Negotiating the barriers between science and policy: from 'useful' to 'valuable' knowledges in climate change adaptation.

Dr Geoff Whitman

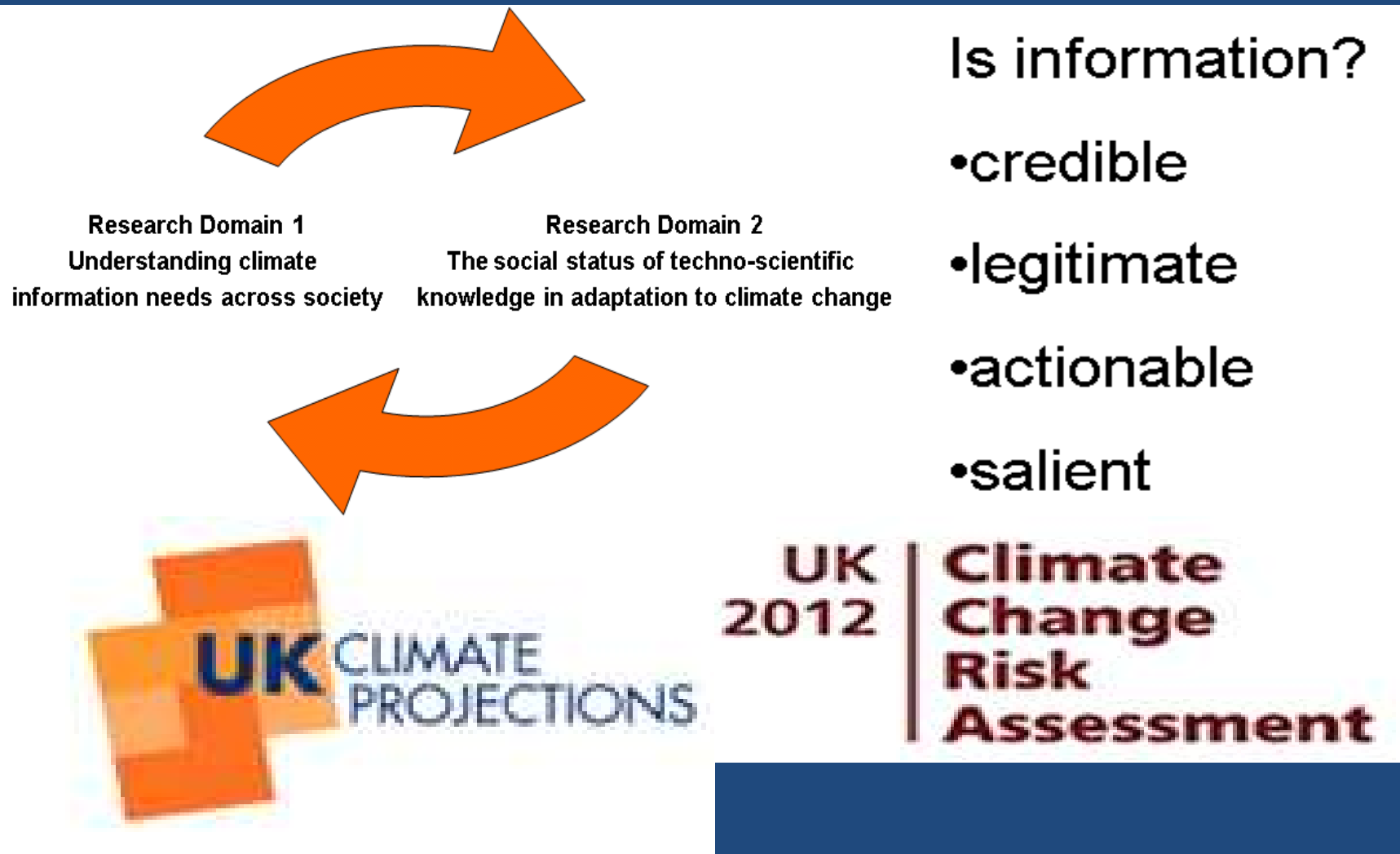Professor Suraje Dessai

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Paper outline

- Project ICAD- brief background
- Conceptual idea
- Adaptation and knowledge
- Framing of climate knowledges
- Broadening the knowledge base
- From 'useful' to 'valuable' knowledges
  - 'Knowledge systems'
  - Problems with this
- Valuable knowledges
  - Expertise
  - Co-production
  - Note of caution
- Final thoughts
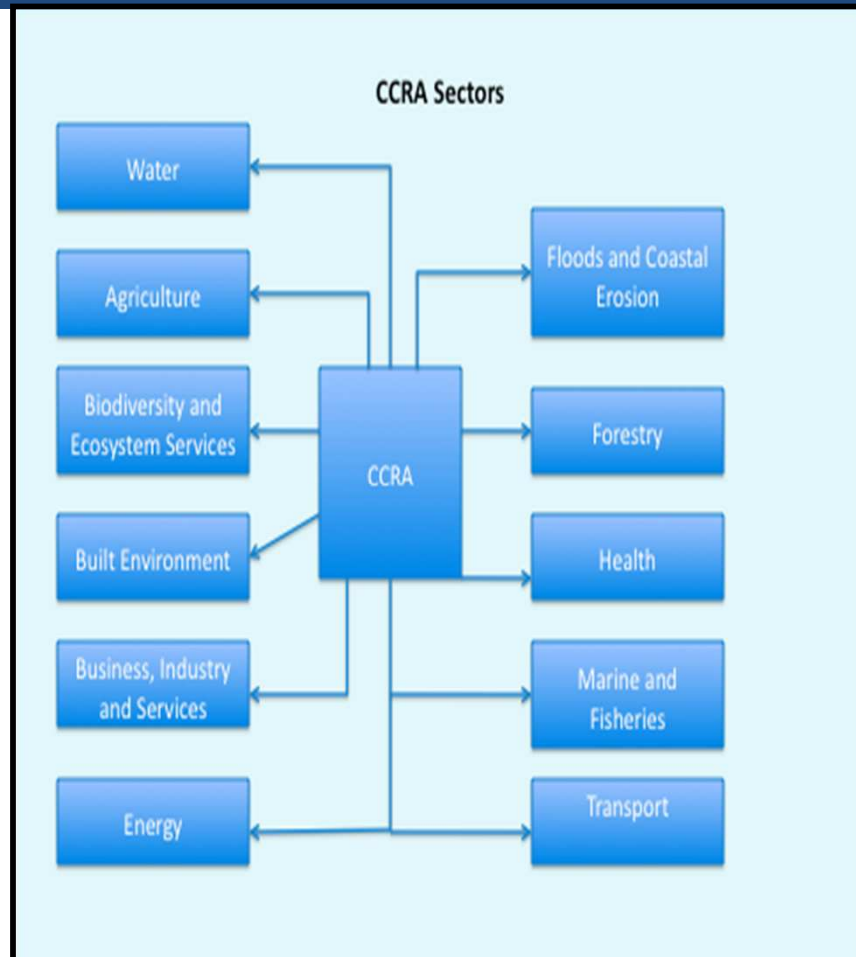
Project ICAD

- Advancing Knowledge Systems to <u>Inform Climate Adaptation Decisions</u>
- Funded by a European Research Council (ERC) Starting Grant under the domain of Social Science & Humanities (Environment and Society panel; SH3)
- "Frontier" - or basic - research, selected exclusively on the basis of scientific excellence
- €1.045 million
- 4 years (1 April 2012 – 31 March 2016)

The research project aim: significantly advance knowledge systems to enable society to adapt effectively to an uncertain climate

Research Domain 1
Understanding climate information needs across society

Research Domain 2
The social status of techno-scientific knowledge in adaptation to climate change

Is information?

- credible
- legitimate
- actionable
- salient

UK CLIMATE PROJECTIONS

UK 2012 | Climate Change Risk Assessment

RD1:Understanding Knowledge needs across UK Society

1. Understand different adaptation contexts and capacities

2. Understand how observed or projected climate information has been used in organisations and decision-making

3. Understand the importance of non-climatic information for decision-making

4. Understand what levels of uncertainty users are able to tolerate for different kinds of scientific knowledge used in decision-making

5. Understand what users expect science to deliver.

CCRA Sectors

Water
Agriculture
Biodiversity and Ecosystem Services
Built Environment
Business, Industry and Services
Energy
CCRA
Floods and Coastal Erosion
Forestry
Health
Marine and Fisheries
Transport

Conceptual premise of paper

- Paper is premised on the notion that scientific knowledge and associated perceptions are powerful determinants of policy action (cf. Lahsen 2010; Grundmann and Stehr 2012).

- The role of climate knowledge is often seen as central for enabling adaptation, yet at the same time as a limiting condition due to the uncertainty around future climate foresight and risk (Adger et al. 2009; Dessai et al. 2009).

- Our aim is to examine the barriers and limitations of moving climate knowledge from being *useful* to *valuable* in adaptation to climate change.

- We are proposing that as we move from **'useful'** to **valuable'** knowledges that the barriers to using knowledge for climate change adaptation may begin to dissolve.

- However, we of course recognise that knowledge is only one of many potential barriers to adaptation – for example, financial, institutional and physical factors may also play a role in adaptation.

Adaptation and Knowledge

- The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) defines adaptation as "...*an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploit beneficial opportunities*" (IPCC, 2007).

- Individual and collective acceptance of climate knowledges is dependent on whether we understand and believe both the knowledge claims and those who supply them.

- Furthermore, the increasing evidence of climate change and its potential impacts now warrant a greater scrutiny of the "...scientific and political products and processes that shape" such claims (Lahsen, 2010, p. 162).

- In other words a critical engagement with the framing of climate change is vital to the broader understanding and acceptance of both the 'problem' and how we are to adapt to this.

Framing of Climate Knowledges

- Mike Hulme (2008) has argued that the critical period for framing climate change occurred during the formative years of the IPCC (1985-1992). It was during this period that the 'emergent phenomenon' of climate change was,

  "…*strongly tied to roots within the natural sciences; to an enhanced ability to 'predict' future climates and to a policy-framing that claims both global reach and authority*" (Hulme, 2008, p.5).

- The dominance of natural science representations of climate and the institutionalisation of these within the IPCC has resulted in an overly quantified approach to climate change.

- In effect, these **early framings created barriers** to different types of knowledge's and expertises being used in climate change.

- In particular, the **absence of the social sciences** from this early and informative framing of climate change has resulted in climate change being dominated by numerical representations and framings that are removed from their wider social and cultural meanings (Hume, 2008; 2010)

Broadening the Knowledge Base

- Constructing climate as a global phenomenon distances it from individual's **'mental worlds'** making it easier for them to separate out verbal claims of support from actual action (Lorenzoni *et al., 2007*, p.8*)*.

- Results in a **'the view from nowhere'** (Shapin, 1998, p. 5) or a **'view from everywhere'** (Hulme, 2010a, p. 559).

- Both Shapin (1998) and Hulme (2010) are attending to the highly **de-contextualised** and **disembodied** nature of climate knowledge with its top-down view of global knowledge that is detached from more localised 'meaning-making' (Jasanoff, 2010).

- Globalised climate knowledges (i.e. global climate models) acts as a **potential barrier to adaptation.**

A typology of knowledges for climate change adaptation: From 'useful' to 'useable'

- Our typology suggests that knowledge can be: **'useful'**, **'useable'** or **'valuable'** to decision makers
  - As we move from 'useful' to 'valuable' we reduce the barriers for knowledge use in adaptation?

- **Knowledge as 'useful'**
  - Linear model of science where usefulness is defined by scientist's perceptions of user needs (lemos and Rood, 2010)

- **Knowledge as 'useable'**
  - Useable is defined by what user's perceive as useful to their decision making (Lemos and Rood, 2010)
  - Drawn from **'knowledge systems'** (Cash *et* al., 2003) that argues knowledge requires three essential components:
  - **Salience** (the perceived relevance of the information),
  - **Credibility** (the perceived technical quality of the information)
  - **Legitimacy** (the perceived objectivity of the process by which the information is shared) (Meinke et al. 2006).

Knowledge Systems

- Knowledge System Criteria

    (see Cash et al, 2003; Cash and Buizer, 2005; McNie, 2007)

Credible

Salient

Legitimate
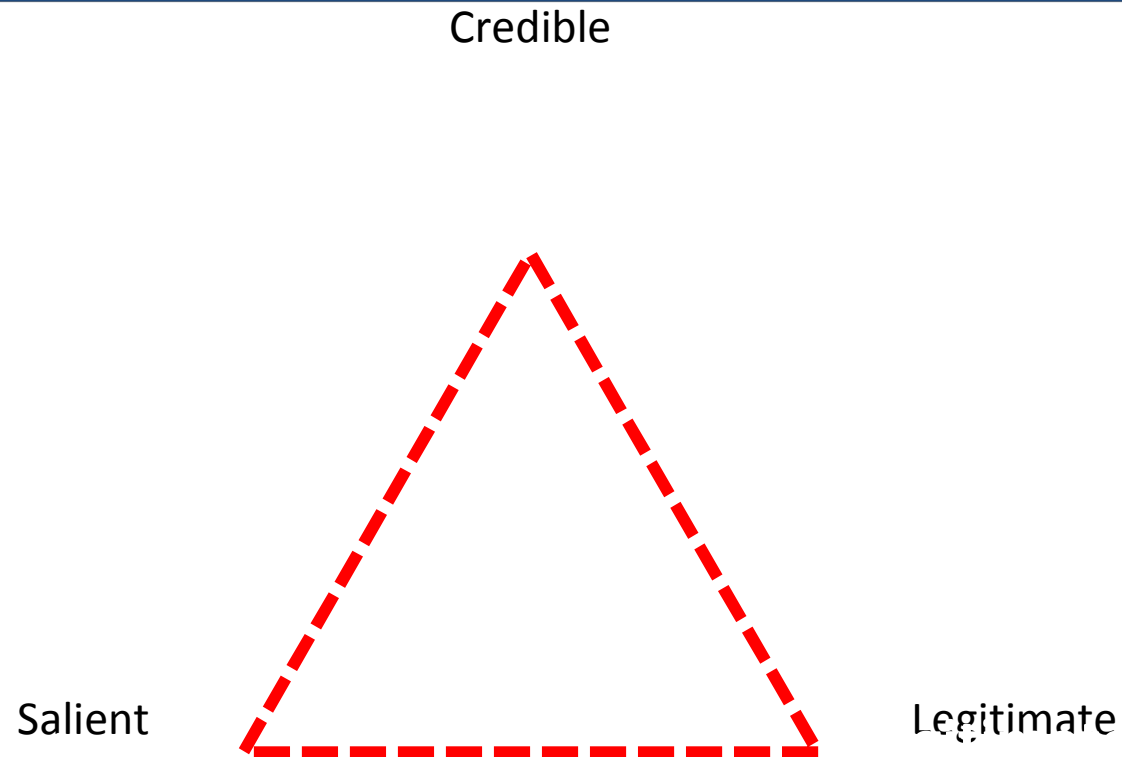
Problems in producing useable knowledges

- Although the 'knowledge systems' approach outlined above is a useful framework for thinking through how the production of knowledge could be more effective to users it is now **recognised that stakeholders generally have different perceptions of what makes credible, legitimate and salient information.**

- Consequently, the criteria cannot simply be incorporated without case specific consideration of the users (Cash and Buizer 2005; Meinke *et al*., 2006; Tang and Dessai, 2012).

- The pragmatic use of 'knowledge systems' has been shown by a number of authors to be problematic (Lemos and Morehouse 2005; Meinke *et al*., (2006); Lemos and Rood 2010; Dilling and Lemos 2011; Tang and Dessai, 2012).

From 'useable' to 'valuable' knowledges

- We acknowledge that Cash *et al* (2003) provided a useful framework with which to think through how knowledge can be produced that better suits user needs while at the same time maintaining its scientific credibility.

- However, the above examples have demonstrated the problematic nature of *credibility, saliency and legitimacy*.

- 'Valuable knowledge' – attends to the three knowledge system criteria mentioned above (Cash et al. 2003) but also leads to deeper learning from those involved in the adaptation process.

  – Exposes the uncertainties and limitations of knowledge

  – Clarifies the role(s) of **expertise** (and its power relations) in adaptation governance

  – May lead to a genuine **co-production** of climate knowledge where the distinction between knowledge producers and users becomes blurred (Callon, 1999).

  – Such an approach to knowledge production has been shown to be highly effective in some environmental areas such as flood risk management (Lane et al., 201;1 Landstrom et al., 2011), but more problematic in others (Lovbrand, 2011).

Valuable knowledge and expertise

- Knowledge systems left expertise as 'unpacked' and 'implicit'
  - **Criteria of 'credible' suggests scientists are only judge of scientific work/knowledge/expertise**
  - In contrast 'legitimacy' and 'saliency' seem to reside in wider social world
  - Aligns with 'normative theory' of expertise (Collins and Evans, 2002)
  - Should technical decisions in the public domain should seek maximum "political legitimacy" (2002, p. 235) by "…referring them to the widest democratic process, or should such decisions be based on the best expert advice? (2002, p. 235).
  - This goes to the heart of Cash *et al's (2003)* idea of 'credibility'- broadening of expertise to 'non-specialists' would 'devalue' credibility of scientists in view of Collins and Evans.

- Alternative view is to broaden out expertise and recognise it as more than epistemology- rather as inherently a "…project in political theory" [Jasanoff, 2003, p.394] that focuses on how knowledges are classified and who is included and excluded from such classifications.

- In order to prevent the deletion of "…social and epistemic questions" (Wynne, 2003, p. 408) about "…how public meanings, issue-framings and definitions" (p. 408) are established debates about expertise need to "...articulate a more inclusive social debate over knowledge" (p. 408) that challenge science's ability to colonise the spaces in which public meanings are negotiated.

- This shift is necessary in order to engage with the often multiple and contested notions of *saliency* and *legitimacy* outlined by Cash *et al*. (2003).

Valuable knowledge and co-production

- Cash *et al.,* (2003) mention co-production but again leave it unpacked as a concept ('boundary objects' and 'boundary organisations')

- Co-production as a way of trying to address the complexities that are inherent in environmental issues as well as attempts to better connect people, science and policy (Whatmore, 2009; Lane *et al.,* 2010; Hegger *et al.,* 2012).

- Co-production as a continuum:
  - *Constitutive/Descriptive*: Knowledge and social order (Jasanoff (2004))
  - *Prescriptive:* normative statement about democratizing expertise through public participation
  - *Emancipatory*: Emancipation through self-knowledge (Participatory Action Research)

Valuable knowledge and co-production (2)

- Our notion of 'valuable knowledge' sits on the 'boundary' between the *prescriptive* and *emancipatory* approaches to co-production.

  - From the *prescriptive* approach we support the need for greater involvement of wider publics and knowledges in understandings about climate (Lahsen, 2010; Hulme, 2010).
  - The *emancipatory* approach encourages a re-think of 'who' is involved in defining the 'climate problem' and whether an 'experiential knowledge' base would be complimentary to an 'experimental' one for adaptation?

- Our hypothesis is that such knowledges are valuable in terms of what they offer to particular scientific issues for two main reasons:

  - They have as full a range of knowledges, expertise's and values associated with them as possible (they are therefore both *legitimate and salient*).

  - They are also valuable to the science itself because they have achieved a broader notion of *credibility* than the peer-review process's narrow definition of this

Notes of caution on co-production

- Co-production has a normative interpretation to it- that is it can be read as an appeal to wider public participation in techno-scientific issues with a view to creating more trust and preventing conflict through social agreement (Holliman and Jensen, 2009; Irwin, 2009).

- This 'rationalistic' rationale for co-production has drawn criticism for **the "…intrinsic futility of trying instrumentally to engender public trust in science, whether by `public engagement', dialogue, or any other means''** when the **``objective is to manage and control the other's response''** (Wynne, 2006).

- Suggestion is that participation – and by implication co-production - is being treated with "unreflected normativity" (Felt and Fochler, 2008,p. 489) leading to the charge that it, **"…is presented almost as an end in itself (), without any critical discussion of the precise aims to be achieved and the methods to be used to achieve these aims**" (Felt and Fochler, 2008, p. 489).

- Eva Lövbrand (2011) has also highlighted the need to be cautious in assuming that co-production will automatically lead to 'useful' knowledges. In her work on European climate policy research she demonstrated the need to be wary of **"…naively accepting the many benefits of knowledge produced in the context of application"** (2011, p. 234). In place of this she argues that research in this **field "…needs to carefully assess the conditions under which co-production makes sense"** (2011, p. 235).

Final thoughts

- We have argued that climate knowledge may act as a barrier to technical decision-making in adapting to a changing climate.

- A framework to analyse this barrier is proposed, which suggests that moving from useful, to usable/actionable to valuable knowledges may overcome the barrier and enable adaptation decision-making.

- We fully recognise that there may be other more important barriers at work.

- Needs further empirical and theoretical development

Further research

Project ICAD – 1st April 2012- 31st March 2016

Advancing Knowledge Systems to Inform Climate Adaptation Decisions

http://www.see.leeds.ac.uk/research/sri/project-icad/

Blog – adaptationow.com