



The changing role of science in climate adaptation in the agriculture sector

CLIMATE ADAPTATION



Mark Howden, Steven Crimp, Rohan Nelson

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The food security challenge

Increasing:

- population growth
- dietary change
- energy demand

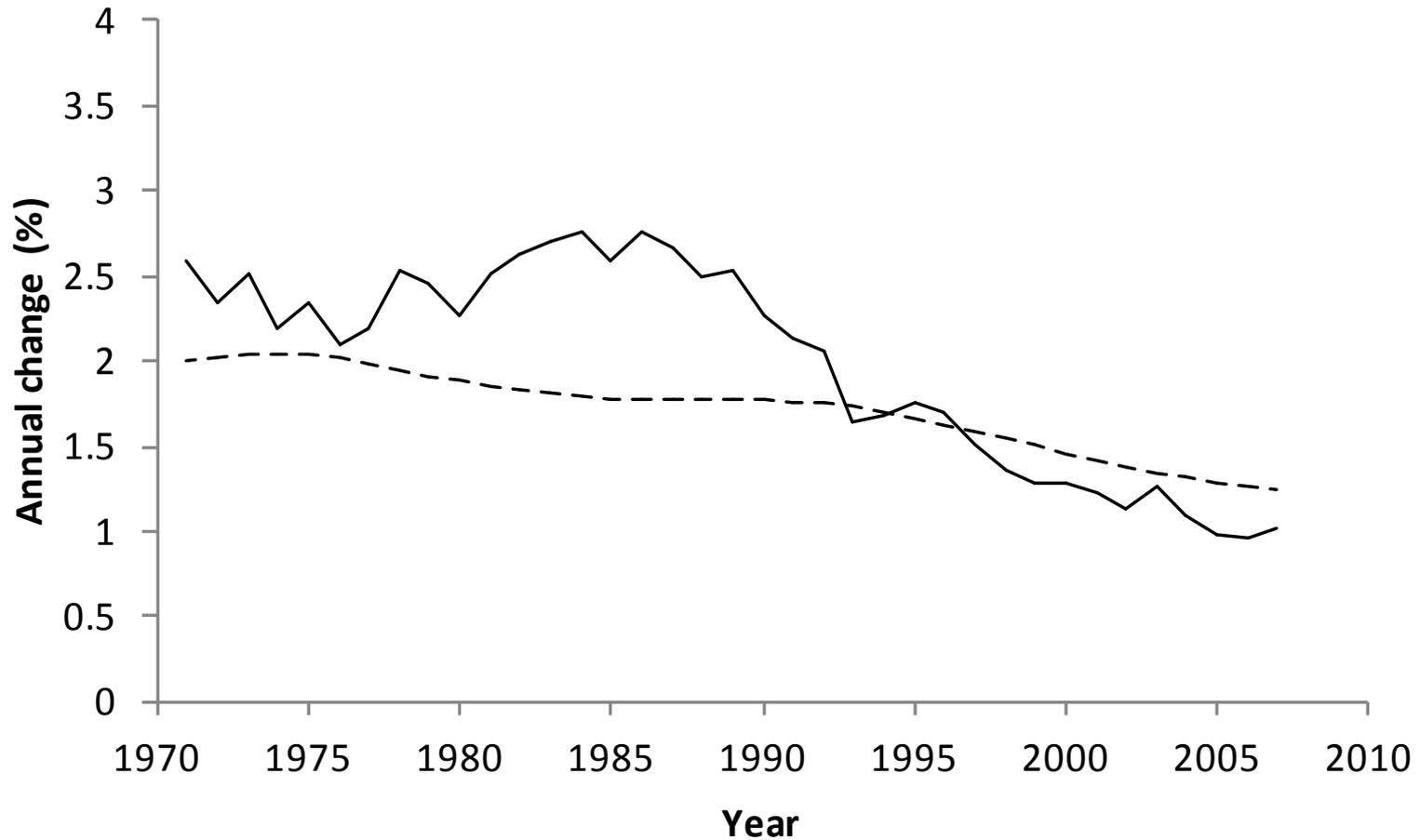
Growing constraints:

- undegraded arable land, water and some inputs
- reduce net greenhouse gas emissions
- enhancing landscape biodiversity

At the same time as:

- substantial climate variability and change

Growth trends in population and cereal yield



A growing mismatch

- Unsurprisingly, this has generated substantial research
- But there is increasing evidence that this rarely leads to actual adaptation
 - for example less than 5% of journal papers on climate adaptation from 2006-2009 report on intentional adaptation
- Additionally much of the research focuses on the availability (production) dimension of food security, not accessibility, utilisation or ***stability***

Increasing our impact

- Climate adaptation research always involves decision-makers if it is to be implemented
 - progress in the climate science does not equal progress in adaptation
- Recognition that knowledge is held by many - not just researchers - that the agricultural industries have enormous experience, knowledge and skill
- Also recognition that more information does not automatically lead to better decisions
- Core operating principles

More information does not necessarily equal better decisions

- Not relevant
- Not appropriate for the decision
- Not reliable or trusted
- Not legitimately sourced
- Conflicts with users values or interests
- Unavailable or untimely
- Poorly communicated
- Whose decision is 'better' ? And how do we know ?

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Operating principles (1)

- values, aspirations and decision-context of stakeholders (including the institutional environment)
- assess the decisions that are within their existing decision-horizon, the sensitivity of these decisions and their systems of interest to possible climate impacts
- the stakeholders' existing capacity to deal with these impacts and how this capacity can be built

Operating principles (2)

- the array of adaptation options and their consequences, risks and costs
- the implementation path for selected adaptations (including facilitating factors, barriers and limits)
- monitoring to determine what works, what does not work, and why, for active adaptive management

Benefits: participatory action research

- Better define the questions
- Co-invest – build a bigger team
- Co-design research
- Pool knowledge
 - scientists often *not* the dominant knowledge holders
 - broader range of solution options
- Own the solutions, operate the ‘tools’
- Relevance, credibility, legitimacy and rigour

Need different actors at different stages

- Is it real ?
 - Does it matter ?
 - Can we do anything about it or its impacts ?
 - How do we take action ?
 - How do we know we are doing the right thing ?
-
- Scientists
- Economists,
social scientists,
stakeholders
- Policy,
politicians,
stakeholders

Decision vs climate centred approaches

This 'decision-centred' approach contrasts with the 'linear model' of research that:

- places climate at the centre of the analysis
- implicitly (and sometimes explicitly) places climate information above other knowledge
- and places biophysical components above socio-economic and policy ones
- often focuses on reducing uncertainty and delivering climate information at ever finer temporal and spatial scales regardless of whether these are either desired or feasible



Evolution of the science: policy

- Narrow disciplinary and institutional perspectives have provided few practical options for policymakers dealing with the complex and interacting goals of adaptation
 - climate-centric not human-centric
 - identifies the problem but not solutions
 - pressure to reduce policy goals to fit the scientific methods and agendas
- The nature of the policy problem should determine the relevance of the science that is available
- Significant blockage in science-policy interface

Science-policy opportunities

- Alter the policy discussion from a science-gap model (knowledge will lead to action) to an economic policy agenda with a clear rationale for government intervention
 - including through addressing market and public values failures and barriers to adaptation including institutional inertia
- When combined with an outcomes-focussed farmer and value-chain program, this will help change the focus from defining the problem to participating in developing the solutions

Science-policy opportunities

- Develop and support ‘boundary spanning’ institutions and people: those who transform scientific knowledge into forms that can be used to support decision making
 - they are often vulnerable but likely to grow in importance
- Develop partnerships with groups ‘next in the line’ as key actors in getting outcomes: be prepared to ‘pass the baton’
- Continually reconsider what we do, how we do it and why – this will help ourselves adapt to change

Climate Adaptation Flagship

Dr Mark Howden
Theme Leader

Phone: +61 2 6242 1679

Email: mark.howden@csiro.au

Website: www.csiro.au/org/ClimateAdaptationFlagship



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