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Professor Ross Garnaut
Garnaut Review
Level 2, 1 Treasury Place
Melbourne
Victoria 3002

11 April 2008

Dear Professor Garnaut,

I write in reference to the invitation for general submissions to the Garnaut Climate Change Review. WWF-Australia looks forward to a discussion of adaptation to climate change in the draft report of the Review.

A number of reports have been produced in Australia and elsewhere outlining potential adaptation measures for biodiversity.¹ However there has been limited attention given to the process of adaptation, including the barriers to implementation. In order to move beyond iterative lists of potential adaptation measures, we must shift the focus towards removing the barriers to effective adaptation.

In the area of nature conservation, a number of barriers to climate change adaptation are readily apparent.

Informational barriers

There is great uncertainty surrounding ecological responses to climate change, and this is compounded by a lack of underlying baseline data. Given this complexity and uncertainty, adaptation to climate change involves taking decisions on risks. Ultimately, these risk decisions are public policy choices so improved methods are needed to integrate economic criteria, scientific knowledge, and community values in the decision-making process. Key questions to ask include

- How do we design, fund and implement systems for ecological data collection and monitoring at various scales?
- How do we structure deliberative processes to promote public dialogue on the risks to biodiversity?



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Financial barriers

In order for Australia's biodiversity to adapt to climate change, adaptation efforts must take a whole-of-landscape approach that coordinates the National Reserve System and off-reserve conservation. Conservation management currently relies heavily on regulation and government funding, and the fiscal resources available to adapt to climate change are limited.

Adaptation to climate change in other sectors could potentially have negative flow-on effects on biodiversity. Biodiversity is a non-market good, so conservation outcomes may not be fully considered when evaluating the economic tradeoffs of various adaptation policies. This raises further questions:

- How can various economic instruments, such as taxation, or ecosystem service markets be harnessed to support adaptation to climate change for biodiversity?
- How will changing climate and land use influence the relative effectiveness of such instruments?
- How do we resolve the tradeoffs between nature conservation and adaptation in other sectors (e.g. water or agriculture)?

Institutional barriers

The impacts of climate change will vary from region to region, and the capacity to adapt to change will also vary. Attempts to build the capacity for adaptation can learn from past reviews that have identified barriers to successful integration of biodiversity conservation and regional planning.² These include the complex nature of biodiversity; limited access to data, skills, and practical examples of what to do; and the need to plan and deliver regional management of biodiversity across different types of land tenure.

Regional planning boundaries commonly represent surface water catchments and not ecosystem boundaries (bioregions). However a bioregional framework is most appropriate for anticipating future stresses to biodiversity and developing adaptation responses.

A further factor that may hamper adaptation is that the concept of static ecological communities is prevalent in societal expectations, planning tools and legislation, and these will not accord with the expected realities of climate change.³ Therefore the questions that must be answered in the context of institutional barriers to adaptation include



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- How can capacity building needs for biodiversity conservation be better identified and met?
- How can an effective system of bioregional conservation planning be implemented?
- What changes are needed to legislation and planning tools to allow for the ways in which we will need to manage biodiversity in the future?

The above barriers represent an illustration rather than an exhaustive list. In its discussion on climate change adaptation I would urge the Garnaut Review to pay close attention to the barriers to implementation in various sectors including nature conservation. WWF-Australia would be happy to assist the Review; please contact Dr. Cassandra Brooke, Manager Climate Adaptation Science on (02) 8202 1219 or 0406 381 136.

I look forward to reading the draft report.

Yours sincerely

Greg Bourne
Chief Executive Officer



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¹ Dunlop, M., & Brown, P.R. 2008. Implications of climate change for Australia's National Reserve System: A preliminary assessment. Report to the Department of Climate Change, February 2008. Department of Climate Change, Canberra, Australia.

Natural Resource Management Ministerial Council (2004), National Biodiversity and Climate Change Action Plan 2004–2007, Australian Government, Department of the Environment and Heritage, Canberra, ACT.

Hansen, L. J., Biringer, J. L., and Hoffman, J. R. (2003). "Buying Time: a user's manual for building resilience to climate change in natural systems." WWF - International Climate Change Program, Berlin.

² Lowe, K., Fitzsimmons, J., Straker, A., and Gleeson, T. (2003). "Mechanisms for improved integration of biodiversity planning in regional natural resource management planning within Australia." Department of Sustainability and Environment; School of Ecology and Environment, Deakin University; Synapse Research and Consulting, Melbourne.

Read, V., and Bessen, B. (2003). "Mechanisms for improved integration of biodiversity conservation in regional NRM planning." Report prepared for Environment Australia, Canberra.

³ Dunlop, M., & Brown, P.R. 2008. Implications of climate change for Australia's National Reserve System: A preliminary assessment. Report to the Department of Climate Change, February 2008. Department of Climate Change, Canberra, Australia.