

GREENHOUSE '89

Panel discussion.

Summary of comments by John S Hickman, Convener, New Zealand Climate Committee of The Royal Society of New Zealand.

Prospects for climate change

If greenhouse gases are the dominant feature in determining climate trends during the next several decades then the most likely prospect for climate change in New Zealand is as follows:

- * By about the year 2025 temperatures are expected to be 0.5-1.0°C higher than at present and perhaps 1.0-2.0 °C higher by the year 2050. That is, the overall warming trend observed during the last century is expected to continue but to show a marked acceleration before the middle of next century.
- * Sea level is likely to rise by 7-17 cm by the year 2025 and 17-35 cm by the year 2050.
- * Average westerly wind flows over New Zealand are likely to decrease from those presently experienced and there may be a higher frequency of winds from a northerly quarter.
- * Although in general summer rainfalls may increase especially in the northern half of the North Island and in the north of the South Island the overall rainfall change is difficult to assess. Rainfall in New Zealand is highly correlated with wind flow and until regional models of future climates can adequately depict mean wind flows and their variability little can be said, with confidence, about changes to rainfall patterns.
- * While globally the frequency of occurrence of intense tropical storms may increase, as sea temperatures increase, it does not follow that New Zealand would experience a higher frequency of damaging storms of tropical origin. The frequency with which such storms move over New Zealand depends upon the dominance of particular regional atmospheric circulation patterns. For example, at times of a strong El Nino event, tropical storms may move along a path well to the east and have no direct effect on New Zealand. Meaningful assessments of the effects on New Zealand of a change in the number of intense tropical storms in the South Pacific await the development of reliable regional circulation models and the determination of changes, if any, to the frequency of occurrence of phenomena such as El Nino events.

Public and political interest in climate change

Climatologists, atmospheric and all environmental scientists welcome the widespread renewed interest in climate. As the Prime Minister reminded us in his opening remarks, climatologists and meteorologists are now having their day - they are among the most-needed of the scientists. But both opportunities and dangers are present in this situation. In the clamour to emphasise the relationship between climate and many other things, and thus to heighten the

importance of these other things, we increase the chances of losing our way and neglecting some fundamentals. We are extra anxious to show connections and demonstrate their importance. And while this is very necessary it must not be allowed to crowd out the tasks of improving our understanding of basic parts of the sciences. For unless we continue to increase our basic understanding, we will soon run out of things to connect up. Meteorology and climatology have increased their scientific status during the last few decades and the strongest plea one can make at the present time is for meteorologists and climatologists not to lose their way and forsake the real science.

Population, the market place and ethical questions

Considering the estimates and predictions of the world population for the years 1650 to 2025, the increase in greenhouse gases and other environmental pollutants closely parallels the increase in population. The major achievements of mankind - the domestication of animals, agriculture, the industrial revolution, and the discovery of bacteria, contain within them both prospects for a better life and the seeds of future trouble. Some of mankind have enjoyed the benefits of the former, and all of mankind now faces the consequences of growth of the latter.

Unbridled exploitation of the major achievements of mankind in a market place not required to count all of the environmental costs has heightened our awareness of the need to come to terms with the rest of the biosphere if we are to survive. For mankind is the first of the species on earth that has the power to bring about its own annihilation.

It is clear that a future policy that mirrors that of the past is not a viable option for survival. The past methods of fostering progress through historical approaches to economic growth are no longer appropriate. A "market led" economy may well be the practical way to achieve desirable economic and social goals for the future. But it must be a market that functions within a set of rules that are different from those used in the past. There are ethical questions to be answered universally before the market can be allowed free reign within a newly-defined ethical framework.

We are all part of one biosphere, and we all breathe and live in one atmosphere. And we are our brother's keeper. Unless we accept and act on this premise, we may well yet be the first of the species to engage in self-annihilation.

But I see this danger of self-annihilation to be one that is becoming recognised so widely that it has every prospect of being one of the major driving forces that brings greater unity to the world. The United Nations Organisation has every prospect of playing the full role of its founding visionaries, and all of mankind may yet work for not only their own good but also the good of others.