



EIANZ POSITION STATEMENT ON CLIMATE CHANGE

May 2007



BACKGROUND

Climate change in the form of global warming is a major environmental challenge for people living in the 21st century. Viability of the Earth's biosphere is dependent on the *natural greenhouse effect* around the planet. Atmospheric gases such as water vapour, carbon dioxide, methane, ozone, and nitrous oxide trap heat, keeping the surface of the planet approximately 30°C warmer than it would be in their absence. Over geological time scales, climate has fluctuated from a range of natural causes including oceanic current changes, continental drift, solar activity, volcanic activity and variations in the Earth's orbit around the Sun. The rate of change and time-scale of these natural climatic fluctuations span a very wide range.

In the last century or so, the global average surface temperature of the earth (measured as near-surface air temperatures) has risen by 0.74°C, with the linear warming trend since 1955 nearly twice that for the last 100 years. Scientists believe that there is an *enhanced greenhouse effect* now trapping more heat in the Earth's atmosphere, caused by increased concentrations of certain radiatively-active greenhouse gases. These increased concentrations are the result of increased anthropogenic (human induced) emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and also synthetic industrial gases (perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆)).

For example, the burning of fossil fuels (coal, oil and natural gas) for energy has released carbon dioxide from fossil carbon originating from geological deposits laid down millions of years ago in the global carbon cycle. Deforestation also releases carbon stored in vegetation and soils, and reduces the ability of the Earth's ecosystems to continue storing carbon. Anthropogenic emissions of methane and N₂O are also created from the use of fossil fuels. Methane is emitted from ruminant livestock production, waste landfills and rice agriculture. N₂O is released during chemical and industrial processes and from soils used in agriculture. The amount of synthetic industrial gases is smaller but they are a rapidly growing source of greenhouse gases.

In 1988, the Intergovernmental Panel on Climate Change (IPCC) was established to assess information relevant to understanding climate change, its potential impacts and the adaptation and mitigation options for response. The IPCC regularly reviews worldwide research. Its recent reports, including 2007, reflect a broad scientific consensus that most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* [>90%] due to the

observed increase in anthropogenic greenhouse gas concentrations, i.e. human activities are the main cause of the global warming observed in recent years. The existence of an *enhanced greenhouse effect* is recognised worldwide by the National Science Academies of many countries, including Australia, Brazil, Canada, China, France, Germany, India, Italy, Japan, Russia, UK and USA, and numerous State and National Governments worldwide, including Australia and New Zealand. Anthropogenic emissions of greenhouse gases are the most significant cause of global warming. Global warming and associated forms of climate change (e.g. changes in rainfall) present major threats to a myriad of ecosystems, species and human settlements and societies.

In 2007, the IPCC reported that CO₂ concentrations had increased by 35% since 1750 from 280 to 379 ppm in 2005, and are the highest in 650,000 years by at least 26% (natural range 180 to 300 ppm). Measurements indicate that CO₂ levels were rising at 1.9 ppm per year during 1995-2005, compared to the 1960-2005 average of 1.4 ppm per year. Emissions of fossil CO₂ have risen from an average of 23.5 billion tonnes per year in the 1990s to 26.4 billion tonnes per year since 2000. In 2007, the IPCC reported CH₄ and N₂O concentrations have increased by 148% and 18% respectively since 1750, with CH₄ the highest in 650,000 years by at least 125%. Global sea level rose at an average rate of 1.8 mm per year between 1961 and 2003. The rate was faster between 1993 and 2003 at 3.1 mm per year. Eleven of the last 12 years rank as among the 12 warmest years since 1850. Australia's hottest year on record was 2005. The average temperature of the global ocean has increased down to a depth of 3000 m.

There has been an increasing rate of greenhouse gas emissions from burning fuel and other sources since the Industrial Revolution and especially since the 1940s. Industrialised nations are the source of approximately 90% of past and 80% of current anthropogenic greenhouse gas emissions. Compounding this situation is the long residence time for greenhouse gases in the atmosphere so that their impacts continue long after the emission occurred. Modelling indicates that, if the current rate of emission increase continues, then CO₂ will double compared to pre-industrial levels during this century; some high economic growth scenarios suggest it could triple. Models assessed by the IPCC in 2007 project that a doubling would result in a temperature increase *likely* [$>90\%$] in the range of 2 to 4.5°C and potentially higher. Long residence times and the inertia of the global climate system, that includes the ocean, mean that global warming will continue to affect the biosphere for hundreds of years, even after atmospheric emission levels are stabilized or reduced.

Scientists up to 2006 had observed climate-induced changes in about 420 physical processes and biological species or communities. The 1992 UN Framework Convention on Climate Change (UNFCCC) aimed to stabilise emissions "at a level that would prevent dangerous anthropogenic interference with the climate system" in a time-frame that will allow ecosystems to adapt naturally, ensure food production is not threatened, and enable economic development to proceed in a sustainable manner. To implement the UNFCCC, the 'Kyoto Protocol' was negotiated and agreed upon in December 1997. The Protocol sets out targets and associated rules, and has mechanisms available to reduce emissions including the use of carbon sinks, Clean Development Mechanism, Joint Implementation and emissions trading. On 16 February 2005, the Kyoto Protocol entered into force for all ratifying signatories around the world.

The range of strategies that could slow and eventually reverse global warming includes:

- lower greenhouse gas emissions through reduced dependence on fossil fuels;
- increased use of sustainable low pollution energy sources to minimize irreversible damage to climate and ecosystems;
- efficient energy generation and consumption while minimizing short and long term pollution;
- reversal of deforestation and expanded implementation of reforestation;
- changes in agricultural practices;
- application of current and future research to enable sustainable development across generations;
- mitigation and/or adaptation strategies to provide equitable outcomes for all societies; and
- effective promotion of awareness in the community and among businesses.

POSITION STATEMENT OF EIANZ

The EIANZ accepts the international consensus of the Intergovernmental Panel on Climate Change (IPCC) that human activities are the main cause of the global warming observed over the last hundred years or so. The global nature of climate change requires integrated international, national and local responses.

The EIANZ supports Australia ratifying the Kyoto Protocol and supports New Zealand's ratification. The EIANZ encourages Australia and New Zealand to vigorously pursue international strategies and agreements that will enable all countries to participate in equitable measures aimed at stabilising atmospheric greenhouse gas emissions "at a level that would prevent dangerous anthropogenic interference with the climate system".

Guiding principles for the EIANZ's approach to climate change are:

- The precautionary principle requires that there be no delay in reducing anthropogenic risks to the stability of the climate;
- Action today is better (more greenhouse and cost effective) than action delayed into the future;
- It is Government's special role to provide strong, clear leadership and policy frameworks that encourage rapid implementation of emission reduction strategies and protection of the natural environment;
- Governments, businesses, communities and individuals need to progressively reduce greenhouse emissions through the use of a range of approaches with multiple, sustainable development outcomes;
- Carbon derived from the current carbon cycle needs to replace fossil carbon use;
- Mitigation and adaptation strategies require new approaches and partnerships ensuring actions and investments deliver multiple, sustainable benefits;
- Greenhouse policies must consider intra- and inter-generational equity and sustainability with implications for the economic, social and physical fabric of societies worldwide; and
- While the issue is global, the answer requires actions and encouragement at all levels.

The EIANZ believes that climate change policy needs to embrace *leadership, research, mitigation and adaptation* strategies in order to deal with the environmental, social and economic implications of climate change. New approaches and partnerships may need to be developed to ensure implementation of effective programs.

Leadership

The EIANZ believes *leadership*, education and awareness relating to climate change are particular responsibilities of Government at all levels to ensure communities, businesses and governments:

- build an understanding of the risks, requirements and opportunities involved;
- develop the capacity to respond in a pro-active manner; and
- actively and rapidly reduce anthropogenic greenhouse gas emissions.

Research

The EIANZ believes that *research* is a foundation of successful strategies to cope with climate change. The EIANZ prefers wide-ranging research into environmental, social and economic causes and consequences of climate change as the basis for determining policy, responses and strategies. While not delaying action (the Precautionary Principle), research needs to:

- continually improve the understanding of climate science, modelling and vulnerabilities, including better understanding of regional impacts;
- improve existing technologies or develop innovations to rapidly reduce fossil carbon use and emissions from the energy and transport sectors that will improve sustainable outcomes;
- improve existing technologies or develop innovations to reduce greenhouse gas emissions across all sectors of the economy that will improve sustainable outcomes;
- improve socio-economic understanding of the consequences of climate change and the penalties for delaying action; and
- develop appropriate mitigation and adaptation strategies applicable to regions and economic sectors with sustainable outcomes.

Mitigation

The EIANZ believes *mitigation* strategies are important to rapidly reduce emissions and to shift economic and social development to a significantly lower dependence on fossil carbon. Implementation of mitigation strategies should have regard to potential adverse impacts and risks to the biophysical world, society and the economy. These strategies should include:

- funding technologies and supporting industries offering sustainable low carbon or non-fossil carbon alternatives and solutions which are low polluting, especially for energy supplies;
- appropriate development of emission trading regimes or other mechanisms to ensure cost-effectiveness of greenhouse gas abatement, providing for a clear price signal for emitting fossil carbon and incentives to shift expenditure to sustainable low pollution technology;
- assistance for industries and sectors facing difficulties in retooling or transforming to a low fossil carbon future; and
- cessation of deforestation and provision of increased terrestrial carbon sinks through improved land management, to reduce the contribution of agriculture, land use change and forestry to climate change.

Adaptation

The EIANZ believes *adaptation* strategies will be important in adjusting to human-induced climate change in circumstances where mitigation is ineffective or inappropriate. There is also a need to identify and take advantage of any new opportunities arising from climate change. Adaptation includes:

- provision of support for industries or communities damaged by climate change;
- implementation of programs to assist ecosystems to adapt to changing climatic conditions such as by reducing other pressures on biodiversity and managing biodiversity for natural climate variability; and
- assistance for industries, sectors and regions to identify and take advantage of new opportunities that may arise out of climate change.

Footnotes

Footnote regarding other EIANZ policies

For more detail on specific topics related to climate change such as sustainability, energy and water, reference should be made to other EIANZ position statements, which are relevant to Climate Change also.

Footnote regarding EIANZ's Climate Change Position Statement for Australia

In Australia, climate change policy needs to inform all areas of government policy because of the impact of climate change on all areas of the economy, environment and society. Australia has major energy resources including fossil fuels (e.g. coal and natural gas), nuclear fuels and renewable resources (wind, solar, etc.). It also has technological skills and a stable political environment, which provide a base for domestic use and export of energy resources which the world requires. Australia's climate change policy could make an effective contribution to the issue world-wide through a national government policy to stabilise and reduce greenhouse gas emissions from the energy sector. Australia's choices about energy for its domestic consumption and for world trade purposes are linked to future climatic change.

The EIANZ calls for the Australian Government to develop climate change and energy policies which provide leadership to the world in addressing climate change. The energy policy would need to address energy matters for Australian use and for export of resources and technology to the world. A strong policy in this area that promoted reduced carbon emissions to address climate change concerns nationally and internationally could become a showcase to influence world decisions on energy, consequences arising from excessive consumption and responses to global warming.