



Ministry for the
Environment
Manatū Mō Te Taiao

Valuing New Zealand's Clean Green Image

The Ministry for the Environment commissioned PA Consultants to carry out this study (funded by the Contestable Research Fund of the Ministry of Research, Science and Technology) to provide an estimate of the value for New Zealand's export trade of our clean green image.

There is considerable discussion about New Zealand's clean green image, but relatively little solid information about its value. This was clear from an earlier study which the Ministry commissioned through the Sustainable Management Fund, *Green Market Signals*, published in 1999. The current study is, in part, a response to the suggestions received from industry groups and others at that time.

The aim of this current study is to quantify the extent to which particular New Zealand exports benefit from positive perceptions about our environment. The project focuses on three export sectors: dairy, inbound tourism, and organic produce. It assesses the potential consumer reaction to an illustrative decline in New Zealand's cleanness and greenness.

The empirical work done in this study reinforces the qualitative evidence that our clean green image is valuable, and provides some useful insights into the size and nature of that value. The results are of course not definitive – no contingent valuation study can ever be so – but they do strongly indicate a significant vulnerability of export value (through reduction in product quantities likely to be purchased by consumers) in the event of a (hypothetical) degradation of New Zealand's environment.

While the research's approach and findings have been robustly peer reviewed, like all empirical economic estimates, the conclusions rest on assumptions and a specific methodology. That said, the study certainly provides food for thought. Main findings are as follows:

- New Zealand's clean green image does have a value. Environmental image is a substantial driver of the value New Zealand can derive for goods and services in the international market place.
- The study suggests this image is worth at least hundreds of millions, possibly billions, of dollars – aggregating value elements from dairy, tourism, and organic produce, and extrapolating to other sectors such as meat.
- New Zealand is relatively clean and green. This is mainly attributable to our low population density resulting in relatively benign environmental pressures.
- However, there are environmental problems that are sufficient to raise questions about the sustainability of the value of New Zealand's exports attributable to its environmental image. There is a risk that New Zealand will lose value that is created by the current environmental image if we are not vigilant in dealing with the problems that could threaten the image.

If you would like to discuss this report further, please contact Dr Ralph Chapman, Manager of the Strategic Policy Group, Ministry for the Environment, at (04) 917 7444 or email him at ralph.chapman@mfe.govt.nz.

1. INTRODUCTION

1.1 PREAMBLE

Environmental policy is driven not only by a desire to protect the environment for its own sake but also in recognition of the connection between environmental quality and economic and social outcomes. The contribution the environment makes to the value of New Zealand's internationally traded products (including tourism exports) is a case in point.

In order to determine where to direct scarce resources available for environmental protection and enhancement, and how much to allocate to vital investment, it is useful to understand further the nature of these "extrinsic" values¹. For example, if we knew that the absence of heavy metal contamination of New Zealand's soils added considerably to the value of our dairy export products then we might be more inclined to invest in hazardous waste management.

To this end, Stephen Thornton and Sue Paul of the PA Consulting Group and Geoff Kerr of Lincoln University were retained by the Ministry for the Environment to conduct a quantitative investigation into the value New Zealand's clean green image adds to its export receipts.

1.2 STUDY CONTEXT

This project is the second in a series of investigations commissioned by the Ministry for the Environment into the link between New Zealand's export trade and the quality of New Zealand's environment.

The purpose of the project is to build on the qualitative analysis already conducted for the Ministry, by Woodward-Clyde (NZ) Ltd *Key Opportunities and Risks to New Zealand's Export Trade from Green Market Signals* completed in December 1999 under a grant from the Sustainable Management Fund.² In particular, it is to take the analysis further through to a *quantification* of the value attributable to environmental factors.³

The results of the investigation will provide background to the preparation of policy advice in the areas of business and the environment, and sustainable development.

¹ In value theory generally, a distinction is often made between intrinsic value (attributes that are valuable for their own sake) and extrinsic or instrumental value (attributes that are of value because they contribute to some other thing which is itself valuable). Thus in this sense, what is of interest is (a component of) the extrinsic value of New Zealand's environmental quality.

² Woodward-Clyde's report can be downloaded from www.smf.govt.nz/results/6117_final.pdf.

³ This project was funded through the Departmental Contestable Research Pool of MORST.

1.3 APPROACH AND METHODOLOGY

1.3.1 Overview of Approach

In contemplating how best to approach the assignment, we formed the view very quickly that it would be impossible to undertake a comprehensive valuation of New Zealand's "clean green image". There are simply too many export products and services that may benefit from the image. Furthermore, the value derived from New Zealand's environmental image is likely to be specific to the good or service being marketed, and to the export market into which it is being sold.

Having reached this point, the task became one of determining which "couplets" of goods/services and markets should be selected as the subject of the valuation effort. This in turn raised the question of how, precisely, the "couplets" should be selected.

In addressing the question of how best to focus an investigation of the "value" of New Zealand's clean green image, we undertook two pieces of preliminary analysis.

The first was an "export sector scan". In this part of the analysis, we considered the sectors and markets in which New Zealand's export revenues are earned and the qualitative evidence for the value being enhanced by New Zealand's environmental image.

The second part of the analysis consisted of an environmental scan. Here we considered the areas of the New Zealand environment under pressure and the potential for environmental degradation to flow through into the value obtained from our key exports.

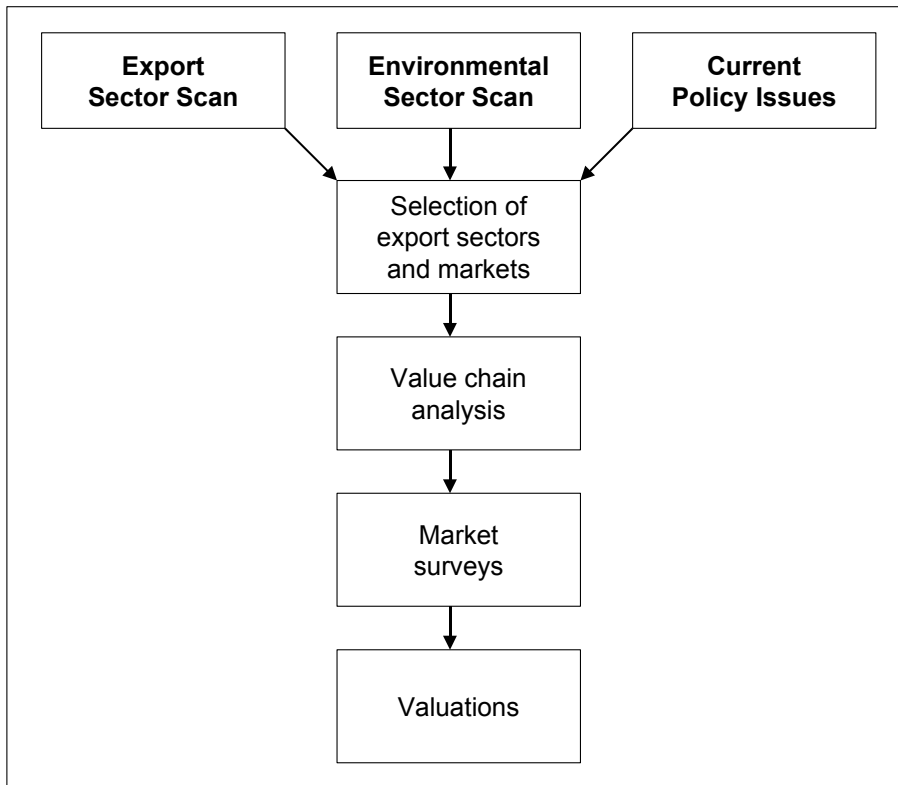
These two pieces of preliminary analysis, coupled with input from the Ministry for the Environment with respect to how the insights developed from the investigation might inform current policy work, helped narrow the focus of the study to three areas in particular, namely:

- the relationship between the value obtained in emerging markets for New Zealand's added value dairy products and the impacts poor farm management might have on the rural environment;
- the relationship between environmental quality generally and the inbound tourism sector; and
- the relationship between various policy positions with respect to the release of genetically modified organisms and the value obtained from the exports of organic produce.

Once the scope of the study had been narrowed to these three areas, a view needed to be formed about where in the value chain, environmental value was being added. This in turn would inform decisions about where to focus the survey effort needed to drive the valuation methodology (see below). In order to answer these questions, we conducted a brief "value chain analysis" for the three "couplets" selected for more detailed study.

Following completion of this preliminary work, the survey work and ultimately the valuation work itself could commence. These components of the work are discussed in more detail in the following section. The approach to the investigation is summarised in **Error! Reference source not found.** below.

Figure 1: Approach to the investigation



1.3.2 Valuation Methodology

The value of New Zealand's clean green image is not something that we can observe unbundled in the market place. Nor is it possible to experiment, in the sense of changing New Zealand's environmental image with a view to measuring the resulting effect. This makes the valuation stage of the analysis somewhat problematic.

In many respects, the task of valuing the impact of New Zealand's clean green image is similar to the valuation of other non-market environmental goods and services. Usually, in the environmental area, non-market valuation is carried out using revealed preference methods such as hedonic pricing and travel cost methods or stated preference methods such as contingent valuation. (A brief overview of non-market valuation methods is contained in Appendix A.)

Of the methods available, we chose the contingent valuation methodology as the most appropriate. In essence, this involves the surveying of market participants with a view to determining how their purchasing behaviour might change if key parameters (in this case, relating to environmental quality) might be varied.

Thus, we measure the value of exports under New Zealand's current environmental image (the status quo), and then the value of exports under an alternative (hypothetical) degraded environmental scenario. Essentially we are measuring the difference in export receipts in the presence and absence of New Zealand's clean green image. This difference gives us an indication of the value of New Zealand's clean green image. The valuation methodology, as applied to this assignment, is discussed in more detail in Chapter 5.

1.4 ORGANISATION OF THIS REPORT

The remainder of the report is organised into five main sections as follows:

- *Chapter 2* contains the results of the export sector scan. It briefly summarises New Zealand's export trade in terms of our highest value exports and major overseas markets. The main products and markets for each sector are discussed, followed by evidence of environmental contribution to export value.
- *Chapter 3* presents the findings from the environmental scan. The chapter concludes with a set of couplets, which associates areas of environmental stress with export sectors that could potentially be affected if these "risk areas" are not adequately managed.
- *Chapter 4* contains the insights developed during the value chain analysis stage. It provides a brief overview of the tourism, dairy and organics sectors, with a view to establishing where in the production-distribution-marketing chain environmental value is being added. This enabled us to focus the survey effort in terms of determining the markets where the survey should be administered, as well as who in particular in the value chain to target.
- *Chapter 5* contains the results of the empirical phase of the investigation. Survey design for each of the three sectors is discussed, along with the location of the survey effort, as well other implementation issues. The chapter also includes a discussion of the contingent valuation methodology used. The results obtained from each of the three sectors are presented.
- *Chapter 6* brings together the conclusions and insights developed during the course of the study.

Relevant export sector data and environmental data, along with the surveys used in the three sectors (and the overview of non-market valuation methodologies mentioned above), have been included in the appendices.