



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.

6. CONCLUSIONS

6.1 OVERVIEW

During the course of this investigation, it has become clear that New Zealand's environmental image is a key driver of the value New Zealand is able to obtain for its goods and services in the international market place.

At the qualitative level, there is evidence from previous surveys and analyses to suggest that environmental image is an important contributing factor to the behaviour of purchasers of New Zealand's exports. In addition, many of the key marketers of New Zealand product use New Zealand's image as part of their marketing strategies.

The empirical work done in the context of this study reinforced this assumption and provides some additional insights into the size and nature of the impact. Key conclusions with respect to the empirical work are outlined below:

6.1.1 Dairy sector

The analysis of the dairy sector found that Malaysian consumers purchasing New Zealand dairy products could be categorised into one of two groups. Those who would continue purchasing New Zealand dairy products under worsened environmental perceptions (i.e. New Zealand's "clean green" image is not a predominant factor in their purchasing decisions) and those who would stop buying New Zealand product under worsened perceptions.

Surveys undertaken in Kuala Lumpur indicated that the average percentage change in the amount of dairy product purchased by consumers was almost 54%. These results were used to generalise to other markets in Asia and Africa, India and Middle East (AIME) regions. We found that the approximate loss in revenue depended on how much "lost" product could be redirected to ingredients markets where environmental image plays a less important role. The loss in revenue varied from NZ\$241 million (in the case where all the lost product was redirected to ingredients markets) to NZ\$569 million (in the case where none of the lost product was redirected).

The approximate loss in profit depends on how much more profitable the consumer business is than its ingredients counterpart (as well as how much lost product is redirected). The worst case scenario (where the consumer business yields a profit ten times as much as the ingredients business) had a profit loss of around NZ\$60 million associated with it.

The long-term profit loss would most likely be substantially less than that in the short-term. In the short-term, despite worsened environmental perceptions and a loss in volume from added value markets, the NZDB would still incur the costs of most of the existing business infrastructure, implying that a loss in revenue would have a large impact on profit. In the long-term, however, these costs will gradually decrease (as the industry adapts to a reduction in demand) yielding a less substantial loss in profit.

6.1.2 Organic produce

The valuation of the organic sector was particularly challenging. New Zealand's stance on GM and its subsequent effect on the organic sector will depend on consumer opinions in our key overseas markets coupled with the views and behaviour of relatively few individuals occupying key positions in the distribution chain. This makes the impact difficult to predict with any certainty.

Evaluating loss of profit to the organic sector under the two GM scenarios was another challenge. A small sample size, coupled with a lack of information about the cost structure of the organic fresh fruit sector made the task a difficult one. Given the difference in cost structure between organic and conventional orchards, aggregated profit figures from ENZA and Zespri annual reports provide very little insight into how much profit was attributable to organic lines.

The valuation was conducted individually for each survey response and loss in profit to the organic sector was evaluated for a variety of contrived profit margins. In the short-term the loss in profit would be considerably higher than that in the long-term, due to the high input costs associated with organic farming.

Overall, it appeared that in the short-term New Zealand's organic sector would not be affected by limited field trials going ahead. In the long-term, however, New Zealand organic producers may be replaced with alternative sources of supply. Price signals are also an important consideration, in that there may be no mitigating effect through price manipulation. A price drop may indicate that consumer interest in New Zealand organic products is waning. New Zealand already allows field trials of GMOs, but it is not clear if this was known to the survey respondents. Therefore the extent of the risk faced by organic growers is also unclear.

Under the "uncontrolled release" policy the New Zealand organic sector would almost certainly suffer immediate losses. The two survey responses (Worldwide Fruit and Organic Farmfoods) indicated that under an uncontrolled release scenario they would immediately decrease or sever supply.

6.1.3 Inbound tourism

The results from the inbound tourism survey, like those from the dairy sector survey, indicated that there were two distinct groups of tourists: those that would visit New Zealand (and stay the same number of days) irrespective of our environmental image and those that would not visit New Zealand at all under worsened perceptions.

The extent of the change in purchasing behaviour (measured here by the percentage change in length of stay) varied by country. Australians exhibited the least change at 48%), while Japanese and Korean tourists showed the highest change (at 79% and 77.5% respectively).

The loss to New Zealand from these five markets varied from NZ\$938 million (loss in direct value added plus GST) to NZ\$530 million (deducting the labour component from direct value added).

Change in visitor behaviour largely depends on the purpose of visit. Visitors on business were more likely to reduce their length of stay, as opposed to cancelling the trip entirely, as was the case with tourists visiting friends and family. The group, which showed the highest percentage change in length of stay, was, not surprisingly, those on vacation.

6.2 EMERGENCE OF GREEN PROTECTIONISM

The valuation methodology used in this investigation is based on the actions of consumers and retailers (under a hypothetically degraded environment), and the associated economic impacts. A second important economic dimension that should be mentioned is the emergence of “green protectionist” strategies in First World countries to limit food imports from countries such as New Zealand.¹

McKenna and Campbell (1999)² noted an example regarding difficulties encountered by the New Zealand kiwifruit industry in the Italian market in 1992. Italian authorities claimed that New Zealand kiwifruit exceeded the maximum residue levels (MRLs) for certain agrichemicals. McKenna and Campbell (1999) further noted that such protectionist policies were not entirely independent of politics. The restrictions on New Zealand sales occurred at the same time as the harvest of the Italian kiwifruit crop. At the same time the New Zealand pipfruit industry also experienced difficulty satisfying sanitary and phytosanitary (SPS) criteria established for entry into the US market with lower MRLs.

In the early 1990's these moves intensified after the completion of the GATT round in 1995. SPS barriers now involve much lower MRLs, an increasing range of banned inputs and clauses enabling embargoes on goods that might cause environmental damage or compromise animal welfare. Campbell and Coombes (1999)³ suggest that such “food barriers” have become a mechanism for protecting Japanese and EU farmers against a tide of cheap, intensively produced imports from the US.

Campbell and McKenna (1999) noted that the process for establishing legitimacy for environmental claims has proved problematic. While the principle of providing “scientific proof” was agreed upon, the practice of attaining scientific consensus was another matter entirely. An example quoted was the widespread agreement in 1999 of US science establishments that Bovine Growth Hormone (BGH) has no adverse effects, while EU scientists contended that there are potential human and animal welfare risks from using this particular input.⁴

The second example discussed by McKenna and Campbell (1999) involved the debate over the potential environmental and health risks associated with GM foods.

It was noted that it is unlikely that markets will move towards more permissive SPS regimes. Rather, it is more likely that some First World markets will become more restrictive. New Zealand fresh fruit and vegetables (FFV) exporters have identified these trends as threatening to the long term market access for conventionally produced FFV from New Zealand.

Given the emergence of such protectionist strategies any perceived change in the state of New Zealand's environment (or indeed New Zealand's stance on GM) could be capitalised upon by markets wishing to restrict New Zealand food imports.

¹ Hugh Campbell.

² McKenna and Campbell (1999), Strategies for “Greening” the New Zealand Pipfruit Export Industry: The Development of IFP and Organic Systems.

³ Campbell and Coombes (1999), “Green Protectionism and Organic Food Exporting from New Zealand: Crisis Experiments in the Breakdown of Fordist Trade and Agriculturalist Policies”, *Rural Sociology* 64(2).

⁴ US meat imports into the EU were subsequently banned.

6. Conclusions

To assess the impact on New Zealand (in particular, with regard to the GM issue) under such a scenario, it is then worthwhile considering not only the economic impacts associated directly with the actions of consumers and retailers in our key overseas markets, but also those impacts associated with potential barriers arising from green protectionism.

6.3 QUALIFICATIONS TO THE VALUATIONS

Needless to say, one has to be extremely careful in attaching undue weight to the figures generated in the course of this work, or in generalising too quickly to the value of New Zealand's environmental image generally. In particular, there are reasons for thinking that the valuation might be too high – or too low.

Some of the factors that would tend to inflate the estimates of value include:

- The respondents may be acting strategically in responding to the questionnaire, ie they may overstate their reaction in the hope that it will lead to an improved focus on the environment;
- The questionnaire itself may draw the attention of the respondent to the issue of environmental image in a way that would not happen in reality; and
- The images chosen are relatively extreme, ie they represent a clear contrast which is unlikely to eventuate in practice; it is much more likely that a gradual (rather than step) change in environmental quality would occur which may lead to a more muted reaction.

Some of the reasons for believing that the results may underestimate the true value are:

- All of the industries subjected to the valuation work are growth industries; as volumes of goods and services sold in the future increase, so will the value able to be attributed to environmental quality;
- There is evidence to suggest that not all of the value able to be extracted from New Zealand's environmental image is being exploited. For example, the bulk of the exports of the New Zealand Dairy Board are into the global ingredients market where relatively little use is made of New Zealand's environmental image;
- The evidence seems to suggest that the importance of environmental factors in purchase decisions is growing in overseas markets;⁵ and
- The threat of green protectionism (mentioned above).

For these reasons, we are reluctant to push the quantitative analysis too far – for example to develop Net Present Values of New Zealand's environmental image to the industries under consideration.

While these uncertainties might have been a concern if the change in purchase behaviour observed was relatively small, the size of the impact is such that they do little to undermine the significance of the result.

⁵ See Chapter **Error! Reference source not found.**

6.4 RISK ASSESSMENT

The size of the contribution environmental image is making to some of our major and emerging export industries, coupled with the degradation in environmental quality in some key areas, suggests that New Zealand may stand to lose the value created by its current environmental image.

On this issue, it is important to note that the relationship between environmental quality and export value is somewhat indirect in nature. In particular, it is the environmental image that creates the value, not environmental quality *per se*.

Furthermore, environmental image and environmental quality may move independently of one another. For example, it is quite possible that the efforts of marketers could maintain an image of environmental quality in spite of a deterioration in environmental quality – particularly in the dairy sector where the consumer has no direct experience of environmental quality.⁶ Similarly, it is possible that New Zealand's environmental image could deteriorate without any change in environmental quality – the concern over the misreporting of the incidence of scrapie in New Zealand in Germany in early 2001 is a good example.

Thus it is quite possible that, in the short term at least, New Zealand may be able to maintain at least some of the contribution to environmental value in the face of declining environmental quality. However, it seems unlikely that this could be sustained over the long term. In the long term, one can expect environmental image and environmental quality to track one another.

Before leaving the discussion of risk, it is perhaps also worthwhile reflecting on the chances of reversing a loss of value attributable to a loss of environmental quality. While, this matter was not explicitly addressed in this study, it seems likely that it would be difficult to restore the positive image of New Zealand's environment held by overseas consumers should this be shattered through an adverse environmental effect. If this was in fact the case, it would argue for a risk averse approach to environmental management.

6.5 EXTENDING THE RESEARCH TO FUTURE WORK

This investigation has made a first attempt at valuing New Zealand's environmental image in terms of export receipts with respect to three sectors. There are areas in which this investigation can be further extended in the future. These are discussed below.

The basis of the contingent valuation used in this research was to measure change in consumer purchasing behaviour by exposing survey subjects to "environmental" stimuli. In this case, stimuli comprised sets of idyllic and degraded environmental images, as well as alternative stances on the GM issue. In reality, however, environmental image is only one of the many drivers, which may induce a consumer to purchase New Zealand product. For example, Malaysian consumers purchasing New Zealand dairy products will be affected not only by New Zealand's "clean green" image, but also a variety of factors such as price and taste.

⁶ This is less likely to be the case in the tourism and organics sectors where, respectively, the tourists, and the international buyers, will tend to have first hand experience of New Zealand's environmental quality.

6. Conclusions

Future research in this area could include valuing these other “purchasing drivers” concurrently with environmental image.⁷ This would enable us to not only value New Zealand’s environmental image, but also the contribution it makes to our export receipts, relative to other drivers such as price and taste.

The contingent valuation applied in this investigation only measured change in purchasing behaviour given a perceived degradation in New Zealand’s environment. The implicit assumption was that the end-consumer would purchase less, given a change for the worse in New Zealand’s environment. To this end, it may also be interesting to measure the potential gains to New Zealand, given an improvement in its environmental image.⁸ That is, we could test both:

- scenarios that measure sales loss due to environmental degradation; and
- scenarios that measure sales gains due to environmental improvement.

Given our prior beliefs about the value of New Zealand’s environment, we would expect studies measuring gains to New Zealand due to environmental improvement to display an upward response (while studies measuring losses to New Zealand due to environmental degradation would display a downward response).

One aspect of “clean green” marketing strategies, which was omitted in the report was the relativity of New Zealand’s “clean green” image to other “clean green” nations.⁹ It is important to note that New Zealand is by no means the only country which takes advantage of such “clean green” positioning. Countries such as Australia and Canada have also adopted similar marketing strategies. An interesting question is whether (perceived) environmental degradation in New Zealand would have a more severe effect, if our “clean green” competitors were seen to retain or improve their environmental image and vice versa.

⁷ A conjoint analysis would enable us to determine the exact role that the various purchasing drivers play.

⁸ Andy Heinemann, National Research Bureau.

⁹ Andy Heinemann, National Research Bureau.