for breach are also provided for – is tantamount to granting the relevant Māori a veto right over those activities. This is substantively very similar to granting ‘ownership’ over the relevant taonga (even if the Tribunal has stated it does not consider ownership per se to be warranted) because consent rights amount to rights to control use, transfer benefits, etc. In that case, the techniques used for valuing IP commercialisation are once again pertinent, since consent rights over taonga use are substantively similar to having the ability to control the use of IP (i.e., to ‘owning’ the underlying IP, and therefore being able to control its use).

It is worth further exploring how value can be created and shared when the owner of certain rights (e.g., IPR holders, or taonga consent holders) either exploits those rights themselves or grant rights to third parties to do so – creating the potential for mutual gains in doing so. A key consideration is how the value of exploiting or preserving/protecting the relevant IP/taonga is shared when a third-party has specialised resources for doing so (e.g., skills, capital), and/or bears the greater share of associated risks or costs.

A natural precedent is the royalties regime applying to the exploitation of Crown minerals, such as oil (to pick an example). While oil exploration companies invest large sums, apply specialised skills, and bear significant risk in exploiting oil resources, the Crown – as ‘owner’ of the oil, and the party whose consent is required to exploit it – demands a royalty expressed as some share of the revenues or profits of those companies. The greater share of returns may accrue to the oil companies, but the resource owner is able to extract a share of those returns in recognition of its underlying ownership interest.

Hence, in those cases where the consent of Māori is required for certain uses of taonga (where ‘use’ includes ‘disturbance of’), it should be expected that those Māori might expect to enjoy a share of any mutual or exclusive benefits of third-party use of those taonga. This then points to the use of literatures on bargaining and value sharing, such as those that address bargaining outcomes in general (e.g. Shapley

values)<sup>19</sup> and the IP commercialisation literature with bargaining assumed, more directly addressing how bargaining affects both the sharing and the level of gains to be made by rights owners and third-party rights users from exploiting valuable resources (e.g. Tauman and Watanabe, 2007; Kishimoto and Muto, 2012).

Once again, the IP commercialisation literature offers a guide as how to value the relevant Ko Aotearoa Tēnei recommendations, in this case where Māori are granted consent rights over the use of certain taonga. Where the consent rights enable prohibition of offensive/derogatory public uses of taonga, the techniques suggested for estimating the value of ‘relieving pain’ in relation to better discharging kaitiaki obligations, and of better recognising mana, would also be relevant.

### **Delegated control and joint decision-making**

Where the Ko Aotearoa Tēnei recommendations involve control being delegated to Māori in respect of certain taonga, this is substantively similar to granting Māori the right to grant or withhold consent over the use of those taonga. This suggests that delegated control – like consent rights – is substantively similar to ownership, and can be valued in the same ways (including for the valuation of the mana of the relevant Māori being better acknowledged and respected).

The Tribunal makes it clear in its Ko Aotearoa Tēnei report that joint decision-making – i.e., partnership – does not necessarily imply equal power-sharing. As for the oil royalties example above, the Tribunal recognises that government agencies such as DOC might be making the greater contribution to managing and protecting taonga, and might therefore enjoy majority control as a result.

That said, the same considerations as apply for valuing consent rights will be relevant for valuing joint decision-making rights, with different levels of bargaining power translating into different sharing of the value created from using and protecting taonga. Where joint decision-making requires consensus, or affords Māori with majority control rights, this should be expected to translate into greater value shares to Māori.

### **Electoral colleges and specialist tribunals**

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<sup>19</sup> For a non-technical introduction to the Shapley Value and its applications, see Hart (2008). Technical discussions are provided in graduate economics texts on game theory, such as Osborne and Rubinstein (1994) and Myerson (1991).

In cases where multiple Māori groups share an interest in a given taonga, it is potentially useful to coalesce their shared interests into some manner of shared governance arrangement, as could be achieved through the recommended electoral colleges. Likewise, specialist agencies/tribunals with clear mandates and specialist skills (including in mātauranga Māori and tikanga) to resolve disputes and to balance interests, are also potentially useful in bringing clarity to who has what rights in respect of which taonga.

Both of these represent ways of reducing the costs of parties coalescing their collective values and coming to agreed uses (or non-uses) of shared taonga, and reducing uncertainty over who has rights to decide. Valuing these reduced costs and uncertainties is analogous to valuing the creation of secure IPRs and other property rights. Hence literatures on the value of such property right security offer insights into how they might be valued in relation to specific taonga, or classes of taonga.

### **Dedicated funding**

Providing Māori with dedicated funding to build capacity to exercise kaitiaki duties, undertake research into taonga use, management and protection, and to find modern applications of traditional knowledge, all represent methods of reducing the costs Māori face in pursuing these ends. In this sense they could be considered as being analogous to subsidies for IPR commercialisation, and hence the literature on IPR commercialisation provides insights into how such subsidies affect the overall returns to commercialisation, and how those returns are shared between IPR owners and any third-party commercialisers.

It should be acknowledged that IPR exploitation might also be pursued for non-commercial (e.g. social) purposes. In that case, variations on the IPR commercialisation literature will be required (such as using the framework in Meade (2019), which considers how resource use is affected when resources offer cultural services as well as commercial services).

### **Preferential access**

Preferential Māori access to things like commercial concessions on DOC land require an additional set of approaches. On the one hand, such access lowers the entry barriers to Māori in engaging in commercial activities on DOC land, making it more

likely they will profit from such activities. At the same time, allowing Māori to run commercial activities on DOC land opens the door to those activities being imbued with Māori values regarding the relevant taonga, which potentially differentiates those commercial activities in a way that can capture value premiums from consumers who value those attributes (e.g. more culturally-authentic experiences, alignment of sustainability preferences, etc.).

On the other hand, preferential access makes it harder for non-Māori to access the relevant concessions, reducing their expected returns, and changing competitive dynamics. Industrial organisation techniques would be relevant for determining how this changes the overall size and distribution of expected profits.

### 5.3 Emerging Māori innovative products and processes, including in digital space

The Ko Aotearoa Tēnei recommendations grapple with Māori taonga from a primarily traditional perspective. They recognise that contemporary institutions are required to properly reflect Māori values in the use, management and protection of taonga in a modern economic context. However, they do not seek to address what institutions might be required for innovations that have arisen since the Recommendations were released.

This is particularly relevant to innovations in digital space – the ‘fourth industrial revolution’ – where ‘data is the new oil’. Many foresee novel jeopardies in a world where personal data flows more freely than in the past, such as through reduced privacy. However, there is clearly also considerable potential for the proliferation of such data, and modern data analytics, to produce transformative solutions to long-standing issues – e.g. addressing inequities in health outcomes through the use of digital tools for monitoring wellbeing and delivering 24/7, low-cost, personalised, healthcare.

While the Ko Aotearoa Tēnei recommendations do not directly address such issues, they provide templates for institutional changes that might be tailored to do so. An additional value of developing culturally-appropriate tools for measuring market and non-market values for the use, management and protection of taonga is that those tools might also be adapted to more recent innovations, such as the use of taonga in digital space.

This is more than theoretical. The ‘metaverse’ is currently being touted and rolled out (e.g. by Meta, formerly Facebook) as the next stage in the evolution of the internet, where digital representations and uses (including possible misuses) of taonga should be expected. This partly explains the recent surge in interest in non-fungible tokens (NFTs), which can be treated as virtual property rights in the metaverse. It points to solutions for the better use, management and protection of taonga in the traditional material and spiritual domains likely also being required in digital space. Just as international institutions will likely be required to avoid implementation of the Ko Aotearoa Tēnei recommendations leading to ‘leakage’ in physical space, they will likely also be required to avoid such leakage in virtual space. Doing so could not just protect taonga against inappropriate use in new domains, but also pave the way for new opportunities to realise taonga value in such domains.

Māori data sovereignty represents a particular example of an area where institutional innovations could be critical for unleashing the full potential of Māori data (another form of taonga), while properly reflecting Māori preferences for the use, management and protection of such data. Institutional innovations like those set out in the Ko Aotearoa Tēnei recommendations should be expected to have economic impacts in terms of direct wellbeing impacts, as well as indirect wellbeing impacts through enhancing productive possibilities. Likewise, institutional innovations protecting the use, management and protection of Māori (e.g. personal) data could do likewise – and potentially in transformative ways).

**Box 4 – How Māori data sovereignty might accelerate improvements in Māori health**

Innovations in measuring, analysing and using real-time personal data across large populations are expected to result in revolutions in treating and preventing illness.<sup>20</sup> Such innovations are likely to be essential if long-standing disparities between Māori and non-Māori in terms of access to healthcare and health outcomes are to be resolved.

At the heart of such innovations is access to personal data. However, concerns about how personal data is used or shared could result in people withholding their personal data (e.g. by not adopting technologies like fitness trackers and smart watches), even where this impedes technology-based improvements in healthcare.

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<sup>20</sup> For example, see the May 2022 technology quarterly featured in *The Economist* magazine, at: <https://www.economist.com/technology-quarterly/2022/05/02/data-from-wearable-devices-are-changing-disease-surveillance-and-medical-research>.

Better recognition and protection of Māori data sovereignty could provide Māori with greater confidence to share their personal data, and an improved ability to negotiate – e.g. collectively – with data users about how such data might be used. Instead of resisting new technologies for fear of misuse of their personal data, this could pave the way for Māori to make greater use of the technologies developed using their data, with potentially significant improvements in health outcomes as a result.

If Māori at some relevant unit of analysis (e.g., whānau, hapū, etc.) are better able to control how their data is used, this better enables them to agree mutually-beneficial uses of their data – e.g., by negotiating arrangements with Meta, Google, etc. to use their data in exchange for innovative products and services that enhance their wellbeing. Research on developing suitable governance and ownership/use/protection institutions for Māori data would be a natural extension of that proposed above for valuing the economic impacts of the Ko Aotearoa Tēnei recommendations.

#### 5.4 Indication of the possible economic impact of implementing the Ko Aotearoa Tēnei recommendations

As emphasised earlier, the GDP impact of implementing the Ko Aotearoa Tēnei recommendations is only a very narrow measure of their overall economic impact, let alone broader wellbeing benefits (e.g. health and social cohesion benefits, among many others). However, it does at least provide a lower bound indication of the potential ‘size of the prize’ that might be secured by implementing the Recommendations. It is also a measure that is widely understood and used in practice.

An estimate of the potential order of magnitude of the GDP impacts of implementing the Ko Aotearoa Tēnei recommendations can be derived based on the results of an early study by Knack and Keefer (1995). They found that improved economic institutions (e.g. property right security and contract enforceability) could add over 1% to annual GDP growth.

For illustrative purposes, suppose implementing the Ko Aotearoa Tēnei recommendations – representing an improvement in institutions affecting an aspect of the overall Aotearoa economy – adds only 1/100<sup>th</sup> to 1/10<sup>th</sup> of this level of extra GDP growth. In other words, that implementing the Recommendations increases the country’s GDP growth by 0.01% to 0.1% per annum. This implies additional GDP of

\$34m to \$340m each year, based on June 2021 GDP of \$340 billion.<sup>21</sup> Capitalising this annual gain at Treasury's default real pre-tax discount rate (5% per annum)<sup>22</sup> in perpetuity implies an all-up value impact of almost \$700m to \$7 billion.

Even if only the most modest annual gains are considered, the GDP benefits alone are still tens of millions of dollars per year. A single bioactives breakthrough could generate gains of this level, as illustrated by the increased value of - 60 -aupap honey following research demonstrating its healing properties (which had long been known by Māori), and medical technology innovations for its therapeutic use.<sup>23</sup>

## 5.5 Recommended research

Research is needed to accurately define and estimate the economic impact of implementing the Ko Aotearoa Tēnei recommendations to help guide decision makers and into achieving desired socio-economic outcomes. We recommend a three-stage research programme:

**Stage 1 (foundational research)** will conduct dialogue with - 60 -aupapa Māori researchers. Subject to outcome of the dialogue, technology development and refinement will be finalised, and selected pilot research will be carried out. Stage one will drive research stages 2 and 3.

### **Stage 1 potential study #1: Non-market valuations that are relevant to Māori institutions.**

Very few non-market valuations in Aotearoa have focused on Māori institutions such as taonga and mātauranga. This lack of Māori focus in Aotearoa non-market valuation studies could be due to the resistance of putting a dollar value on taonga. Future research on the economic value of Māori taonga could be extended 3 main ways:

- Non-market valuation studies exploring Māori specific intuitions such as taonga, toi māori, mātauranga and emerging Māori innovative products and

<sup>21</sup> <https://www.stats.govt.nz/indicators/gross-domestic-product-gdp>.

<sup>22</sup> <https://www.treasury.govt.nz/information-and-services/state-sector-leadership/guidance/financial-reporting-policies-and-guidance/discount-rates>.

<sup>23</sup> For example, see <https://theregister.co.nz/2017/01/29/how-did-happen-how-manuka-honey-became-global-must-have/> and <http://www.petermolan.com/honey-research>.

processes. This would entail identifying culturally significant sites or issues, like mahinga kai sites in Miller et al. (2015). Stage 1 case study #2 below addresses this research in more detail.

- Future research is needed to examine to what extent Māori value certain outcomes differently to non-Māori, particularly to maximise collective wellbeing, and allowing for taonga to have intrinsic or inherent values. This would require designing a survey to have a substantial Māori sample size (with a high response rate).
- Future valuations of taonga should address issues of national scale and significance, while clearly recognising variation in how different Māori might value similar taonga, and where possible, estimate different types of value separately.

This research will need to be Māori-led and approached with caution as Awatere (2005) posits, it can be challenging to value indigenous concepts in an economic framework, even if such frameworks are indispensable if it is useful or necessary for value to be expressed in monetary terms. Given relevant gaps in the international literature, such research extensions will not only contribute to the evidence base for Aotearoa policymaking, but also enrich the growing international literature on the economic value of indigenous resources.

### **Stage 1 potential study #2: Māori theory of value – how it is applied etc – carrying on work of manahau.**

Further research is required to explore a Māori theory of value in more depth. Research in this area is growing as the Māori theory of value research project led by Dr Carla Houkamau, Dr Kiri Dell, Dr Jamie Newth and Dr Jason Mika has produced several research outputs in recent years. Dr Kiri Dell and Dr Carla Houkamau among others are carrying on Manuka Henare's work on the economy of mana.

Future research directions could look to collaborate with scholars already established in this space to explore Māori theories of value and then work to bridge these conceptualisations with modern economics, particularly where it is useful or necessary to express value in monetary terms.

**Stage 2 (exploratory studies)** will comprise case studies on Ko Aotearoa Tēnei recommendations based on government and stakeholder priorities and resourcing.

**Stage 2 potential study #1: Economic case studies into sites and issues of significance for Māori.**

Further economic research that focuses on sites and/or issues of significance for Māori is required as only a handful of these kind of studies currently exist including those mentioned above by Miller et al. (2015) who used choice modelling to estimate the cultural values of freshwater for Māori and non-Māori and Meade (2021b), who used the travel cost method to estimate the WTP for participation at Te Matatini. To our knowledge, there have been no economic valuations in the areas of mātauranga Māori and emerging Māori innovative products and processes, and therefore this subject requires further enquiry.

**Stage 3 (follow-up studies)** will be devoted to a more nuanced understanding of the impact of the Recommendations.

**Stage 3 potential study #1: Trade-offs and maximising benefits from implementing Ko Aotearoa Tēnei recommendations:**

As mentioned above, research is required to understand the economic trade-offs and to maximise any benefits that may occur from the productivity gains that will occur alongside implementation of the Ko Aotearoa Tēnei recommendations. This is especially relevant in the situation where productivity gains from enabling the Recommendations are not sufficient to ensure wellbeing gains for all people living in Aotearoa, as in this situation trade-offs will occur.

**Stage 3 potential case study #2: How Māori data sovereignty aligns with Ko Aotearoa Tēnei recommendations – the application of Ko Aotearoa Tēnei in the digital space:**

Further research on developing suitable governance and ownership/use/protection instructions for Māori data in the digital age especially in relation to the Ko Aotearoa Tēnei recommendations is required. This research will afford Māori better control of

how their data is used and enable them to agree to mutually beneficial uses of their data. A deep dive into the role Māori data sovereignty can play in implementing and enabling the Ko Aotearoa Tēnei recommendations would be a good place to start for this research.

**Stage 3 potential case study #3: Rigorous economic analysis of implementing Ko Aotearoa Tēnei recommendations.**

The previous stages and case studies mentioned above would create a solid foundation from which an estimation of economic value of affording Māori better protection of their taonga and better access to their roles as kaitiaki can be built. However, this task is a significant research project in itself and involves rigorous economic analysis and many resources. If this research is done right, it will shine a light on the importance of affording Māori better protection of their taonga and better ability to be kaitiaki, not only from an economic perspective, but from a te ao Māori tirohanga as well. It will reveal benefits of implementing the Ko Aotearoa Tēnei recommendations not only for Māori, but for all New Zealanders.

Along with the direct contribution of enabling understanding and valuing of Ko Aotearoa Tēnei recommendations, this programme creates a number of spillover benefits including knowledge creation (demonstrating ‘gold standard’ in the use of modern economics for economic valuation fully informed by indigenous knowledge and preferences; and positioning Māori and Aotearoa as leaders in understanding indigenous property rights and economic outcomes), capability building (developing future workforce and capabilities in Māori economics by employing a number of Māori (post-)graduates and introducing them to advanced applied economics; contributing to the career and development of Māori and non-Māori scholars through an excellent and unique team at different career stages and with diverse expertise) and better decision making (empowering stakeholders with the tools and knowledge needed to deliver better decision making and undertake long term strategic planning, which would lead to improving future wellbeing).

## 6 Conclusions

This report has created a framework for measuring Māori taonga, especially in the context of estimating the impact of implementing the Ko Aotearoa Tēnei recommendations. To build this framework, we carry out five key steps.

First, we explore the Ko Aotearoa Tēnei recommendations and the impacts of implementing them through a modern economic lens. We find that from an economic perspective, the Ko Aotearoa Tēnei recommendations fundamentally do two things: a) seek to ensure that public and private decision-making regarding taonga better align with Māori preferences and b) add to Aotearoa's productive capabilities by enabling mātauranga and other taonga to be used to their full potential without fear of misuse. Our framework shows that the implementation of these recommendations can have a significant impact on Aotearoa's in the form of two types of economic impact, direct wellbeing impacts and productivity gains.

Second, we investigate Māori conceptualisations of value. We find that the literature on a Māori theory of value is built around four key themes: 1) whakapapa, 2) taonga, 3) the economy of mana and 4) manahau. From these key themes six kaupapa Māori themes can be used to bridge te ao Māori and modern economics: 1) intrinsic value, 2) whakapapa, 3) whānau, 4) te tikanga kanorau, 5) kotahitanga and 6) tauutuutu.

The third key step examines theories of value and various approaches to measuring value that has been used in the field of economics. Focus is given to non-market valuation techniques, as the markets for most Māori tāonga either do not exist or are imperfect. There are three major non-market valuation methods: revealed preference methods, stated preference methods, and the subjective wellbeing method. We find an extensive international literature on non-market valuation of environmental and cultural resources but only a handful of literature that focused on the economic valuation of Māori resources. However, there is a growing number of studies that have stressed the importance of valuing aspects of the Māori economy.

In the fourth key step we explore how specific types of institutional changes associated with better recognising of protecting Māori taonga might be valued. Here we consider how implementing each of the main classes of the Ko Aotearoa Tēnei recommendations might be valued, and find that non-market valuation techniques and

techniques for valuing IP and IPR commercialisation among other techniques will be useful in this area. We also discuss the emerging relevance of Māori innovation products and processes including in the digital space.

In the fifth key step we look at how specific types of institutional changes associated with better recognising the protecting of taonga might be valued, and find that while the Ko Aotearoa Tēnei recommendations do not directly address such issues, they provide templates for institutional changes that might be tailored to do so. We expect that Māori data sovereignty is an area where institutional innovations could be critical for unleashing the full potential of Māori data. As indicative estimates for illustrative purposes, we gauge that even if only the most modest annual gains are considered, the GDP benefits of implementing the Ko Aotearoa Tēnei recommendations could be tens of millions of dollars per year.

Finally, as this is a scoping study, we compile future research directions. There are three stages of future research directions described above. Stage 1 seeks to conduct a dialogue with kaupapa Māori research. Stage 2 and 3 will be subject to the outcome of stage 1. Research stage 2 tentatively seeks to comprise case studies on Ko Aotearoa Tēnei recommendations based on government and stakeholders' priorities and resources. Stage 3, also tentative, will be devoted to a more nuanced understanding of the impact of the Recommendations.

This report is not without limitation. As indicated throughout the report and particularly in the research recommendations of section 5.5, the main limitation arises from the lack of evidence and practice that combines economic techniques with Māori taonga valuation, more so studies that come from a position of deep cultural knowledge. Without this seminal research, we are limited in our capacity to understand many of the facets of Māori taonga, and appropriate ways in which economic techniques can be applied to these.

A specific example of where this knowledge gap limits this report includes understanding the technical and philosophical issues relating to the extension of economic techniques into the valuation of metaphysical aspects of taonga. This report also signals the importance of, rather than develops, economic techniques in line with whakaaro Māori, an important step in ensuring the suitability and safety of economic valuation.

What is clear through this report is that more research is needed, and Māori voices made prominent in exploring existing economic techniques and describing concepts such as the Māori economy, and mechanics within these concepts to facilitate more detailed and better-quality valuation exercises that seek to move our understanding of the economic value closer to the underlying total value of taonga.

Taonga are important to all of Aotearoa. More effective protection, preservation and tika promotion of taonga including mātauranga Māori has significant cultural, social, and environmental benefits that can be realised, primarily for Māori but also for Aotearoa as part of our national identity. As mentioned at the beginning of this report, Aotearoa's current economic institutions are not conducive to incorporating a te ao Māori tirohanga, and therefore it has been challenging to measure, or even imagine, the economic impacts of implementing the Ko Aotearoa Tēnei recommendations for Aotearoa as a whole. This report has addressed the first steps in starting to measure the economic value of implementing the Recommendations. It has also laid out specific and structured future research directions so this important work can continue.

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# Appendices

## Appendix A: Translating graphical depictions of gains from implementing Ko Aotearoa Tēnei recommendations into cost-benefit terms

Figures 4-5 in Section 2.3 can be translated into terms more familiar for cost-benefit analyses, by thinking of values like ‘consumer surplus’ (changes in wellbeing, or ‘utility’) and ‘producer surplus’ (changes in production, or ‘profits’).

It is helpful to consider the impacts of implementing the Ko Aotearoa Tēnei recommendations on intergenerational social welfare (ISW), which might be defined as being:

- A weighted average of utility (U) and profit ( $\Pi$ ) streams of Māori and non-Māori;
- Discounted over time to produce their present value (PV), using discount rates (DR) appropriate to each of Māori and non-Māori – i.e. reflecting their respective rates of (inter-generational) time preference.

In symbolic terms this can be expressed as (where w represents weight):

$$\begin{aligned} \text{ISW} = & w_{\text{Māori}} \times \{ \text{PV}_{@ \text{MāoriDR}}(U_{\text{Māori},0}, U_{\text{Māori},1}, \dots) + \text{PV}_{@ \text{MāoriDR}}(\Pi_{\text{Māori},0}, \Pi_{\text{Māori},1}, \dots) \} \\ & + (1 - w_{\text{Māori}}) \times \{ \text{PV}_{@ \text{non-MāoriDR}}(U_{\text{non-Māori},0}, U_{\text{non-Māori},1}, \dots) \\ & + \text{PV}_{@ \text{non-MāoriDR}}(\Pi_{\text{non-Māori},0}, \Pi_{\text{non-Māori},1}, \dots) \} \end{aligned}$$

Changing institutions to place greater weight on Māori preferences increases  $w_{\text{Māori}}$  and thus shifts social decisions.

Critically, maximised utilities depend on prices and profits – i.e.:

$$U^*_{\text{Māori}} = U^*_{\text{Māori}}(\text{prices}, [\text{relative}] \Pi_{\text{Māori}}, \text{etc.})$$

$$U^*_{\text{non-Māori}} = U^*_{\text{non-Māori}}(\text{prices}, [\text{relative}] \Pi_{\text{non-Māori}}, \text{etc.})$$

Due to the diminishing marginal utility of income, changes that increase  $\Pi_{\text{Māori}}$  might lead to  $U^*_{\text{Māori}}$  rising faster than  $U^*_{\text{non-Māori}}$  falls in response to any falls in  $\Pi_{\text{non-Māori}}$ .<sup>24</sup>

So, if implementing the Ko Aotearoa Tēnei recommendations boosts  $U^*_{\text{Māori}}$  and  $\Pi_{\text{Māori}}$  but causes falls in  $U^*_{\text{non-Māori}}$  and  $\Pi_{\text{non-Māori}}$ , ISW could still increase. Whether or not it does will depend on relative profit changes, and whether the diminishing marginal utility of income causes a disproportionate increase in  $U^*_{\text{Māori}}$ .

<sup>24</sup> E.g., see HM Treasury (2020) and Fujiwara (2013) for discussions of reweighting costs and benefits to address distributional issues when different groups have different incomes.



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