Climate Change: lessons from Copenhagen and Cancun, and implications for Australia, its regional ecosystems and wildlife

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In 2009, one of us (CM) had the fortunate opportunity of attending Copenhagen COP15 as an observer, representing The University of Queensland (Figure 1). Despite high hopes, there was little concrete action arising out of COP15 (COP is Conference of the Parties). In light of this outcome, and the recent Cancun Agreement at COP16, this paper will discuss the inherent difficulties of negotiating solutions to the problem of global warming, and outline the implications of these for current climate change projections for Australia, particularly focusing on implications for ecosystems and fauna in the western regions of Queensland.

At the beginning of COP15, there was an incredible optimism that an agreement would be realised, both inside the conference walls and outside in the community square. In the open plenary talks, Rajendra Pachauri and Yvo de Boer both emphasised the critical need to achieve substantial outcomes by the closing of the conference. By the end of the first week, and sitting in some of the sessions, it was clear that the process was immensely slow. There was deep deliberation over diminutive details in the documents: the working groups failed to come to any agreement. The factions and fault lines were plain to see and by early in the second week the entire process began to break down: reaching boiling point with the dramatic exit of China from the discussions. The initial expectations of COP15 were too high and the negotiation process too technical. There were poorly-planned transitions between the documents drafted by the ad hoc working groups and the high-level sessions involving world leaders. The high-level sessions proved too short: US President Barack Obama was only present for the final day, and in the end national self-interest in the various blocs prevailed.

The culmination of these troubled talks was the Copenhagen Accord, cobbled together in the last dying moments of the Thursday night of the conference. However, this response was inadequate in both pace and eventual outcome. Significantly, the Accord offered a reduction in emission targets from 2020 onwards, meaning a likely rise in global temperatures beyond the critical threshold of 2° above pre-industrial levels. One of the things that stood out was the president of the Maldives making this late plea for action, "Stop the politics and get on with delivering", but that plea was not heeded.

Even in Cancun COP16, where the atmosphere was comparatively subdued, cordial and science-focused, there was only the 'recognition' of the deep emissions cuts necessary to prevent warming past 2°C, but no legally binding agreement. In addition, many important practical actions, like the extension or replacement of the Kyoto Protocol have been left until the COP17 in Durban, South Africa, in December 2011. Nevertheless, the resultant Cancun Agreement, while not legally binding, does commit all signatories in a formal UN decision – the US and China included – to reductions in over 80 percent of global emissions, notably including the establishment of a Green Climate Fund. However, lack of legality and the absence of commitment to long-term reduction in greenhouse gas emissions means the global target of 2°C warming will almost certainly be exceeded, possibly rising above 3°C or more by the end of the 21st Century.

Climate change remains an intensely problematic and politically sensitive issue: as evidenced by the fervour, bluster and disarray surrounding COP15 and the inability of Parties to agree to a legally binding document at Cancun. Clearly, the world still grapples to gain global political consensus on the appropriate courses of action that will lead to the necessary cuts in greenhouse gas emissions. Consequently, regional agreements and regional action will become critical, with countries like Australia and the United States needing to take a very strong lead in reducing greenhouse gas emissions.

What does this mean for Australia? The droughts have lifted in many parts of the country, but the long-term climate change prognosis remains disquieting. The recent devastating floods and Category 5 Cyclone Yasi in Queensland, and the 2009 Black Saturday bushfires in Victoria, highlight the vulnerability of Australian communities and economy to climate extremes.

CO_2 is the major force of climate change; whether the world will stay at 400 parts per million CO_2 or exceed this is uncertain. This heralds an era of trying to adapt to climate variability or commit to deep carbon cuts (McAlpine *et al.* 2010). The worst case temperature-rise scenario for Australia is major warming across the Australian continent of 3 to 6°C. The best-case scenario indicates a warming of 1.5-2°C. The current projections anticipate the worst case scenario: the territory of dangerous climate change.

Pp 1 - 2 in *Wildlife and Climate Change: towards robust conservation strategies for Australian fauna*, edited by Daniel Lunney and Pat Hutchings, 2012. Royal Zoological Society of NSW, Mosman, NSW, Australia.

The projections for 2030 and beyond show Australia will experience significant drying, similar to the recent droughts occurring in many parts of the country. However, unlike the current trend of isolated, patchy areas of drought, climate change models predict Australia will experience major drying over the entire continent, especially in south-east Australia and in south-west Australia, the most densely populated areas containing important agricultural land.

The number of hot days with temperatures in excess of 35°C is likely to increase quite substantially across the Australian continent. This will see a rapid and significant increase in the number of hot days by the end of the century. Based on climate change predictions Australia is now entering into a phase of declining rainfall. There is going to be a rapid escalation in the proportion of the Australian continent that's under drought at any one time. By 2070, up to 55 percent of Australia is likely to be under drought at any one time, compared to approximately 30 percent now. The interaction of land use pressures and the global warming phenomenon will cause increasing stress on Australia's ecosystems. Land use conflicts, particularly between conservation and agriculture, are likely to become more prevalent in the future.

An increase in climate extremes will have a major impact on Australia's ecosystems and biodiversity. Changes in the mean climate are important, but these extremes are likely to cause divergence major perturbations to ecosystems and fauna populations. The Australian continent has large areas of cleared agricultural land, and these agricultural landscapes are already highly fragmented and degraded. The stress of drought on these fragmented ecosystems is predicted to be considerable. Ecosystem restoration and maintaining ecosystem resilience are critical to securing the future of these ecosystems and their fauna.

The effect of climate change on wildlife must not be overlooked. The Koala is one species which is highly sensitive to climate change, with recent bioclimatic modelling showing a major contraction in the range of koalas towards the east coast by 2050 and 2070 (Adams-Hosking *et al.*). These coastal areas receive the greatest population pressures from urbanisation. It is predicted that the future range of koalas may no longer occur in the arid western areas of Queensland and New South Wales. During the last drought the koala population of south west Queensland decreased by approximately 50 to 70 percent during the drought. More droughts mean koala populations are likely to go regionally extinct in these areas. Therefore, it is critical the global community commits to reducing greenhouse gas emissions to protect the future of Australia's native ecosystems and fauna.

Figure 1. Billboard of Kevin Rudd at Copenhagen International airport (Photo Clive McAlpine, November 26 2009)

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