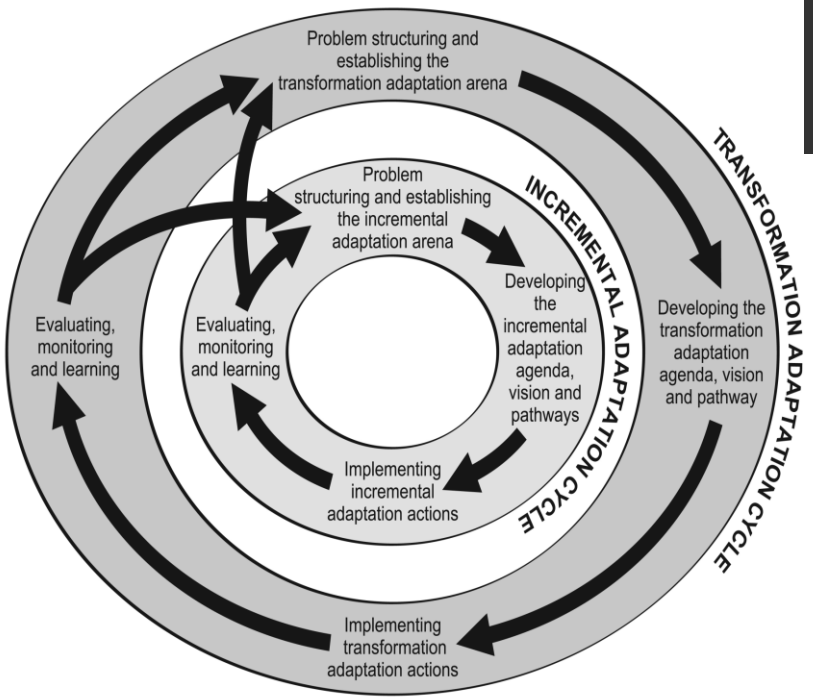


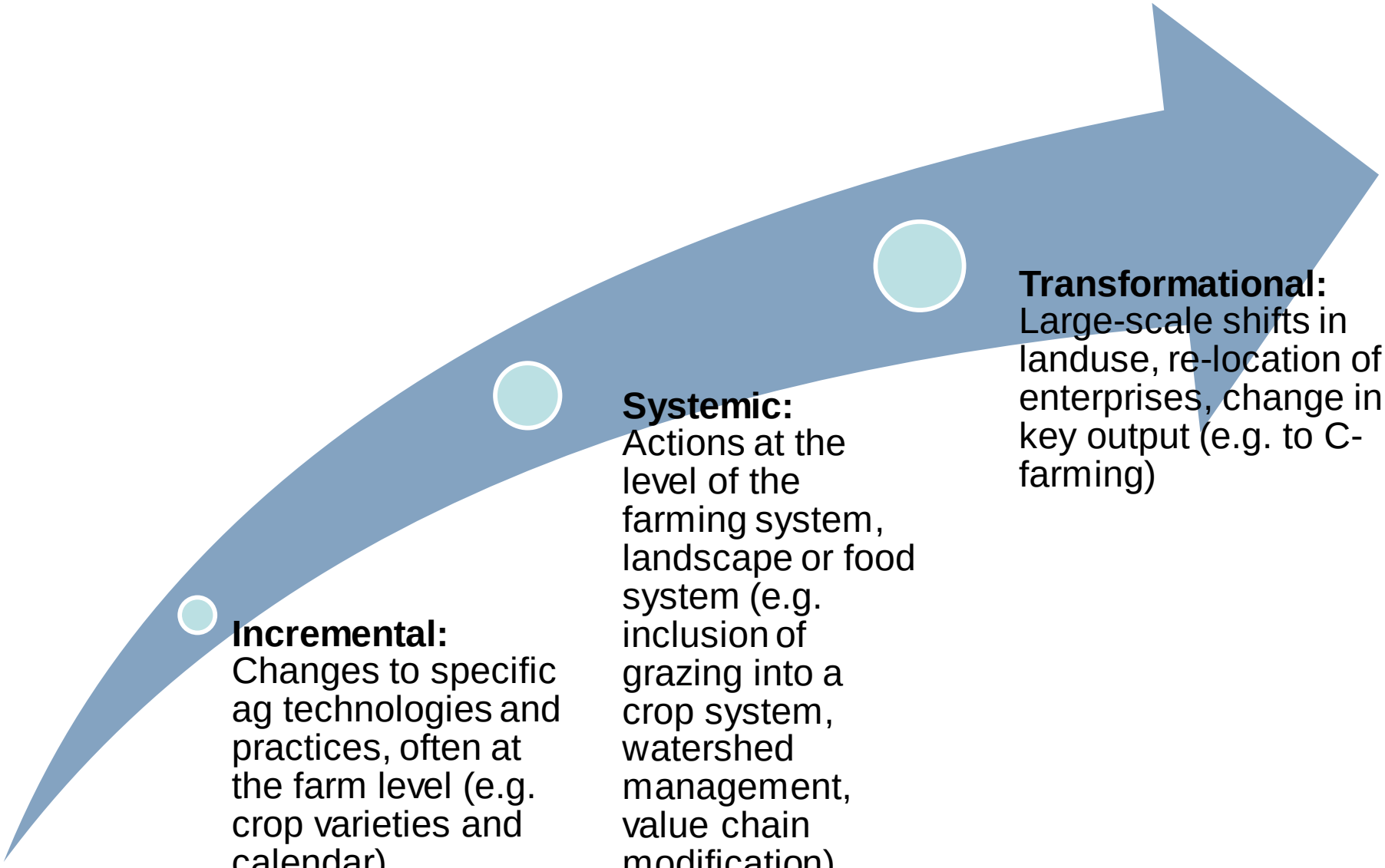
What evidence for transformational adaptation?

Mark Howden and many others

ANU Climate Change Institute

Vice Chair, IPCC Working Group II

Incremental to transformational



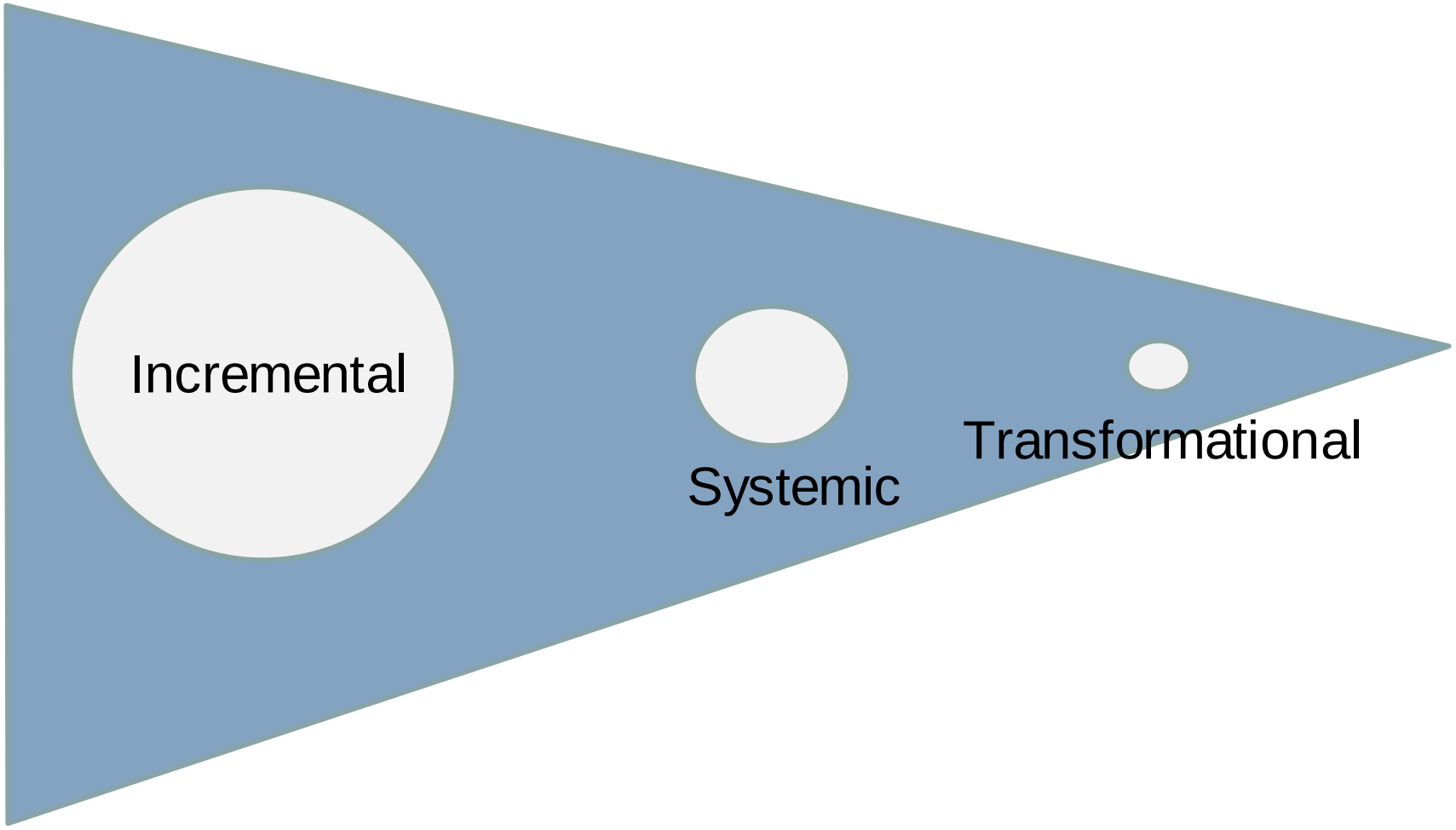
Incremental:
Changes to specific ag technologies and practices, often at the farm level (e.g. crop varieties and calendar)

Systemic:
Actions at the level of the farming system, landscape or food system (e.g. inclusion of grazing into a crop system, watershed management, value chain modification)

Transformational:
Large-scale shifts in landuse, re-location of enterprises, change in key output (e.g. to C-farming)

Howden et al. 2010,Rickards and Howden 2012, Vermuelen et al. 2015

Careful of implicit prioritisation



Lacey et al. 2015

Transformation is not unusual

- Domesticated grazing about 13 000 years ago
- Spread of agriculture about 11 000 years ago
- Land clearing
- Irrigation in semi-arid zones
- Aquaculture
- Relocation of industries
- Sedentarisation of migratory groups
- Conservation Reserve Program in the USA
- Carbon farming

- Transformation historically has been integral to agriculture

Rickards and Howden 2012

Transformational climate adaptation

Relocation:

- coffee growing
- viticulture
- peanuts
- rice
- coastal farmers

Transitions

- grazing to cropping transitions in wet zones
- cropping to grazing transitions in dry zones
- pastoralism to irrigation
- restoration from degraded farmland

Lots of re-labelling to claim a 'transformation' mantle

Vermeulen et al. 2015, Rickards and Howden 2012, Park et al. 2012, Jakku et al. 2017

What have we learnt so far ?

- Can be seen by some as ‘failure’
- Our experience is different – often high profile, celebrated as by emphasising the human potential for creativity, proactive transformational adaptation offers a welcome sense of possibility and control
- Opportunity-driven rather than risk: the vision of leaders matters
- What constitutes success and its evaluation can be challenging
- Top down, policy-driven approaches rarely seem to work whilst some bottom up ones can, especially where values-driven and supported by local communities and knowledge

Anderson 2010; Rickards 2010, Howden et al. 2007, 2012, Jakku et al. 2017, Vermeulen et al 2015

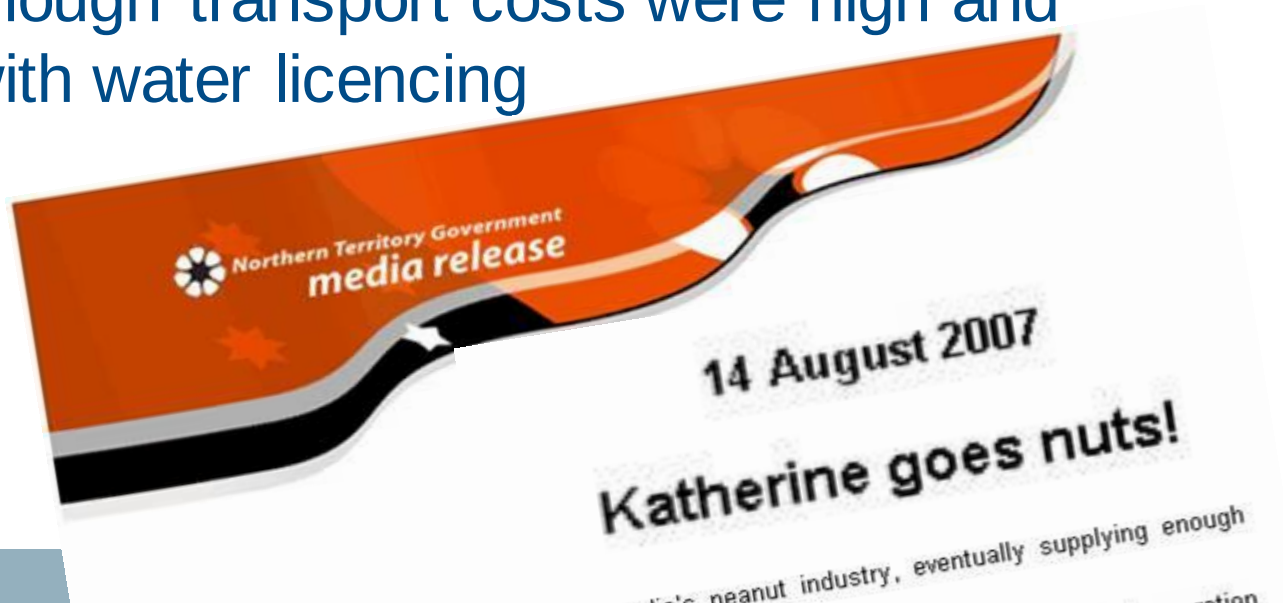
What have we learnt so far ?

- Key issues are social, cultural, institutional, ethical rather than technical and formal knowledge
  - science can sometimes play a valuable support role and is often wise after the fact
- There can be surprising barriers
- Our standard models and tools (e.g. DSSAT and APSIM, household surveys, BCA etc) are generally unsuited to the decision-making process
- Need to consider what type of science is needed, how and when (as we always should)
- Should not be about focusing on transformation or incremental adaptation etc but rather just encouraging exploration of the full range of options

Anderson 2010; Rickards 2010, Howden et al. 2007, 2012, Jakku et al. 2017, Vermeulen et al 2015

A brief case study: peanuts

- Peanuts in Australia historically grown in sub-tropical SE Queensland
- Concerns about climate change and opportunities associated with increasing rainfall trends in the north resulted in development of major new areas, driven by the CEO
- Initial results were good, with asynchronous production, although transport costs were high and some issues with water licencing



Jakku et al. 2017

A brief case study

- But then there was a change of board/governance…
- They wanted to focus on the ‘front end’ (ie marketing and increasing demand)
- Sold the farms at a large loss
- And are probably regretting it now…

Jakku et al. 2017

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Thankyou

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