

Introduction to Greenhouse beyond Rio

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The Sir Robert Menzies Centre for Australian Studies held a two-day conference on the greenhouse effect in September 1992. This edition includes papers presented at that conference. The recent Earth Summit in Rio de Janeiro in June 1992 and the process leading up to it has encouraged new analysis and clarification of the issues. The greenhouse problem has become more clearly defined at a scientific level, although there is still a great deal of uncertainty as to the extent of climate change and its effect on the Earth's environment. The economics of greenhouse have also been extensively investigated and an understanding of the costs and potential methods of control have grown greatly.

Australia has a particular interest in the greenhouse issue and control of emissions. The economy, particularly the export trade, is reliant on energy-intensive industries, yet Australia has been one of the countries prepared to make substantial commitments to reducing greenhouse emissions. An objective of this conference was to expose many of the scientific and economic issues in one forum, to review the climate change outcome from Rio and assess future directions. The sequence of papers was first to review the scientific evidence of the greenhouse effect on climate and to consider the direct impact of this, particularly the physical impact and effect on agriculture. The focus then turned to the potential for control of greenhouse gas emissions and the economic costs and benefits.

The papers by *Sir John Houghton* and *Drs Tegart and Zillman* assess the evidence that the greenhouse effect is occurring and conclude that, while absolute proof may still be many years away, climate records are consistent with a warming of the atmosphere associated with an increased concentration of greenhouse gases. The next two papers by *Professor Parry* and *Dr Tegart* present some assessment of the potential for climate change to impact on food production and living conditions. While the modelling work is not robust enough to make firm predictions, there is clearly potential for significant change flowing from sea-level changes and changes in climate patterns. The impact of these will depend importantly on adaptation processes and the efficiency of world trade.

Jacqueline Karas judges the Framework Convention on Climate Change against an assessment of what should be considered as tolerable limits to climate change and the necessary reductions in emissions to achieve this. While the Convention is a major landmark, it is but a small step in addressing the problem. The challenge will be to strengthen weak commitments and translate them into concrete action. The paper by *James Cameron* provides an insight into the making of the Convention and the arguments lying behind a number of its provisions, and is a very useful document for those trying to interpret the complexities of the Convention and its drafting.

The papers by *Chris Hampson* and *George Beals* give different but not conflicting views from the perspective of industry. *Chris Hampson's* paper draws some parallels between reactions to the greenhouse problem and insurance against other outcomes. It points to the improvements made by industry to date and to the capacity of industry, transport and the domestic sectors to further reduce emissions of greenhouse gases, particularly through increased energy efficiency. The point is made that industry and the public respond well to market-based measures but that these need to be well researched and their cost should

be commensurate with the uncertainties of the greenhouse problem. *George Beals* also refers to the uncertainties associated with climate change predictions and puts the issue within the broader concept of sustainable development. Within this concept, he makes the appeal that we should be careful in establishing priorities on which to spend the scarce environmental dollars available to the world. Other priorities may rank ahead of some of the more expensive greenhouse control options.

The second half of the conference was devoted to economic issues. *Tom Jones* provides an OECD-based overview of the costs and benefits of greenhouse control. *Samuel Fankhauser* and *Neil Adger* present the results of their work at CSERGE quantifying the economic impact of global warming and abatement costs. They draw attention to the differences between a global and a local perspective, but in both cases see justification for precautionary action, probably of the order of that proposed in the Climate Convention.

Andrew Bain looks at the costs to the Australian economy of greenhouse abatement options. The paper is based on some of the better known Australian modelling work. Despite being a major exporter, the costs do not seem to be wildly different from other developed countries, although probably higher than most OECD members. The structural impact may have more significance for decision making than the aggregate effect on national income. There seems to be substantial, although uncertain, 'no regrets' measures available and the cost estimates are very sensitive to assumptions about these. The Australian position of going little beyond 'no regrets' measures in the absence of action by other countries is justified, particularly if the countries referred to are those that compete with Australia in supplying energy-intensive products. *Ian Lowe* makes an assessment of the modelling work and points to a number of deficiencies and uncertainties. He draws attention to the lack of inclusion of the economic and environmental costs of failure to take action, the importance of vested interests and the great sensitivity of the modelling answers to assumptions about matters of which we know little.

Three papers address different aspects of measures to control greenhouse emissions. *Nick Morris* considers four methods by which the world may continue to grope towards a solution — to continue with volume constraints independently of differing relative costs between countries; to seek agreement on an international policy of emission taxation; to issue tradeable emission permits and encourage an international market; and to use loan and guidance programmes in a more major way. He gives particular consideration to the importance of developing countries installing best practice capital equipment and suggests that the ability of developing countries to choose new technologies as part of their growth path could be an important element of control. *Anthony Clunies-Ross* considers how an international system of reward/penalty payments associated with internationally transferable emission credits might be tailored to be politically acceptable in both developed and developing countries, and efficient in their purpose of reducing the economic cost of emission reductions. *Rosemary Clarke* considers the potential problems that could arise from superimposing a carbon tax on the already complex structure of taxes and subsidies applying to the production and consumption of fuels. There is considerable variability in fuel taxes and subsidies both between countries and between fuels within countries; if the purpose of a carbon tax is to equate private costs with social costs, these taxes and subsidies must be taken into account.

The final paper was given by *Michael Grubb*. It is a wrap-up paper that looks at the major political and economic issues that will face the world in coming to grips with this problem. He canvasses the respective responsibilities of the developed and developing countries, including the role of the Global Environment Facility.