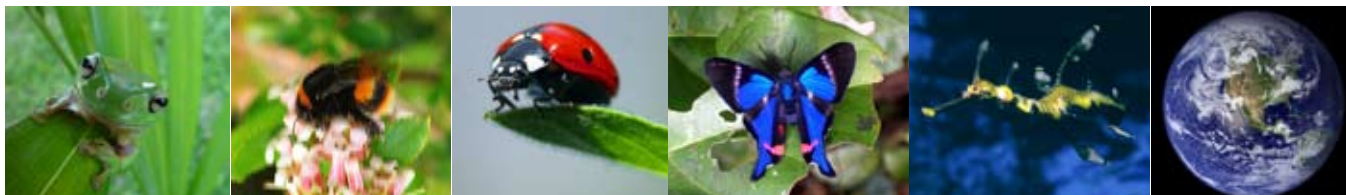


# CASPI: NEWS

## Climate Adaptation - Science and Policy Initiative

October 2007



### Garnaut Climate Change Review

The Garnaut Climate Change Review is an independent study by Professor Ross Garnaut, commissioned by Australia's State and Territory Governments that will examine the impacts of climate change on the Australian economy and environment. The Review's final report is due on 30 September 2008, with a draft by 30 June 2008.

A number of forums are being held around Australia to engage the public on various issues relating to the Review. The next forum is on the 14 November, titled Climate Change: What is the Science Telling Us? Is There a Need to Develop New Emissions Scenarios? The public forum is an opportunity for experts and the public to contribute to the work of the Garnaut Climate Change Review.

CASPI has been engaged to contribute two pieces of work to this Review:

### The Science of Climate Change

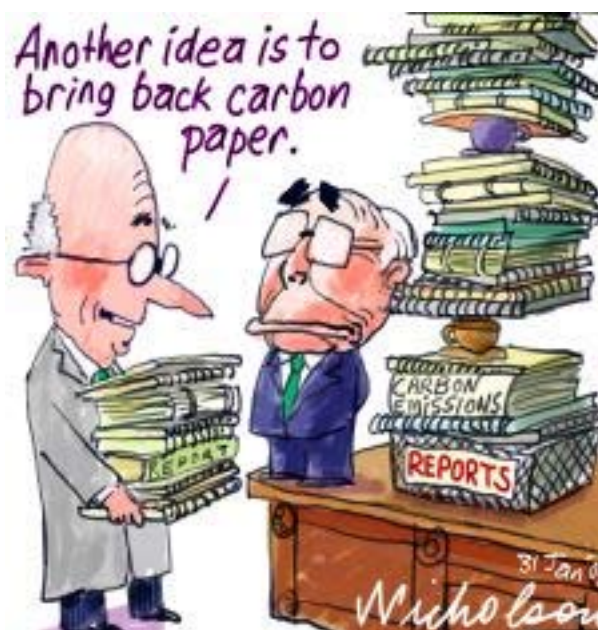
CASPI's first report for the Garnaut Climate Change Review, on the science of climate change, was completed during October. CASPI staff and associates working on this project were Roger Bodman, Jim Falk, David Karoly and Domenica Settle.

### Emissions Stabilisation

The second project, concerning emissions stabilisation is well advanced. It is due for completion early in November. This report focusses on the issue of greenhouse gas stabilisation targets, and the emissions pathways to achieve stabilisation. The project team is Roger Bodman, Nathan Clisby, Ian Enting, Jim Falk, David Karoly and Domenica Settle.

### Climate Change: the latest from the experts

This free public lecture held on the 18th October was organised by CASPI in conjunction with the Australian Meteorological and Oceanographic Society, and CSIRO Climate Adaptation Flagship. During this two hour evening event, three talks were presented. Dr Scott Power, Principal Research Scientist, Centre for Australian Weather and Climate Research, Bureau of Meteorology examined the observed changes in



our climate system, and discussed the role of climate models work. Dr. Power covered the latest in climate science and what it means for Australia, drawing on both the most recent IPCC report and the new report by CSIRO and the Bureau of Meteorology called "Climate Change In Australia" that has just been released.

Mr. Kevin Hennessy, Principal Research Scientist, Climate Impacts and Risk Group, CSIRO Marine and Atmospheric Research, gave an overview of global impacts, the adaptation and vulnerability associated with climate change, and the potential impacts on a range of sectors including agriculture and coasts, the scope for adaptation, and some conclusions about

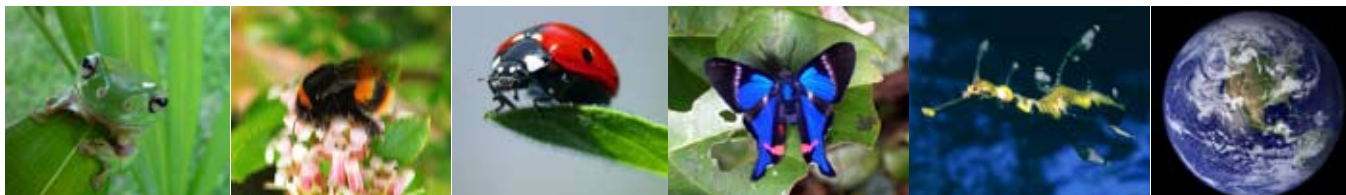


CASPI

# CASPI: NEWS

## Climate Adaptation - Science and Policy Initiative

October 2007



vulnerability.

Mr. Roger Beale, Senior Associate, Allen Consulting Group, discussed the findings from Working Group 3 of the latest IPCC report, including potential scenarios for our future and the effects these may have on climate change. He talked about sources and costs of emissions and discussed constraining emissions with consideration for political and socio-economic influences.

### New Report: Climate Change in Australia

This new report was developed by CSIRO and the BoM in partnership with the Australian Greenhouse Office. It provides the latest information on observed climate change over Australia and its likely causes, as well as updated projections of changes in temperature, rainfall and other aspects of climate that can be expected over coming decades as a result of continued global emissions of greenhouse gases.



Image credit: CSIRO

"By 2030 we expect temperatures will rise by about 1°C over Australia compared with the climate of recent decades," says one of the report's authors, CSIRO's Dr Penny Whetton. "The probability of warming exceeding 1°C is 10-20 per cent for coastal areas and more than 50 per cent for inland regions."

The amount of warming later this century will depend on the rate of greenhouse gas emissions. "If emissions are low we anticipate warming of between 1°C and 2.5°C around 2070, with a best estimate of 1.8°C," Dr Whetton says. "Under a high-emission scenario the best estimate is 3.4°C, with a range of 2.2°C to 5°C."

Increasing levels of greenhouse gases are likely to cause decreases in rainfall in the decades to come in southern areas during winter, in southern and east-

ern areas during spring, and in south-west Western Australia during autumn, compared with conditions over the past century.

As with temperature, rainfall projections for later in the century are more dependent on the level of greenhouse gas emissions. "Under the low-emission scenario in 2070, annual rainfall decreases in southern Australian range up to 20 per cent, and up to 30 per cent under the high-emission scenario," Dr Whetton says. "An increase in the number of dry days is expected across the country. However, when it does rain, it is likely to be more intense," she says. The report also states that: droughts are likely to become more frequent, particularly in the south-west; evaporation rates are likely to increase, particularly in the north and east; high-fire-danger weather is likely to increase in the south-east; and, sea levels will continue to rise.

(Sourced from the CSIRO website. The report is available for download: <http://www.climatechangeinaustralia.gov.au/>)

### Climate Change Adaptation Research Facility

There has been no announcement yet on the successful bid for the new Facility. The result was due to on September 28th. Perhaps the forthcoming November election has something to do with the delay? It is possible it has fallen foul of the caretaker period.

See the AGO website for details: <http://www.greenhouse.gov.au/impacts/about.html#proposals>

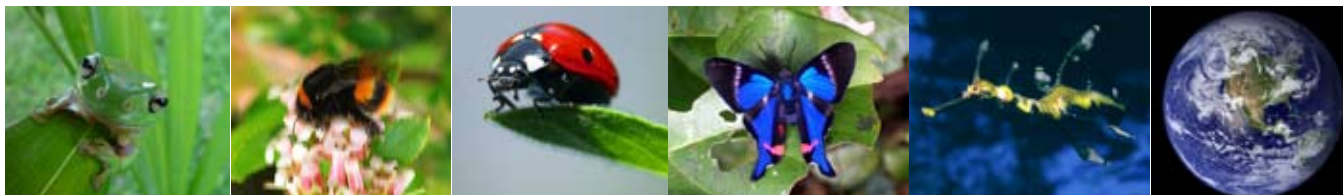


CASPI

# CASPI: NEWS

## Climate Adaptation - Science and Policy Initiative

October 2007



### Smart Transport Solutions

Congratulations to Dr Stephan Winter (Department of Geomatics) who has won an ARC Discovery project that aims to develop smart transport solutions for Australia's sprawling mega-cities with their complex challenges to provide mobility and equitable access, and at the same time to reduce the dependency on private cars. The project will develop software establishing ad-hoc self-organizing transport management in urban environments. Instead of centralized systems, the project suggests a peer-based, local ad-hoc solution to matching transport demand and supply. This approach allows for ad-hoc pick up and transport, ease-of-use of public and private transport, and coordination between different means of transport. With its potential to increase the mobility of citizens even in low-density suburbs, the project can actively contribute to the reduction of private car use, and hence, the reduction of emissions.

### Prof Ian Enting's Book Launch

"TWISTED: The distorted mathematics of greenhouse denial" was launched in October. Ian's book exposes the numerous contradictions in the arguments of the 'greenhouse sceptics' and suggests they are far from constituting an alternative to mainstream climate science. Simple graphical illustrations are used to show that some representations of the data are misleading. In other cases quotes from the sceptics are lined up side by side to show that what passes, in public debate, for an alternative view of the science is an inconsistent set of fragments.

Ian is a Professorial Fellow in the ARC Centre of Excellence for Mathematics and Statistics of Complex Systems, and is funded in part by CSIRO. From 1980 to 2004 he worked in CSIRO Atmospheric Research, primarily on modelling the global carbon cycle. He was one of the lead authors of the chapter "CO<sub>2</sub> and the Carbon Cycle" in the 1994 IPCC report on Radiative Forcing of Climate Change. Twisted can be ordered on-line through <http://www.amsi.org.au/twisted> for \$24.95 plus postage or is available from selected bookstores, including the University Bookshop.

### Greenhouse 2007

2-5 October 2007, The Hilton, Sydney.

This conference provided a unique opportunity to hear the latest findings in climate science, and the implications for Australia and the region. The event focused on projections for the future; the use of probabilities for risk management; the impact climate change will have on human activity; and changing perceptions of climate change.

A series of excellent presentations gave examples of industry and government approaches to tackling climate change together with presentations on the latest Australian and international science findings.

Yet, while we know more and climate science continues to improve, there has been a disturbing lack of substantive progress in real action to contain the growth in greenhouse gas emissions, improve energy efficiency and implement alternative and renewable energy systems. Maria Taylor noted that it is now 20 years since Greenhouse 87. Four popular books on climate change were published in 1989 and policies for a 20% reduction on 1990 emissions were being planned, and all States had a greenhouse action plan. But the problem was re-framed into "We can't do this", and the early momentum was lost.

As Prof Neville Nicholls said, the essentials of climate science are simple and the principles well understood. The warmth of the planet depends on the concentration of greenhouse gases in the atmosphere. If the concentration of carbon dioxide increases, so will the Earth's temperature. The exact amount of warming may not be known, and

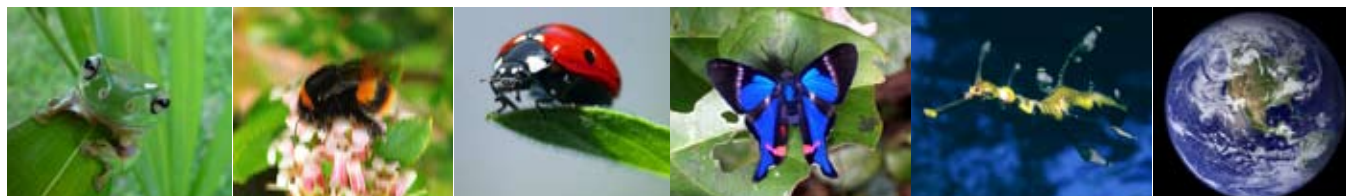


CASPI

# CASPI: NEWS

## Climate Adaptation - Science and Policy Initiative

October 2007



the precise influence of feedback cycles may be uncertain, but the basics are not. Graeme Pearman made a similar point on the basic equation: we are releasing more carbon into the atmosphere than the Earth can absorb, which will result in warming. Increased temperature will lead to changes to the Earth's biogeophysical systems, which will have consequences.

Some of these impacts can be foreseen reasonably well, even if the exact magnitude is unknown. Not knowing precisely when and how does not seem like a good basis for decision making in the face of the risks involved.

Some of the key messages that emerged from the conference were: the importance of leadership; the need to communicate effectively the reality of climate change as the complexity of the issues remains a barrier to industry and governments; continuity & persistence has to be maintained to achieve results. There is also a need to develop an understanding of climate change, particularly the risks of extreme events at local & regional levels.

A number of interesting alternative energy projects were discussed, which are summarised briefly here:

- The Geodynamics hotrocks development, which appears to have to have substantial potential. Prototype development work is underway and the basic concept has been demonstrated. They are working towards a 500MW project by 2015. Issues to address include distance from the grid.
- CETO Wave Technology. This uses the ocean swell to drive a vertical piston pump to push water to shore at very high pressure. This then drives a turbine to generate electricity and produce desalinated water by reverse osmosis pump. The concept has been demonstrated at Freemantle, and they are now looking for a site to build a production scale facility, of the order of 50MW.
- Solar Thermal. Wesley Stein from CSIRO talked about their Concentrating Solar Power

*This newsletter, its contents and style, are the responsibility of the author and do not represent the views, policies or opinions of The University of Melbourne.*

project. A prototype 500kW solar tower system has been built and they are seeking to expand to production scale. [http://www.det.csiro.au/science/r\\_h/nsec.htm](http://www.det.csiro.au/science/r_h/nsec.htm)

- Adriana Downie ( [www.BESTenergies.com.au](http://www.BESTenergies.com.au)) presented information on a pyrolysis system, which uses biomass feedstocks to produce electricity and charr. The latter is applied to soils to sequester carbon and improve soil productivity. A prototype demonstration plant has been built; they are now seeking someone willing to build the first off

### Events

\* Friday 9 November - Assessing the current condition of River Red Gum along the Victorian Murray River UoM Public Lecture at 9:30 am to 10:30 am

\* 14 November - Garnaut CLimate Change Review Forum: Climate Change: What is the Science Telling Us? Details: [www.garnautreview.org.au](http://www.garnautreview.org.au)

\* 30th to 3rd December - Asia-Pacific Eco-Health Conference, Melbourne. Deakin University. Details: <http://www.deakin.edu.au/events/ecohealth2007/>

Please forward any comments, suggestions, and information about related events to:

Roger Bodman  
The University of Melbourne  
Parkville, Victoria 3010  
T: 8344 4708  
E: [rwbodman@unimelb.edu.au](mailto:rwbodman@unimelb.edu.au)  
W: [www.caspi.unimelb.edu.au](http://www.caspi.unimelb.edu.au)



CASPI