

CLIMATIC CHANGE AND THE GREENHOUSE EFFECT*

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When asked to open this conference it was suggested that I might speak about the development over recent years of greatly heightened community and government concern about environmental issues and how, as between state and federal government, governmental power relating to matters environmental should best be apportioned.

With considerable regret, knowing that that topic is necessarily of interest to AMPLA members, I thought it wise nevertheless to avoid it. I did so partly because my views on apportionment of regulatory powers, if indeed they ought to be shared out at all, as the word 'apportionment' rather suggests, are far from clearcut. In other words, I am far from certain what should be the answer to the question implicit in the topic and that in itself provides some obstacle to speaking about it. It also seemed to me that any investigation of possible answers that I might attempt would be likely to entangle me, all unprepared, in the meshes of state-federal controversy, which is a fate best avoided.

With what is intended, then, as an initial apology, I should tell you that I am afraid you find yourselves having instead to listen to me talk about what may seem an already over-exposed topic — climate change and the greenhouse effect; but I will at least try to make it of some relevance to the concerns of AMPLA members.

The first question to ask is whether climate change is truly impending; whether the whole excitement over man-made climate change is justified or whether it is no more than a case of governments succumbing to mild hysteria under the influence of green enthusiasts? This may seem an odd question to pose when our own state and federal governments and governments world-wide are already spending great resources of time and money on the study of climate change and are preparing to enter into solemn international conventions, the terms of which may involve infinitely larger expenditures and may indeed dictate the shape of world economies of the 21st century.

I raise it because there is, I think, a risk of the whole question of climate change being trivialised. Trivialised by too many alarmist articles in the popular press, some of the more sensational aspects of which then provoke some scientists to remonstrate, these remonstrances being in turn often distorted in the reporting of them. The end result can be that the public, confused by apparently divergent views, loses interest in what is in fact one of the major problems of this decade and of the coming century.

There are some indisputable facts. First, the greenhouse effect is real, certain gases normal to earth's atmosphere prevent the reflection

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back into outer space of some of the solar radiation that the earth initially receives. But for the presence of these gases earth would be some 33 degrees celsius colder than it now is. Secondly, in the two centuries since the coming of the industrial revolution there has been an increase of over 25 per cent in the concentration in the atmosphere of one of those greenhouse gases, carbon dioxide, whereas for a thousand years before, levels had been relatively static. Other naturally occurring greenhouse gases have also increased in atmospheric concentration, notably methane which has more than doubled. Man-made chlorofluorocarbons (CFCs), first manufactured in the 1930s, are also now potent contributors to the greenhouse effect, as well as also being destructive of the ozone layer, which when intact serves to protect us from excessive ultra-violet radiation.

As Dr Pearman of CSIRO's atmospheric division says:

There is irrefutable evidence that human activity since the industrial revolution has changed and will continue to change the atmosphere's composition.

The best scientific assessment of the results of these increases comes from last year's report of the Intergovernmental Panel on Climate Change (IPCC). Australian scientists, from CSIRO and our meteorological bureau, contributed substantially to the report of Working Group 1 of the IPCC, joining other leading world climatologists on the panel. That report predicts an increase of 0.3 degrees Celsius each decade over the next century if we all continue with business as usual, the world taking no major steps to prevent climate change. In other words, the world's climate is predicted to be, on average, 3 degrees Celsius warmer by the end of the coming century. These predictions are, as one would expect, carefully qualified, the 0.3 degrees increase per decade itself having a wide uncertainty range and there are a whole host of feed-back mechanisms, as yet not fully understood, which may affect these predictions. However, the likelihood, it is said, is that overall they will operate to increase rather than decrease greenhouse gas concentrations in a warmer world.

The dramatic character of these predicted changes best emerges from the fact that since the last ice age, some 10,000 years ago, global temperatures have fluctuated not by the predicted 3 degrees but by little more than 1 degree Celsius and from the further fact that predicted temperature increases would involve, as early as the middle of next century, only 60 years hence, global temperatures higher than any experienced over the last 150,000 years.

The IPCC believes that the globe has, in the past century, already warmed by about 0.5 degree Celsius. The world's five warmest years on record have all been in the 1980s. Mountain glaciers are certainly retreating and sea levels globally have risen by some 1 to 2 millimetres a year this century, principally through thermal expansion of the oceans. Latest CSIRO data confirms all this, and speaks of sea level rise over the next fifty years as anything between 10 and 70 centimetres depending on the extent of warming that occurs. The IPCC prediction to the end of the century is a 65 centimetres rise in ocean levels.

As Dr Noel Brown, Regional Director, North America, United

Nations *UNEP* said in Melbourne earlier this week, the science debate on greenhouse is behind us — the international community has accepted the precautionary principle and has agreed that the world cannot take the risk of environmental inaction while we await scientific certitude.

Perhaps the best proof of this is in what the G7 countries, the group of highly industrialised countries of Europe but also including the United States and Japan, stated in their declaration at the conclusion of their summit meeting only last week. That declaration spoke of the United Nations Conference on environment and development scheduled for Brazil next June and described the aim of the G7 nations as being the achievement by next June, now only 11 months off, of:

An effective framework convention on climate change, containing appropriate commitments and addressing all sources and sinks for greenhouse gases. We will seek this communique "said" to expedite work on implementing protocols to reinforce the convention. All participants should be committed to design and implement concrete strategies to limit net emissions of greenhouse gases, with measures to facilitate adaptation.

So, like it or not, the nations of the world, and industry and commerce within each nation, are going to face a future in which climate change considerations are going to play a major policy role. Patterns of world trade and the shape of domestic economies alike are going to be affected by these considerations. Whole new areas of international law are going to come into existence as international environmental conventions take shape and require monitoring and enforcement mechanisms.

All this is of particular concern to Australia both because of our continent's natural vulnerability to the effects of climate change and because of our national economy's vulnerability to growing environmental sensitivities of overseas markets to which we export. We not only have an immense coastline but also great distances, which means extensive reliance upon fossil fuels for transportation, and much of our industry is energy intensive, and, in this connection, for energy read, very largely, fossil fuels. We are very dependent on overseas trade and upon the acceptability of our exports, whether agricultural products or minerals including coal (we are the world's largest exporter of coal) in foreign markets.

One can contemplate, in future decades, perhaps not long into the next century, substantial barriers against world trade in commodities which either of themselves or by reason of their methods of production are harmful to the environment because they involve major emissions of greenhouse gases, thus promoting climate change. Fossil fuels immediately come to mind but much more also may be involved. At the same time, there will probably be great new markets opening up both for environmental technology, management and education and for commodities which in their processes of production or of extraction and refining cause minimum detriment to the global environment.

We have to adjust to the fact that quite suddenly, realising that climate change is a universal problem, nations are being forced to become concerned with what is being emitted into the atmosphere not just in their own territories but everywhere in the world; and this because they realise that the atmosphere is a common resource, shared by all. Accordingly,

they seem likely not only to concern themselves with what is being done within their own frontiers that may affect the environment but with what other nations are doing in that regard, particularly nations whose products they import.

At the current negotiating sessions for a climate change convention the chief United States negotiator, Mr Robert Reinstein, described environmental regulation of international trade as the 'number one trade issue' of the 1990s. If one looks at the European community alone, a grouping that accounts for over 40 per cent of world trade, it already has in place over 200 directives and regulations for environmental management. The European commission has declared that 'environment policy today commands a position on the very centre of the European community stage'. If you read *The Economist*, you will find in this week's issue a page-long report on community enforcement of these environmental regulations. The adoption of 'best practice environmental management' is likely to be a prerequisite for any successful exporting nation in the future and, consequently for each of its export industries.

As lawyers the development of new areas of international law resulting from the present upsurge of environmental conventions and regulations is of obvious interest to you. As lawyers in many cases concerned with major exporters of commodities, whether they be fuels or minerals, environmental concerns are likely to be of increasing interest as importing nations increasingly focus on global sources and sinks of carbon dioxide and other greenhouse gases.

I hope you accept what I see as this relevance of my topic to AMPLA members as excusing me from allowing climate change to so dominate this opening address to your annual conference.