Background

For the past 30 years, a system designed to promote the sustainable management of natural and physical resources has been operating in New Zealand under the *Resource Management Act 1991* (RMA). It has become increasingly apparent that the RMA has not fulfilled its early promise (despite initial fanfare) and the New Zealand Government is currently in the process of replacing it with a return to more directive legislation, more akin to the *Town and Country Planning Act 1977.*

As so often is the case, when confronted with problems New Zealand resorts to frenetic legislative activity, drastically changing its regulatory frameworks in order to produce the desired result. Yet almost always the performance does not produce the outcome wished for and we hardly ever measure the effects of our policy changes to see whether their objects have been achieved.

Sir Geoffrey Palmer KC, Address to Resource Management Law Association, 27 September 2013

There are a myriad of reasons for the ultimate failure of the RMA to successfully promote sustainable resource management, many of which are well-documented in the Randerson Report (Resource Management Review Panel, 2020). Yet amongst the reasons generally discussed, little attention appears to be given to the nature of the economic analysis undertaken to inform decision-making (i.e. for a 'section 32' report under the RMA).

There have been many examples over the years of where there have been unintended but foreseeable consequences from government policy. A prime example is the loss of undeveloped land of ecological value such as wetlands, particularly in the lowlands, that resulted from the 1950 Marginal Lands Act (Moran and Keenan, 2019) – and was a driver for the Queen Elizabeth II National Trust. The drainage and clearance of land is still treated as 'improvements' in New Zealand's tax system, which perpetuates the wider issue.

More often than not, the economic thinking used to assess the impacts of a possible policy intervention is the same or similar to that which created the issue in the first place, resulting in something of a vicious circle and few solutions.

In general terms, any economic assessment done to inform resource management decisions in New Zealand must be consistent with the principles of the Treaty of Waitangi, and the purpose and principles of the Resource Management Act 1991 and the Local Government Act 2002. If an assessment fails in this respect then its outputs are likely to jeopardise the achievement of policy objectives. Moran (2020)

This article takes the opportunity, created by this turning point in legislation, to put forward pragmatic ideas for improving economic practice 'at the coal face' in the future so it is at least consistent with (rather than undermining) the legislative purpose. These ideas stem from over a decade's experience in applied freshwater economics for local government's regional sector, and before that in biodiversity economics. The article starts by highlighting the importance of setting out a common understanding before touching on what economic analysis is really needed to support policy so it is ultimately effective.

What is the Economy and Economics?[1]

People generally will tell you they 'know' what economy and economics mean, yet when asked to define these terms they can often struggle to put it into words. There are likely to be as many different interpretations as there are people in a room, with some appearing to erroneously conflate it with chrematistics (wealth creation [2]), or even financial accountancy – occasionally because it suits their ends to do so. This 'fuzziness' is evident in the considerable debate that arises when people are set an exercise to categorise things, such as gold, water or honey bees, by placing them on a continuum from 'economy' to the 'natural environment'.

Creating common ground in terms of definitions is a pre-requisite to having a meaningful discussion about the topic. In essence, the economy and economics are broad terms that cover most human activity, whether it be work or leisure.

An economy is the system of activities relating to supply of, and demand for, goods and services in a specific area (including their trade) that helps to 'allocate' resources that are finite or limited (i.e. scarce). No two economies are identical – each one being shaped by a unique set of factors including its culture, laws, history, and biophysical features (landscape, climate and soils).

Economics is how we explain the choices we make (either explicitly or implicitly) through our activities to allocate scarce resources based on their 'utility' (or usefulness) to us, and the implications of these choices for individuals, communities and society.

- Goods and services are all of the flows from our stock of resources (or 'capitals': labour, financial, built, and natural).
- Allocation is the sharing of resources between alternative goods and services – and usually occurs without full information.
- Scarcity is when demand for a good or service is beyond a finite or limited supply.
- Resources are the different forms of capital: natural, human, built, or financial.
- Utility includes 'use' values [3], 'non-use' values, and 'intrinsic' or 'existence' values.

In economics, value is estimated using a range of indicators that are usually (but not always) quantified, with a focus is on those that can be monetised. Neo-classical economics is human-centric, and in practice it is often limited to change in 'use' values where marketplaces exist to trade goods and services. Those values for which there is no market tend to be neglected, meaning most economic analysis is, at best, incomplete – although this is rarely

acknowledged.

In a Māori economy, choices are founded on an environmental ethic (Rout, Awatere, Mika, Reid, and Roskruge, 2021). This approach is more akin to the original Greek sense of 'economy' where it denoted the 'rational' management of resources and what was 'rational' was based on ethics (Lesham, 2016).

Skidelsky (2021) devotes an entire chapter to the relatively recent removal of ethics from economics and its consequences.

What is Efficiency?

Similar to 'economy' and 'economics', efficiency is an everyday but much mis-understood term. Efficiency is also erroneously used as a synonym for cost-effectiveness (the latter is simply a measure of the 'cost per unit of output'). Discussions of efficiency tend to use a fairly simple interpretation, focusing on 'productive efficiency' (supplying a good or service in ways that are both technically efficient [**4**] and account for costs). Furthermore, assessments of productivity (and so productive efficiency) are usually incomplete and do not capture externalities. The following expands on this point using fresh water as an example:

Although awareness of water quality issues has improved over recent years, the economy's use of fresh water (both for water takes and to receive by-products as waste) continues to increase in Southland and elsewhere in New Zealand. One reason is that standard assessments of productivity do not usually include an economic activity's use of natural resources over the longer term. In other words, they are partial assessments of productivity, and do not necessarily reflect sustainability. Where an activity's use of water is not accounted for, and it impacts on other values, then all of the community is, in effect, subsidising that activity. This is the case regardless of the economic sector being considered (e.g. agriculture, forestry, manufacturing, tourism or local government).

Moran, Pearson, Couldrey, and Eyre (2017)

Productive efficiency, which includes technical efficiency, is just one dimension of economic efficiency. Economic efficiency is a complex concept and it includes: 1) allocative efficiency (how well resources are shared between goods and services) and 2) dynamic efficiency (how resources are used in ways that improve wellbeing over time). Allocative efficiency and dynamic efficiency are both extremely relevant to managing resources sustainably and yet are rarely mentioned in any analysis [**5**]. In particular, the use of positive discount rates, which weigh the interests of the present generation over future generations, deserves more attention (Parks and Gowdy, 2013).

What Economic Analysis is Really Needed?

The discussion so far likely makes economic analysis appear to be an overwhelming task. Yet there are pragmatic ways of making it manageable and targeted through accurate scoping, problem characterisation, careful choice of multiple measures, using a mix of qualitative and quantitative tools, and seeking expert advice. It starts with developing a firm economic understanding of a topic, which is a 'necessary condition' for a successful policy response to address environmental issues (Moran, 2022).

Scoping starts with a policy context, which shapes the analysis and narrows the economic question(s) at hand. For instance, where a certain course of action is pre-determined, such as via a national policy statement, then economics is about exploring soundness of alternative

ways of achieving it rather than re-litigating the direction itself. In other words, testing 'how' something might happen, which means considering 'who', 'what', 'when', 'where' and how much – rather than 'why'. Scoping includes characterising the specific nature of the relevant sectors and activities within the economy, which is influenced by its environmental settings.

The choice and use of economic metrics is critical. For example, at present, analysis tends to focus on partial economic outputs, rather than overall economic outcomes, without acknowledging the gaps. 'Value-added' (i.e. the income earned in the supply of goods and services) gains a lot of attention despite the fact that it may be owned by those far beyond the economy where the resource use (and its environmental effects) is occurring, and can quickly be translated into debt. Employment is usually one of the most relevant measures for local communities (although it needs to capture owner-operators of small businesses).

Despite this information age, not all the data needed for analysis will be readily available or easily understandable. An important but often under-rated source is expert knowledge and opinion. For example, much of what is known about farm debt sits within the agricultural services sector, but it is not accessible for reasons of commercial sensitivity and personal privacy, and is only held by experts (Moran, McDonald, and McKay, 2022). Such qualitative is just as valid as quantitative information, and both are needed in equal measure for completeness.

Models are useful for scenario testing, but there is a tendency to be overly reliant on them. Not everything needs to be modelled, nor does everything need to be included in a model – many things may more easily be addressed in commentary around the results. A conceptual model based on a robust understanding of a system is a useful alternative to a highly developed mathematical 'black box'. Ultimately, the value of models is not so much in producing 'headline' results as learning what is driving those results and so how the system operates, which lead us to think more intuitively about an issue.

For many situations it is sufficient (and even preferable) to develop a range of case studies and real-world examples, especially because industries are often complex and diverse. The process of selecting case studies is an exercise in problem characterisation (e.g. for municipal wastewater in Part C: Section 1 of Moran, McKay, Bennett, West, and Wilson (2018)). Real-world examples are particularly useful for understanding costs avoided – or the benefit side of an equation – where inferential methods can be unsatisfactory. Relevant examples can easily illustrate the costs arising from a deteriorated environment (i.e. damage costs) and the costs of fixing it (i.e. remediation costs [**6**]) are more tangible (Moran, 2019).

The purpose of economic analysis is not to either be dismissive of, or to overly emphasise, the possible implications – it is to learn and so improve policy solutions by minimising the implications and avoid the unintended consequences. Economics is about providing balance (and, in fact, has similarities to tightrope walking), context and perspective - being what science refers as an 'honest broker' (Pielke, 2007). Gluckman, Bardsley, and Kaiser (2021) offer ten recommendations for effective brokerage that are just as relevant to economics. However, all of this effort is wasted unless it is also communicated effectively to a general audience, which unfortunately tends to be an under-rated skill.

So often, the analysis 'needle' appears to get stuck on what is in front of us now and miss how a situation might reasonably be expected to play out in the future. It also fails to recognise the inconsistencies in the system and so works at cross-purposes. If any new

legislation is ultimately going to be successful in promoting sustainable resource management, then our approach to economics has to change with it too. Until this occurs, economic analysis will continue to be our Achilles heel.

Notes

[**1**] This section is based on Moran (2020) and workshops held with Environment Southland's Council and Regional Forum for Freshwater. The Regional Forum was a National Objectives Framework (NOF) process for the National Policy Statement for Freshwater Management 2020: https://waterandland.es.govt.nz/regional-forum

[**2**] From the Greek *khrēmatizein* to make money (*khrēma* meaning money).

[**3**] In general terms, use values can be either consumptive or non-consumptive.

[**4**] Technical efficiency is when resource use is minimised for each unit of output

[**5**] An analogy based on making toast illustrates how all of these dimensions fit together. Imagine you want to make a piece of toast and there are two methods you can use: a metal fork over a camp fire or an electric toaster. Each method has a different mix of resources (e.g. labour, energy, tools) and, depending on the situation, one method or the other will use fewer resources for a given output of toast. This calculation is about the technical efficiency of making toast. Imagine that, as well as the different mixes of resources used in the two methods, you have to also think about costs. The addition of costs shifts the calculus to being about productive efficiency. While imagining all of this toast-making you remember that you also need coffee, and realise that you need to share the use of a resource (maybe it is energy) between the two in a way that makes you as content as possible. Calculating the perfect balance between toast versus coffee is about allocative efficiency. Finally, and having had breakfast, you realise that if you put some resources into developing new tools or growing more raw ingredients you may be able to have more toast or better coffee in the future and be even more content overall. This calculation is about dynamic efficiency across a period of time. A useful reference for further reading is the Australian Productivity Commission (2013).

[**6**] The latter are described here as remediation rather than restoration costs because once an environment has been changed then returning it to a former state can be all but impossible, particularly once ecological thresholds have been crossed

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