



Australian Government

Department of Agriculture, Fisheries and Forestry



# Climate change: mitigation, adaptation and health

OIE Global Conference on *Wildlife, Animal Health and Biodiversity*

*Preparing for the future*

Paris, 23 to 25 February 2011

Dr Peter Black BVSc MPVM MSc MACVSc  
Principal Research Scientist  
Office of the Chief Veterinary Officer

# Outline of presentation

Definitions

What is likely to happen

Implications for health

What might we need to do?





# Climate change definition

A change of climate attributed **directly or indirectly** to **human activity** that **alters the composition of the global atmosphere** and that is *in addition to natural climate variability observed over comparable periods.*

Some aspects of climate variability, including **increasing frequency and intensity of extreme weather events** such as droughts and floods, are attributable to climate change.



# Definitions

## Mitigation

Implementing policies to reduce GHG emissions and enhance sinks.

## Adaptation

Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.

Source: IPCC fourth assessment report 2007.

<http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-annex1.pdf>

Earth System moves to a new state; modern civilisation collapses

Feedbacks push climate change higher; abrupt changes much more likely; massive impacts to humans

**Dangerous**

Loss of Greenland ice sheet

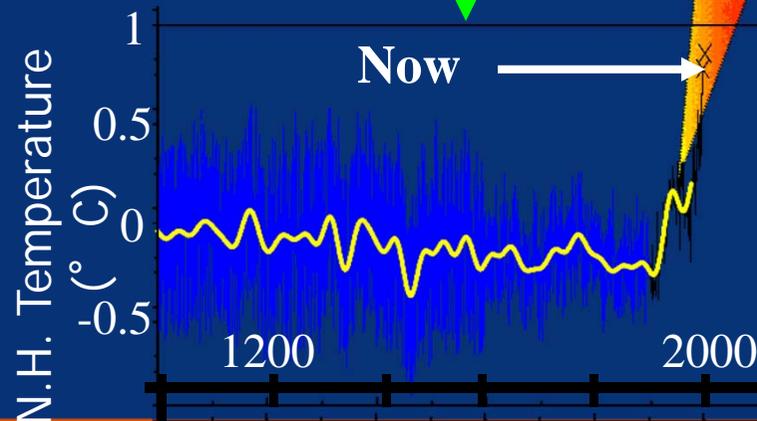
Large biodiversity loss; coral reefs disappear

**Adaptable**

"Committed" Climate Change

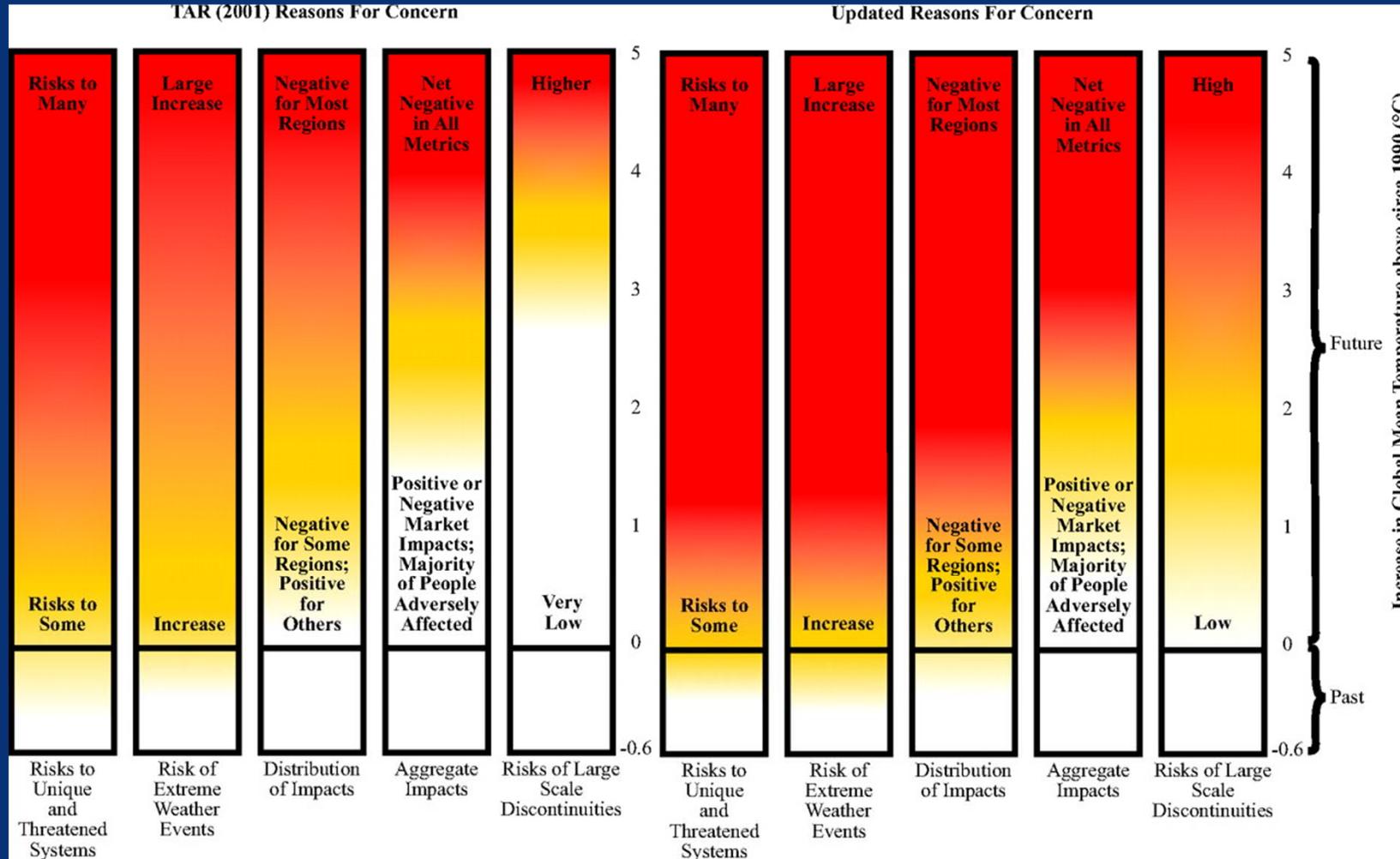
Now

IPCC Projections  
°C 2100 AD



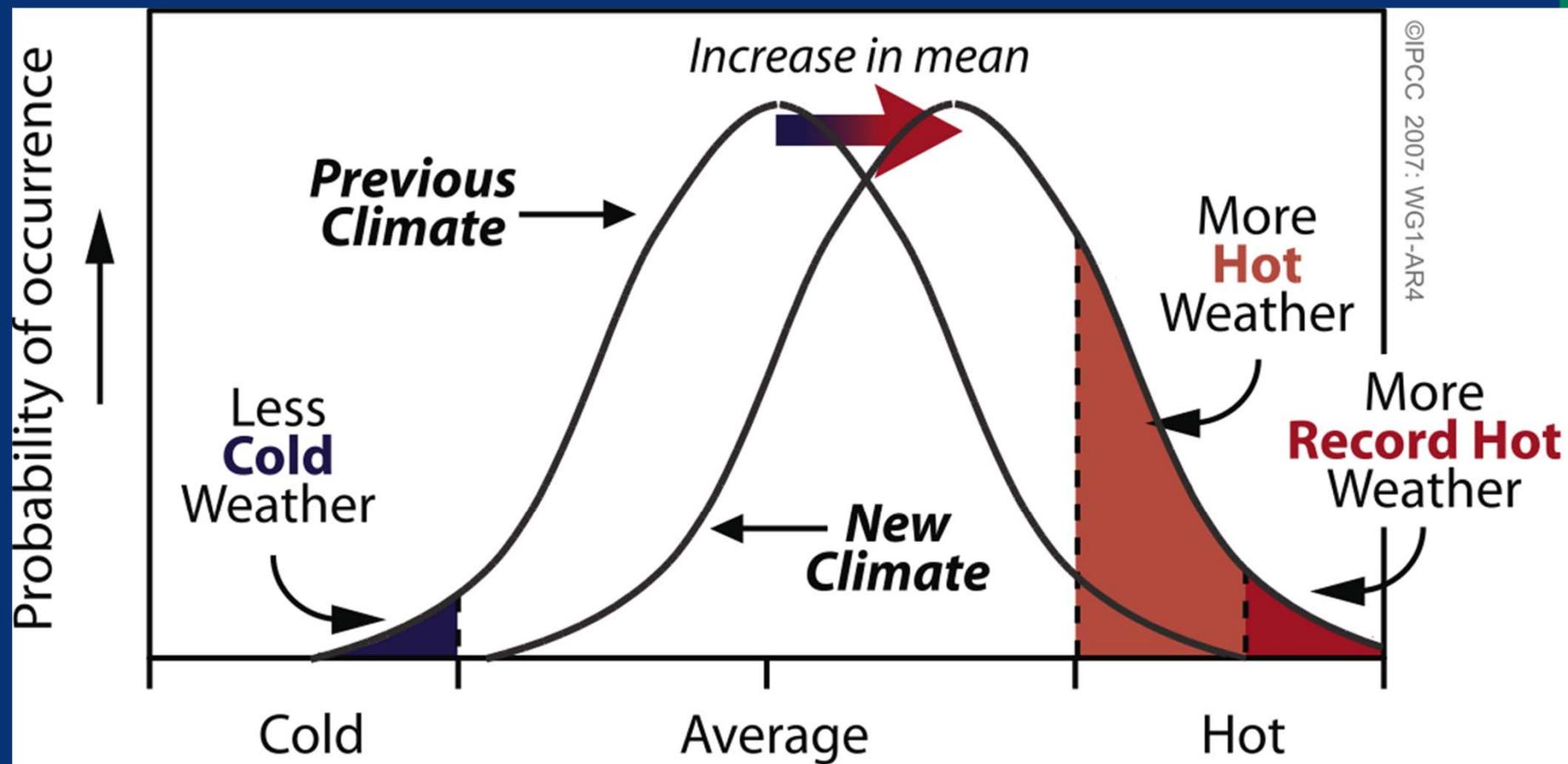
W. Steffan interpretations  
(Pers comm. 2009)

# Risks from climate change, by reason for concern—2001 compared with updated data (revised 2009)



Smith J B et al. PNAS 2009;106:4133-4137

# Increase in mean – translates to more extremes





# Adaptation myths?

Shift from adaptation thinking to strategy of .....

*continuous transformation*

## Language

'Adapting' 'risk management' 'building resilience'

'no regrets' 'win-win'

Only need to tinker at the edges

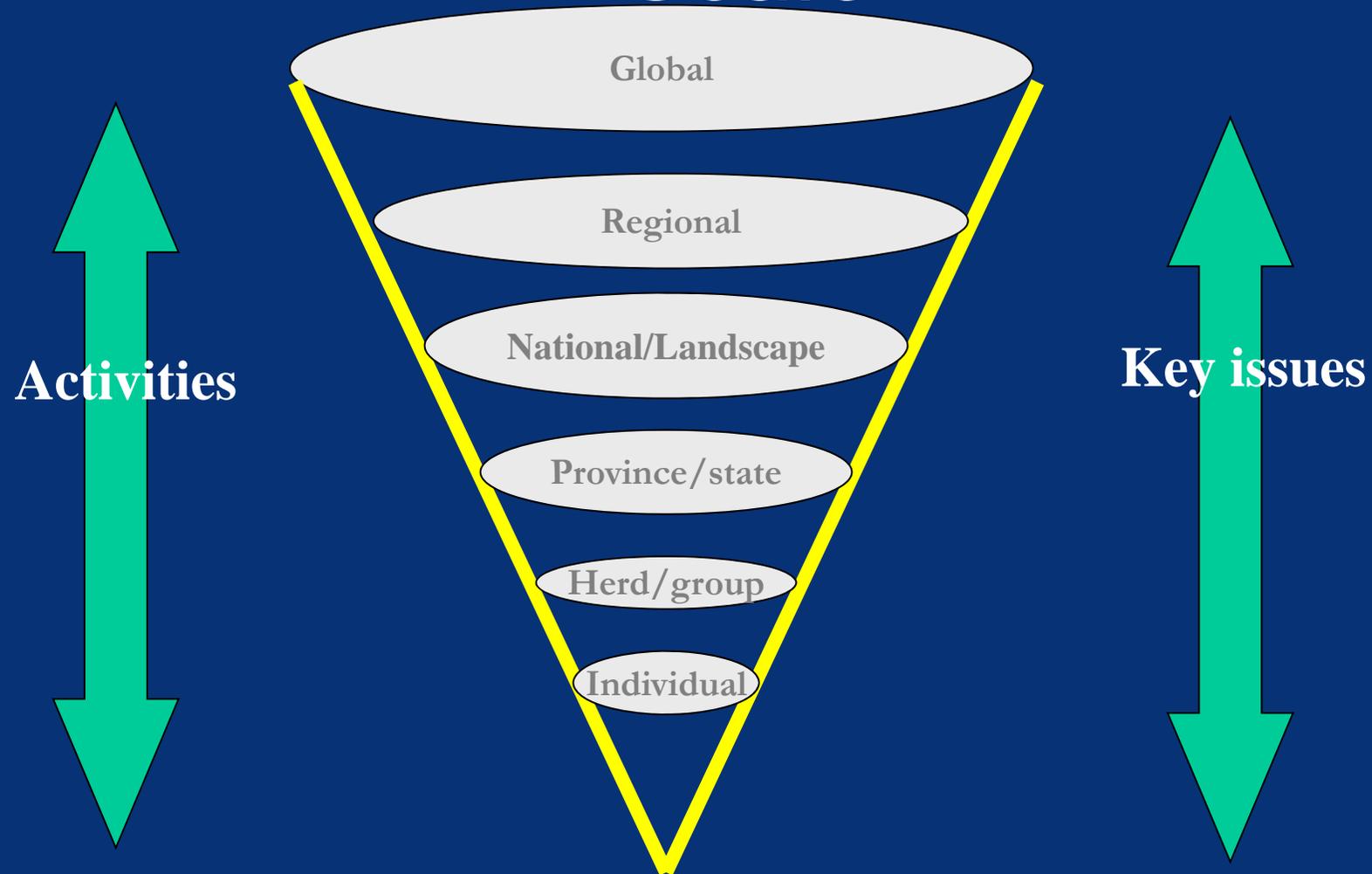
Drawn from: 'Requiem for a species – why we resist the truth about climate change'  
Clive Hamilton, Allen & Unwin 2010.



# Implications for health

- Scale
- Disease examples
- Complexity

# Scale



Activities

Key issues

**Health - where to focus? It depends!!!**

Slide draws on work from David Waltner – Toews



# Which diseases?

Lot of interest in diseases where the transmission cycles involve either:  
a free living stage or  
stages within an intermediary invertebrate host

e.g. arboviruses  
Helminths  
Ticks



# Higher levels of organisation

*Host level dynamics – species, numbers,  
location and density*

e.g.

**Indirectly – food and water availability**

**Loss of synchrony of lifecycles**

**Species cross-overs**



# Climate change and health - part of complex system

**Notions of control and certainty become obsolete.**

**There is no single model of behaviour, mode of thought or method that can provide an answer to all our interconnected challenges\***

**Notions of robustness and resilience become more important**

See <http://www.resalliance.org/1.php>

\* From Sardar Z (2010). Welcome to Postnormal times, *Futures*, 42 (5), (2010) 435-444.

# Panarchy

UNDERSTANDING  
TRANSFORMATIONS  
IN HUMAN AND  
NATURAL SYSTEMS



EDITED BY

**Lance H. Gunderson**

**C. S. Holling**

## RESILIENCE *thinking*

Sustaining  
Ecosystems  
and People  
in a Changing  
World

*Brian Walker  
and David Salt*

HOW CAN LANDSCAPES AND COMMUNITIES  
ABSORB DISTURBANCE AND MAINTAIN FUNCTION?

# What we might need to do

- Increase capacity to deal with complex systems
- Accept that no single institution alone has the answers (real engagement)
- Indeed, for many of the challenges ahead – there is no single answer -but a range of pathways
- Become more comfortable with ambiguity and uncertainty
- Collaboration and cooperation – discipline issues – e.g. One health





DEPARTMENT OF AGRICULTURE, FISHERIES AND FORESTRY