

NEW ZEALAND CLIMATE CHANGE PROGRAMME: IMPACTS WORKING GROUP

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The Impacts Working Group

The Impacts Working Group has the responsibility of assessing possible impacts of climate change on the environment, economy and society of New Zealand, and is to report to Government by March 1990.

It is basing its work on two scenarios - not predictions - of climatic change and sea level rise by the year 2040, which are a more detailed development of those prepared by the Climate Committee of the Royal Society. Because scientific knowledge cannot at present predict how the climate will change in response to elevated concentrations of greenhouse gases, the philosophy is to use the scenarios for a "sensitivity analysis", to identify aspects of the environment, economy or society which might be most sensitive to a climatic change. The scenarios are, broadly, related to present hypotheses about future climate change, in that one is based on the "most plausible state" in 2040, and the other is based on the "most extreme state that could be reasonably expected".

Using these scenarios, about 30 members of the Working Group are each considering different aspects of New Zealand life, ranging from freshwater fisheries, through the transport industry, to employment and population distribution. They are each consulting widely, with over 300 scientists and other experts so far involved in the process.

Some findings

At the time of writing, primary and secondary impacts have been dealt with, that is, those relating to environment and ecosystems (primary impacts), and those relating to economic activity (transport, energy, the farming industry, etc.). The tertiary phase, which is about to commence, will consider impacts on individuals and communities.

Assessments of possible impacts of the climate change scenarios have varied widely. Some negative impacts - those which seem to have received most attention in the popular press - are indicated, but positive ("beneficial") impacts are also indicated. Thus, to take an example involving fish life, the postulated climate changes could see a southward extension of "big-game" marine fisheries and economically significant shell fisheries to Nelson and the Marlborough Sounds, but at the same time could cause a retreat of cold-water salmonid fisheries in streams and rivers whose waters become too warm. The possible loss of many ski-fields has been frequently mentioned, but in fact experts in the tourist industry generally consider that climate change would have negligible impact on tourism as a whole, while recreational opportunities might in many places be enhanced by different weather patterns.

The relative significance of climate

In general, climatic change would have an impact on a particular aspect of New Zealand environment or life only when that aspect were in some way responsive

to climatic controls. In many sectors, climate has less significance than many other factors, so that climate change would have an imperceptible (even if a real) impact. For example, the water treatment and disposal industry will probably be far more responsive to societal attitudes to the practice of waste disposal in natural waters, to plant obsolescence, and to technological advances than to climatic factors. Hence although climatic change may significantly affect the ability of receiving waters to assimilate waste discharges, this would be an insignificant factor in decision-making.

Time scales

The scenarios being considered by the Impacts Working Group relate to specified changes occurring by a certain date, 2040. Should the postulated changes actually occur, they will happen over many decades. Impacts on natural systems might be negligible until some critical level of change or some trigger event occurred. For example, a given native tree species at a particular location might be increasingly badly adapted to the changing climate there, but could persist until some relative catastrophe like a drought or windstorm caused rapid mortality. On the other hand, many human systems, such as the location of particular types of cropping systems, could progressively adapt by normal processes, such as changing ownership and response to market demands. The agricultural industry is widely considered by experts to be unlikely to be strongly affected by climatic change, economic conditions, overseas markets, etc. being regarded as relatively more important.

A major danger of scenario analysis is, however, the focus on a specific date. Should climate change materialise, it will not cease at 2040, but could continue unabated - or even at an accelerated rate - thereafter. A conclusion that New Zealand could cope or even benefit under the scenarios being used could then lead to a dangerous false sense of security - an acceptance of a "time-bomb" that could explode some time later. The progressive nature of the postulated climate change must, then, always be remembered.

Conclusion

Scientists are by no means convinced that elevated concentrations of "greenhouse gases" *will* lead to climate change. However, a prudent response is to investigate the possibility further, and to identify aspects of New Zealand's environment and social system which could be affected if it did occur. Assessments of the likely severity of the consequences, in combination with progressively improving estimates of the probability of climate change, will then permit better decisions to be made on the need for further responses, whether by limitation or adaptation.