

## Public Responses to Climate Change

Keynote address

Conference paper presented at “Climate change impacts and adaptation: Dangerous rates of change”, Exeter University, 22nd – 24th September, 2008

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### 1. Introduction [1]

Climate change would not be an increasingly insoluble problem if we were able and willing to immediately change our behaviour to reduce our greenhouse gas emissions, to perfectly predict the impacts of climate change, and to prepare for those impacts. However, we are reluctant saviours of our own future. Instead we dither about the actions we are willing to take, we allow a lack of understanding of the range of possible climate impacts to create a barrier to our full and active preparedness, and we balk at taking actions to protect our future that might have impacts on our lives today.

After yesterdays presentations I have decided to talk through 4 propositions that I believe we know about public responses to climate change. I will end with a discussion about what this means for scientists, policy makers, and those experiencing climate change.

First – the propositions

- 1) Our perception of who is **responsible** for solving a problem affects how we view the problem, who responds and the effectiveness of the response.
- 2) **Poorly communicated science** and ‘ignorant experts’ destroy the perceived competence of science thereby reducing public willingness to listen to it

- 3) Climate change response is more likely to happen when there are **secondary benefits** from taking action
- 4) In the absence of exposure to impacts, there has to be an **obligation to act**, whether through peer pressure or through legal obligation
- 5) Action happens in the presence of **self-efficacy** plus a minimum level or resources to support this [BUT I WILL NOT TALK ABOUT THIS AS I THINK NEIL ADGER WILL ADDRESS IT]

I will now talk through these four propositions providing examples to back up the statements.

- 1) Our perception of who is **responsible** for solving a problem affects how we view the problem, who responds and the effectiveness of the response (Bryant, 2005; Smith, 2001)

To explain this proposition I would like to relate briefly the history of hazards. More than 2000 years ago, human beings saw disasters as divine punishment for human misbehaviour. This belief remained for thousands of years, and was only called into question when geologists started to provide the foundations for other ways of thinking about disasters.

In 1755 when an earthquake with a possible surface magnitude of 9.0 on the Richter scale hit Lisbon in Portugal, followed shortly after by a tsunami, the city was then consumed by fire over the next few days. Religious leaders pronounced this was a sign of God’s punishment for the lewd behaviour of the people of Lisbon. However, for the first time, using the emergent geological sciences, philosophers (Kant and Rousseau) suggested that the disaster was a natural event, and repeat events could be avoided by not building in hazardous areas.

In the 1950s, Gilbert White and others (White, 1945; Burton et al., 1968) reflected that natural hazards were intimately linked to human actions, and the various decisions people make about developing land in hazards-prone areas. Initially this created the ‘*behavioural paradigm*’. Believers argued that engineered defences effectively reduced the effects of extreme events and that modelling and prediction of extreme events help design the structures.

In the 1970s a ‘*structuralist*’ *paradigm*, that built on the work of Marx emerged (Wisner et al., 2004). Marx argued that it is the poorest in society who suffer most in disasters. By leaving parts of the world in poverty a condition of vulnerability is created wherein all hazards turn into disasters.

Today we are moving into a new era, wherein we are recognising the need to bring together the *behavioural* and *structuralist* paradigms, although this approach is still in its infancy.

From this example, I hope that it is clear that our perception of who should take **RESPONSIBILITY** for the problem affects who responds to the problem, and hence the effectiveness of the response.

- For example, when the Gods were identified as responsible, there was a greater reliance on the use of religious brokers to intervene on behalf of households and manage the situation
- When hazard management was considered to be an issue of land-use planning, then it was the responsibility of government planners, and of government emergency response
- In this new era of hazard management, everyone must take responsibility, from every member of every community to every decision maker in government who makes decisions that affect vulnerability.

2) **Poorly communicated science** and ‘ignorant experts’ destroy the perceived competence of science thereby reducing public willingness to listen to it

To explain this proposition I will talk briefly through the history of asbestos, which (like carbon) was initially seen a miracle product that saved lives and energy e.g. for reduced fire risk in theatres, asbestos boiler insulation saved energy, asbestos brake linings saved lives....This is detailed in a 2001 European Environment Agency publication called ‘Late Lessons from Early Warnings’ (Harremoës et al., 2001).

In **1887**, mining for (‘white’) asbestos began in Canada. (‘blue’) and (‘brown’) were later found in other countries.

**11 years after mining began** In 1898, Lucy Deane, the first Womens Inspector of Factories noted that there appeared to be health effects among workers in asbestos factories, particularly, injury to bronchial tubes and lungs from asbestos dust.

**12 years after mining began** In 1899, first cases of lung disease attributed (by the patient) to inhaled asbestos dust

**24 years after mining began** 1911 pioneering experiments with rats showed the impacts of dust on lung health, lead to the suspicion that inhalation of asbestos dust could be harmful, and so exhaust ventilators were recommended for use in dusty processes.

**31 years after mining began** 1918 US and Canadian insurance companies withdrew health insurance cover for asbestos workers

**43 years after mining began** 1930 First HM major government inquiry into the effects of asbestos. Found that 66% of those employed more than 20 years suffered from asbestosis

**65 years after mining began** 1952 Asbestos companies (supported by workers) fight claims about lung disease using ‘healthy survivor’ argument

**Findings started to get complicated as a result of increasing incidence of smoking related lung cancer. Scientific uncertainty not well communicated**

**99 years after mining began** 1986 WHO concluded all 3 types of asbestos were carcinogens and there was no known safe level for any of them

**111 years after mining began** 1998 EU banned all asbestos

What can this example tell us about public responses to man-made hazards?

- **‘Ignorant experts’** were a significant problem initially. Medical doctors made pronouncements on the ventilation needed in factories, ventilation engineers were not engaged as a result this was not managed effectively for 82 years after mining began. It was only in 1969 that Government introduced air quality regulations for asbestos workers
- **Scientific uncertainty was poorly communicated** ‘Healthy survivors fallacy’ is that some people don’t die from asbestos exposure needs to be communicated effectively or it destroys public confidence in science

3) Climate change response is more likely to happen when there are **secondary benefits** from taking action

I would like to share with you briefly the outputs of a short study that a team of us (myself, Emily Boyd and Sophie Nicholson-Cole) undertook in 2004-5. This study looks specifically at responses to climate change that were occurring in the UK (Tompkins et al., 2005).

In total more than 300 adaptations to climate change were identified. These were classified into two main categories: building adaptive capacity and implementing adaptation actions. Building adaptive capacity involved any activity which contributed to the capacity of the group or institution to adapt to climate change, this includes gathering

information, modelling impacts, training staff etc... Whereas implementing adaptation actions involved practical actions that have been undertaken to reduce exposure or sensitivity to the impacts of climate change. Such actions might include: changing construction design, allowing land to be reclaimed by the sea.

The majority of the actions being undertaken were by the government, mostly in central government, with less occurring in the devolved administrations and in the local governments (I should stress that this is changing –and there is now a growing level of activity at the local government level).

Within the private sector, as expected, those industries which have a long lead time into planning, for example the water industry which undertakes infrastructural development over a 25 – 50 year time horizon had undertaken a significantly higher level of activity than those industries which are more able to make shorter term planning decisions, e.g. agriculture and biodiversity conservation. Nonetheless, there were industries which were not adapting as one would expect, for example the transport sector, lags significantly further behind both in terms of building adaptive capacity within the institutions as well as in terms of implementing specific changes.

Just under ½ of all the actions were undertaken as a result of experienced or perceived changes in weather patterns, e.g. heat, drought, wind storms or floods (EXPOSURE).

The remaining 50% of actions were undertaken for variety of motives.

About 17% appeared to be as a result of non-climate change relate legislation (LEGAL OBLIGATION), much of which related to Sustainable Development standards both national (e.g. CSR, ISO 140001), and international e.g. Common Agricultural Policy subsidies.

Conservation benefits (e.g. of water or biodiversity) (OTHER BENEFITS) accounted for 8% of activity as did risk management.

Other factors such as cost savings and reducing the costs of production as well as social and development pressures drove a small proportion of actions.

Table 2 Published motivators / triggers of responsive action taken

Triggers	Details	No.
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<b>Changing weather or climate</b>	<b>Experienced or perceived: changing weather patterns (heat, drought, extremes, wind storms)</b>	<b>99 (1/4)</b>
Legislation - non-climate change	Sustainable development standards (incl CSR, ISO140001), Common Agricultural Policy subsidies,	66 (1/6)
Flooding		52 (1/8)
Conservation	Including biodiversity conservation	28 (1/12)
Risk management	Coastal flooding, landslides, water abstraction	24 (1/12)
<b>Legislation - climate change</b>	<b>Policy, legislation, incl. PPG, climate change levy, UK emissions trading scheme, energy conservation</b>	<b>24 (1/12)</b>
Cost savings	Costs of production	17
Social pressures	Development / population pressures	5

(Tompkins et al., in prep)

In short, most of the responses that we found were not attributable solely to the presence of legislation, it was far more likely that actions were being taken in other areas and secondary adaptation benefits were coincidentally accruing, yet they were producing very clear adaptation benefits.

4) In the absence of impacts, there has to be an **obligation to act**, whether through peer pressure, local convention or through legal obligation

In 2004 I undertook a socio-psychological survey to assess why some individuals prepared for hurricane hazards and why others do not in the Cayman Islands in the Caribbean. The survey quantitatively assessed the explanatory powers of a variety of variables (Tompkins and Hurlston, in prep).

1000 people responded to the questionnaire, which asked:

- previous levels of exposure to (and impact of) major hazards (Dow and Cutter, 2000)
- attitudes towards the environment (Douglas, 1996)
- attitudes towards risk (Langford, 2002)
- levels of social capital
- perceptions of self-efficacy/resilience (Tompkins and Adger, 2004)

- hazard information sources and trust in those sources (Drabek, 1999) as well as standard socio-economic information. I should just mention here to those who do not work in this area that there is a huge amount of literature that looks at these issues.

From the research in the Cayman Islands, it became clear that certain groups were more likely to act than others. The people most likely to act are:

- 1) those with CHILDREN under 15
- 2) HOMEOWNERS (vs renters)
- 3) Those previously exposed to MAJOR STORMS

After further investigation we found that people born and raised on the island are ... 25 X more likely than expatriate residents to prepare

In the context of that society it was considered socially unacceptable not to prepare. If you did not tidy up your yard, your flying debris could destroy not only your own home, but also your neighbours. Peer pressure here played a major role in encouraging people to prepare for hurricane risk. We can surmise from this and other research that social networks can play a major role in encouraging people to take action on risk reduction.

### **Policy implications and influencing behaviour [7]**

What does all this mean?

I would like to summarise what we know before thinking about what this means:

- 1) Our perception of who is **responsible** for solving a problem affects how we view the problem, who responds and the effectiveness of the response.
- 2) **Poorly communicated science** and ‘ignorant experts’ destroy the perceived competence of science thereby reducing public willingness to listen to it
- 3) Climate change response is more likely to happen when there are **secondary benefits** from taking action
- 4) In the absence of impacts, there has to be an **obligation to act**, whether through peer pressure or through legal obligation

What does this mean for funding research on climate change?

1) Our perception of who is **responsible** for solving a problem affects how we view the problem, who responds and the effectiveness of the response.

This is a challenge at the *science-policy interface*. Scientists need to be able to explain why individuals in society need to take responsibility for planning for the risks they face. Politicians need to be able to explain why they are sharing responsibility throughout society, and the media needs to ask intelligent questions about the sharing of responsibility and the new structuralist-behavioural paradigm and not present this new vision of responsibility as a government cop-out....see proposition 2...

2) **Poorly communicated science** and ‘ignorant experts’ destroy the perceived competence of science thereby reducing public willingness to listen to it

- This is a *challenge for science* and scientists – science communication is not a research area for social scientists – it is an expensive public engagement and dissemination aspect of science that is often overlooked as it is almost never funded by the research councils.

- It is also the responsibility of scientists not to make pronouncements in areas of climate change about which they have no expertise, but about which lay people, policy makers and scientists outside of the area are ignorant.

- What drives human response is an interesting area of research. Findings from this area need to be shared regularly with those working at the science-policy interface.

3) Climate change response is more likely to happen when there are **secondary benefits** from taking action

- This is about *integrated policy making*, to ensure that when policy is made, a full policy analysis is undertaken to evaluate how additional gains can be made by re-orienting, shifting, or modifying the policy to obtain secondary benefits, and to stimulate people’s self-interest...For example the new climate change bill may have far less impact than legislation that people are already dealing with, e.g. PPG and conservation legislation.

- There is also a role here for further work between the government and UKCIP – to further raise the profile of adaptation specifically. The initial work of UKCIP involved encouraging the government to think about the impacts of climate change, however, now it is time to think more widely about coordinating government responses.

4) In the absence of impacts, there has to be an **obligation to act**, whether through peer pressure or through legal obligation

- This is an important area for *social science research* – what factors are most likely to produce a sense of obligation within households or communities.

- Also what institutional frameworks are needed to support, or at least not to prevent effective adaptation to climate change. For example, the UNFCCC while it has no teeth has put in place the institutional architecture that allows politicians to make space in their calendars annually to discuss climate change.

So to end, I would like to summarise my five propositions:

1) Our perception of who is **responsible** for solving a problem affects how we view the problem, who responds and the effectiveness of the response.

2) **Poorly communicated science**, ‘off the mark’ science and ‘ignorant experts’ destroy the perceived competence of science thereby reducing public willingness to listen to it

3) Action is more likely to happen when there are **secondary benefits** from action

4) In the absence of impacts, there has to be an **obligation to act**, whether through peer pressure or through legal obligation

5) Action happens in the presence of **self-efficacy** plus a minimum level of resources to support this

THANK YOU

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