

Stern Review on Economics of Climate Change

Submission from CSIRO Australia



CSIRO is Australia's national science agency (see www.csiro.au).

The Organisation undertakes extensive research into climate change, including atmospheric, oceanic and biospheric observations, climatic modelling, impact assessment and adaptation solutions; and greenhouse-gas emissions mitigation strategies.

Given CSIRO's expertise and focus, this submission focuses on the science of climate change rather than on economic issues.

General comments

Increasing emissions of carbon dioxide and other greenhouse gases are altering the composition of the atmosphere, leading to global climate change.

Regardless of the actions that we take today, some degree of climate change is inevitable and there is evidence that some of this change is already with us. This is because about half of the carbon dioxide emitted by human activities is absorbed by the oceans and biosphere, leaving half in the atmosphere where it has a lifetime of 50-100 years. The long atmospheric lifetime of gases such as carbon dioxide means that climate change is likely to accelerate in coming decades.

To slow global warming, we will ultimately need to stabilise atmospheric concentrations. Substantial emission reductions will be required. For example, stabilisation of atmospheric carbon dioxide concentration at 450 ppm (parts per million) by the year 2090 would require emission reductions of about 40% by the year 2050 and about 70% by the year 2100. Carbon dioxide emissions today will result in increased climate change and sea-level rise up to 100 years or more into the future.

It is doubtful, however, whether the adaptive capacity exists to cope with large climate change.

There are two approaches to dealing with climate change. One is to reduce emissions of greenhouse gases to lessen the rate and magnitude of future warming. The greater the reductions in emissions and the earlier they are introduced, the smaller and slower the projected warming. The second approach is to accept that there will be changes and to begin to adapt to reduce the negative consequences and increase the benefits of a warmer world. Adaptation allows larger levels of climate change to be acceptable, while mitigation reduces the probability of exceeding the adaptive capacity of the system.

In order to tackle climate change, there needs to be a genuine commitment (both nationally and globally) to curtail greenhouse gas emissions, and (in the long-term) bring them down to levels significantly below current.

Despite the uncertainties associated with projections of future risks, a wait-and-see approach anticipating a future 'forecast' is misplaced because of the huge inertia in the climate system – today's emissions may be next century's sea level rise.

CSIRO believes that the scientific evidence for global warming is compelling, and that the world should not allow global climate to continue to change at the rate that we are currently experiencing and are likely to experience in future as a result of human impact on the climate system.

CSIRO advocates a three-pronged approach to addressing climate change:

1. Dissemination of better information about impending climate change
2. Mitigation of greenhouse gas emissions through new technology, and
3. Adaptation to climate change.

Specific comments

CSIRO endorses the following key statements from the Executive Summary of the Discussion Paper:

- Climate change is a serious and urgent issue.
- The problem is global in its cause and consequences.
- We can still take action to avoid the worst impacts of climate change.
- Climate change requires an international response.
- An equitable international response to climate change must include action on both adaptation and mitigation.

We acknowledge the underpinning science quoted in the paper, noting that CSIRO actively contributes to, and supports, the activities and findings of the Intergovernmental Panel on Climate Change.

CSIRO notes and strongly endorses the statement that *awareness* is a key issue for adaptation responses. Communicating the likely changes associated with climate change and the options for dealing with these changes will be vital.

CSIRO

24 March 2006

Submission prepared on behalf of CSIRO by

Paul Holper
Executive Officer, CSIRO CLIMATE
E-mail: paul.holper@csiro.au

CSIRO Laboratories
PB1, Aspendale, Victoria 3195, Australia