

# Enterprise Risk Management Seminar



**Capturing the Upside**

19 November 2014 • Hilton Sydney



**Actuaries  
Institute**

# A Risk Management Approach to Climate Change

Professor Barbara Norman  
Director Canberra Urban & Regional Futures  
University of Canberra

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*This presentation has been prepared for the Actuaries Institute 2014 ERM Seminar.  
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# Getting warmer

FINAL DRAFT

IPCC WGII AR5 Chapter 25

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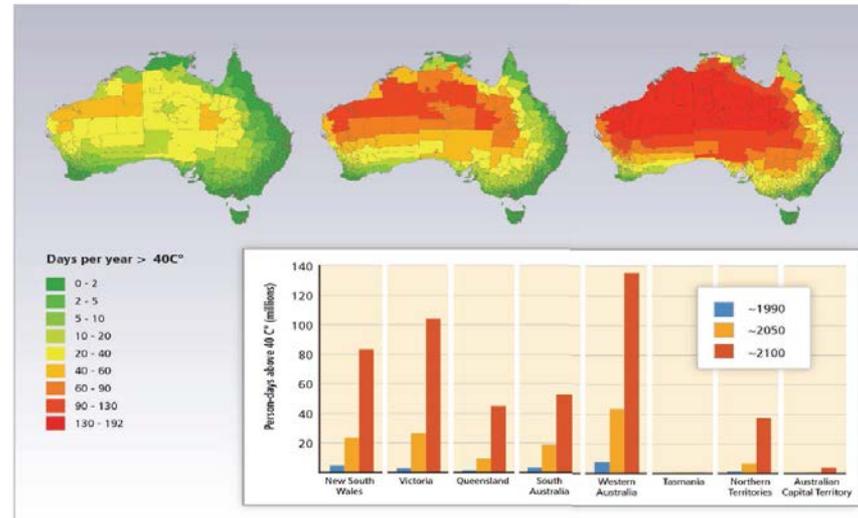
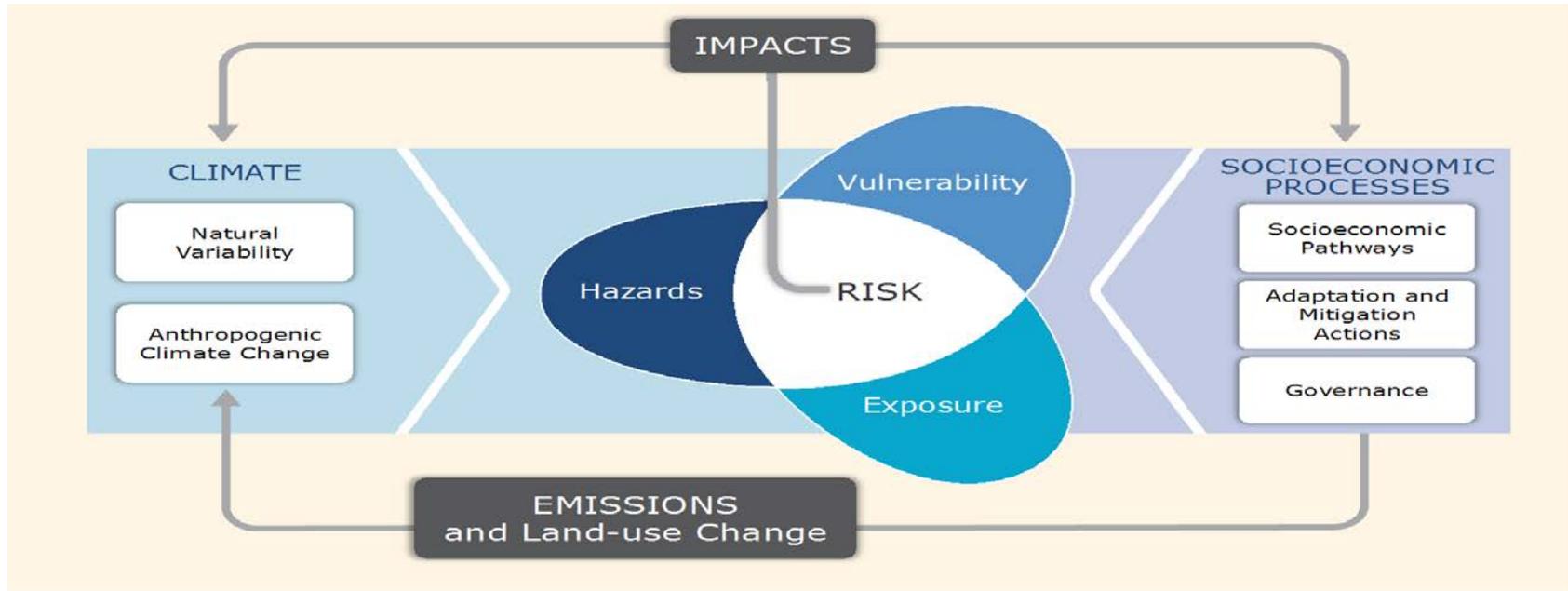


Figure 25-5: Projected changes in exposure to heat under a high emissions scenario (A1FI). Maps show the average number of days with peak temperatures >40°C, for ~1990 (based on available meteorological station data for the period 1975-2004), ~2050 and ~2100. Bar charts show the change in population heat exposure, expressed as person-days exposed to peak temperatures >40°C, aggregated by State/Territory and including projected population growth for a default scenario. Future temperatures are based on simulations by the GFDL-CM2 global climate model (Meehl *et al.*, 2007), re-scaled to the A1FI scenario; simulations based on other climate models could give higher or lower results. Data from Baynes *et al.* (2012).

# A risk management approach to climate change



# Coasts, fire and climate change



## PLANNING AND BUSHFIRE RISK IN A CHANGING CLIMATE

FINAL REPORT FOR THE URBAN AND REGIONAL PLANNING SYSTEMS PROJECT

Barbara Norman, Jessica K. Weir, Kate Sullivan and Jacqui Levis

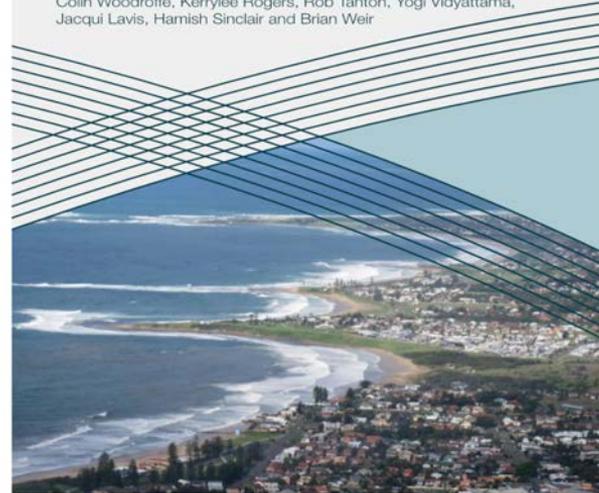




South East Coastal Adaptation (SECA):  
Coastal urban climate futures in SE Australia  
from Wollongong to Lakes Entrance

Final Report

Barbara Norman, Will Steffen, Bob Webb, Tony Capon, Bill Maher,  
Colin Woodroffe, Kerrylee Rogers, Rob Tanton, Yogi Vidyattama,  
Jacqui Lavis, Hamish Sinclair and Brian Weir



 bushfire CRC



## PLANNING AND BUSHFIRE RISK IN A CHANGING CLIMATE

FINAL REPORT FOR THE URBAN AND REGIONAL PLANNING SYSTEMS PROJECT

Barbara Herman, Jessica Weir, Kate Sullivan and Jacqui Lewis

University of Canberra



are critical in better understanding and communicating environmental risks to coastal communities in the future.

# Collaborating with cultural practitioners in communicating research



Street  
Eden NSW

# Accountability in planning decisions

*'In recent years, there has been an increasing tendency towards departures from the stated requirements. The existence of a wide discretion to approve projects, which are contrary to local plans and do not necessarily conform to state strategic plans, creates a corruption risk and community perception of lack of appropriate boundaries. A re- emphasis on strategic planning, clear criteria to guide decisions and a consistent decision- making framework will help address this issue'.* (ICAC 2012. P5)

# Planetary boundaries

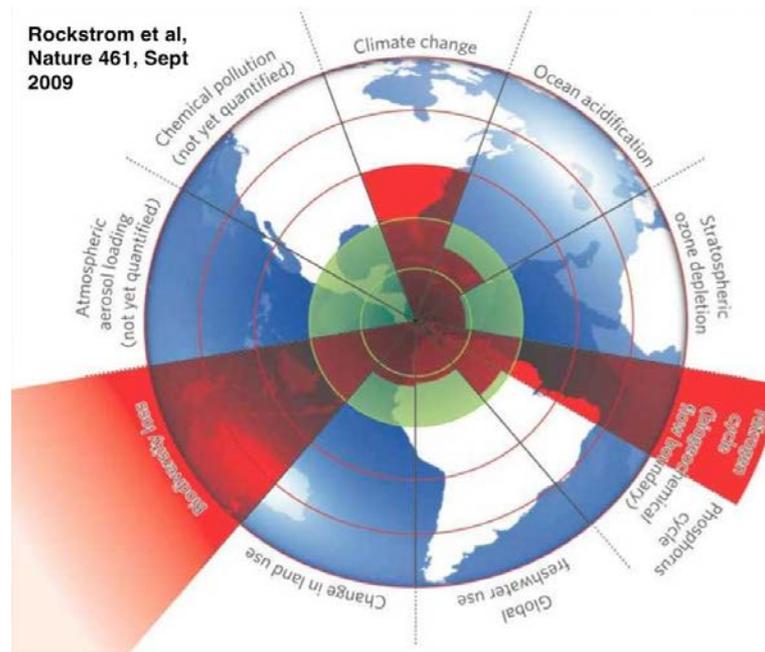


Figure 50: The 9 planetary boundaries of the Stockholm Resilience Centre.<sup>619</sup>

<sup>618</sup> J. Rockström *et al* (2009b) 'A safe operating space for humanity', *Nature* 461, 23 September 2009. Available at: <http://www.nature.com/nature/journal/v461/n7263/full/461472a.html>

<sup>619</sup> Reprinted by permission from Macmillan Publishers Ltd: Rockstrom et al, *A safe operating space for humanity*, *Nature* 461, 472-475, 24 September 2009

# Implications for Actuaries

"Currently, actuarial models are effectively discounting to zero the probability of economic growth being limited by resource constraints. If resource constraints are significant, this means that current models will persistently understate the value of liabilities."



# Conclusions

- Climate change is here and now
- IPCC 5 highlights a risk management approach
- Planetary boundaries and resource limits need to be considered
- Actuaries need to be factoring in all the costs of climate change including coastal impacts such as sea level rise and coastal storms
- Transparency and accountability in decisions making critical to ensuring full knowledge by all participants