Indirect approaches to climate mitigation: The Hartwell Paper

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CLIMATE FROM THE
NORDIC-BALTIC PERSPECTIVE:
SCIENCE, POLICY, ECONOMY
2013

THE SCIENCE NEWS CYCLE

Start Here

Your Research

Conclusion: **A is correlated with B (ρ=0.56)**, given C, assuming D and under E conditions.

...is translated by...

UNIVERSITY PR OFFICE
(YES, YOU HAVE ONE)

FOR IMMEDIATE RELEASE: SCIENTISTS FIND POTENTIAL LINK BETWEEN A AND B (UNDER CERTAIN CONDITIONS).

...which is then picked up by...

NEWS WIRE ORGANIZATIONS

A CAUSES B, SAY SCIENTISTS.

...who are read by ...

THE INTERNETS

...then noticed by...

Scientists out to kill us again.
POSTED BY RANDOM DUDE
Comments (377)
OMG! i kneeew it!!!
WTH???????
...

We saw it on a Blog!
A causes B all the time
What will this mean for Obama?
BREAKING NEWS BREAKING NEWS BREA

...and caught on ...

CNC Cable NEWS

4 LOCAL EYEWITLESS NEWS

...eventually making it to...

WHAT YOU DON'T KNOW ABOUT "A"... CAN KILL YOU! MORE AT 11...

A: KILLER AMONG US??
LOCAL EYEWITLESS NEWS

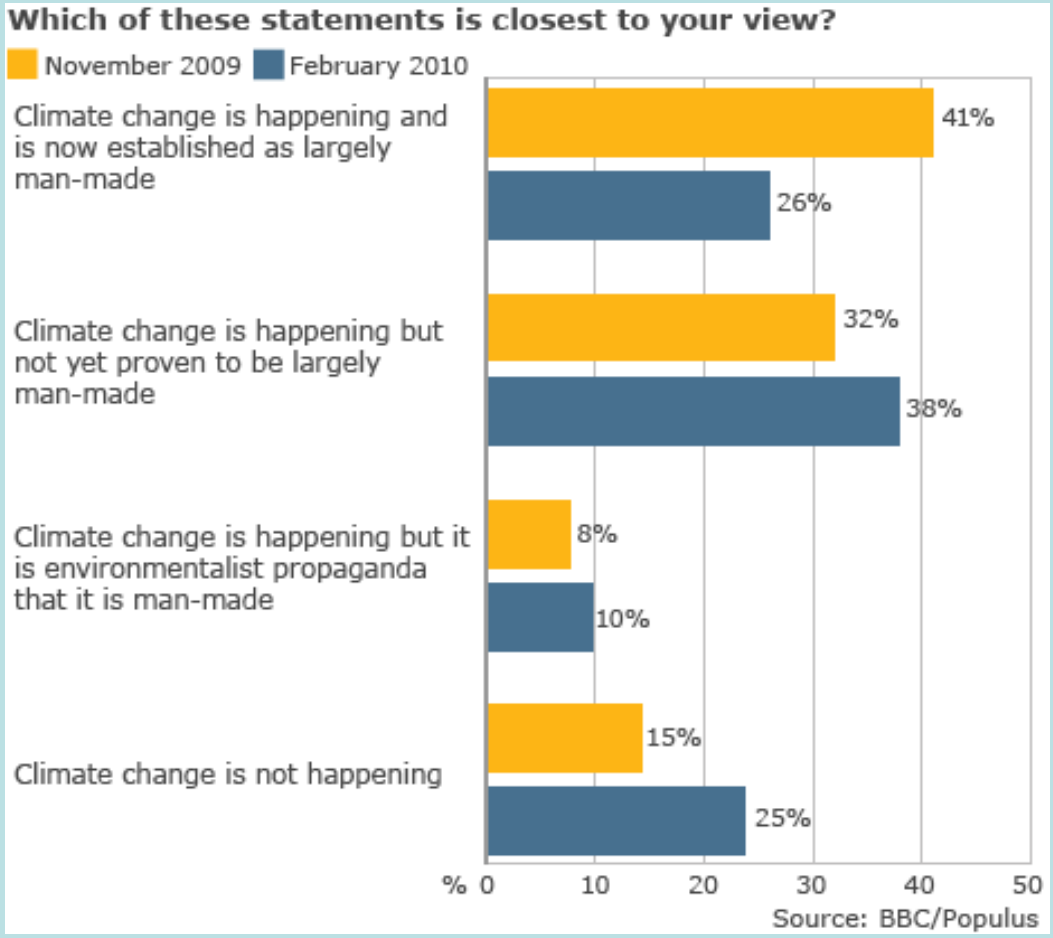
YOUR GRANDMA

Frustrations of communicating climate change

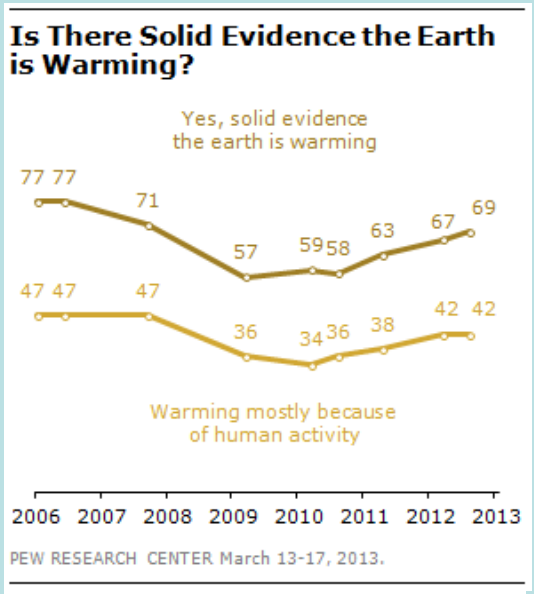
- Opinion polls show that many people doubt the warming and its attribution to humans
- Continued media attention to climate change skepticism and skeptics
- Failure of the public to act on the risks perceived by the climate scientists.

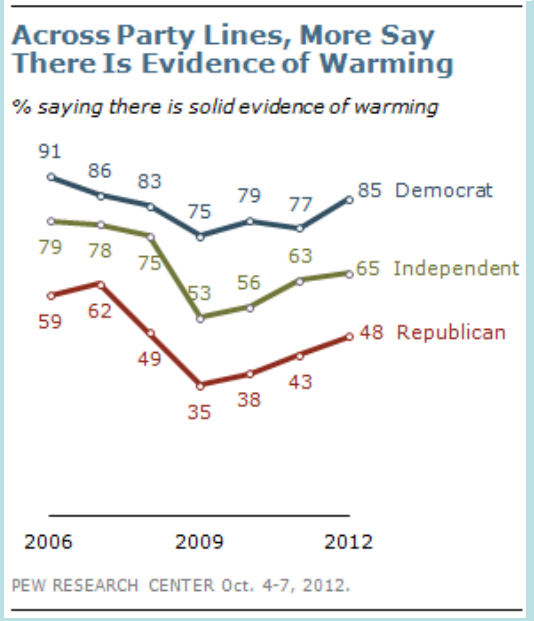
Polls

UK



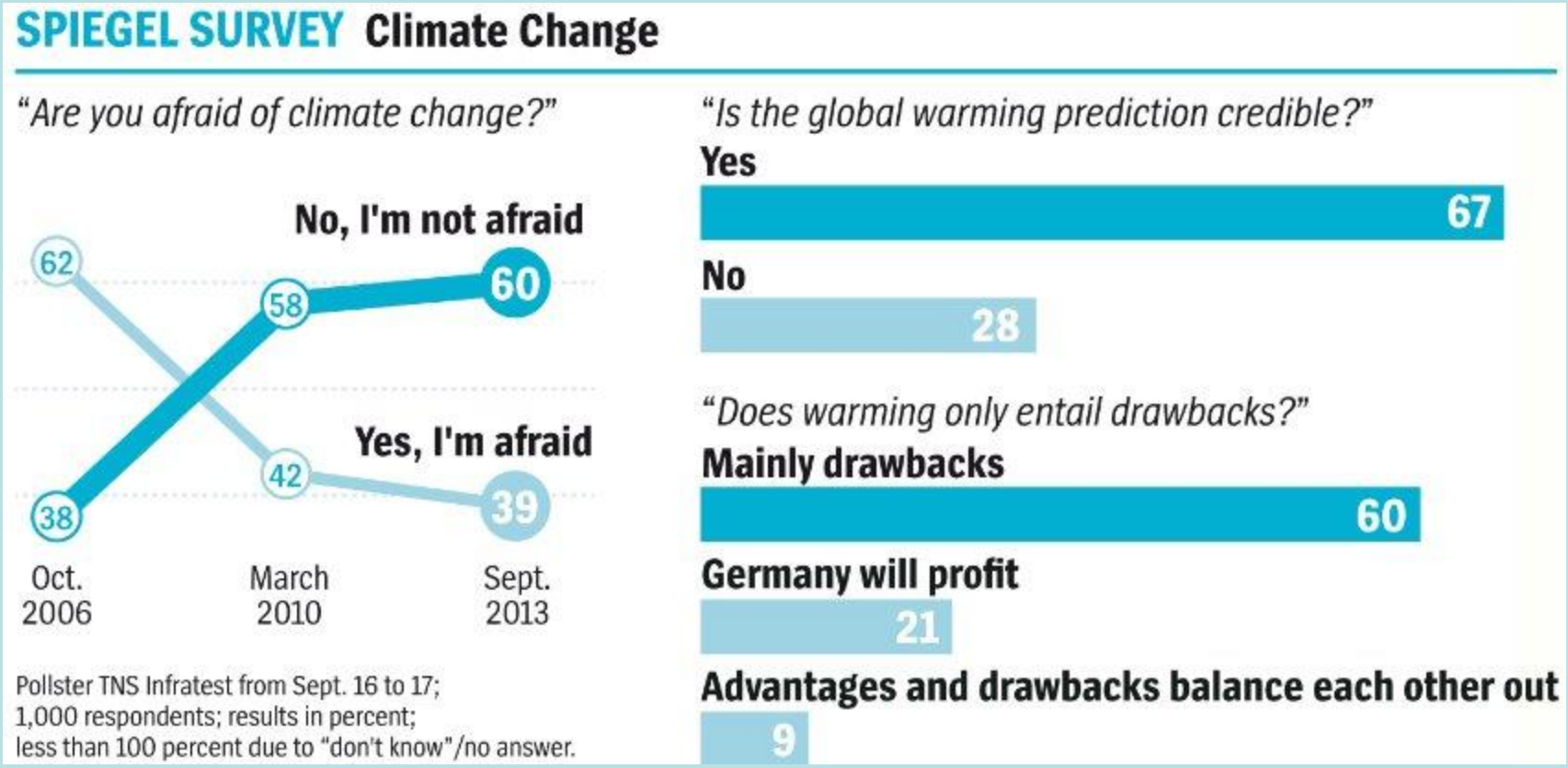
US





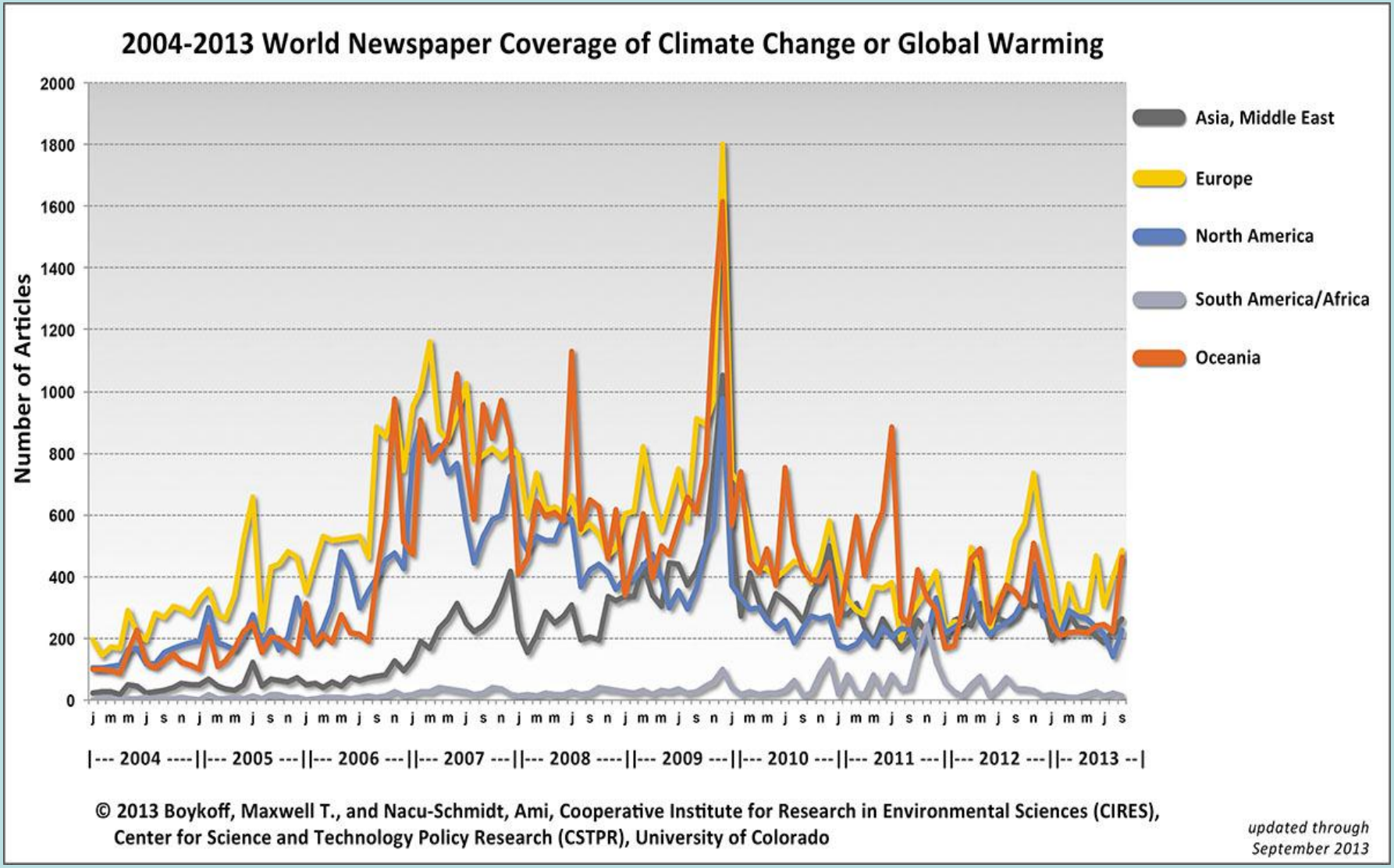
PewResearchCenter

Germany: Der Spiegel



http://www.spiegel.de/international/world/bild-923937-548139.html

Finland: Spring 2010



updated through September 2013

What is the solution to the climate communication problem?

- Better messengers?
- Clearer message?
- More exciting presentations?
- Better educated populace?
- Squashing skepticism?

Linear model of communication

Science + communication = action

Information
Disseminator
Messenger

Simplified message
Appeal to consensus
Effective presentation
Translation for relevance

Scientists

The facts are coming! The facts are coming!

LETTERS
PUBLISHED ONLINE: 27 MAY 2012 | DOI: 10.1038/NCLIMATE1547
nature climate chang

The polarizing impact of science literacy and numeracy on perceived climate change risks

Dan M. Kahan[1]*, Ellen Peters[2], Maggie Wittlin[3], Paul Slovic[4], Lisa Larrimore Ouellette[3], Donald Braman[5] and Gregory Mandel[6]

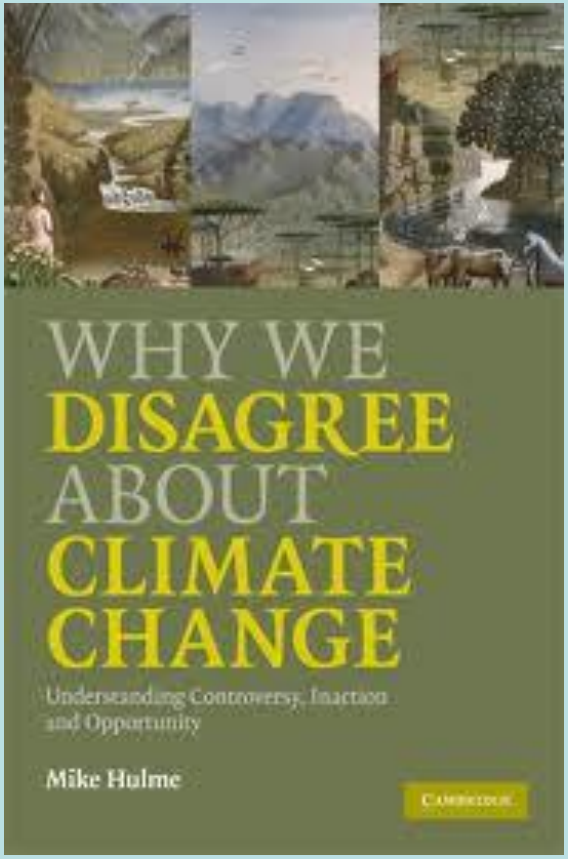
Seeming public apathy over climate change is often attributed to a deficit in comprehension. The public knows too little science, it is claimed, to understand the evidence or avoid being misled[1]. Widespread limits on technical reasoning aggravate the problem by forcing citizens to use unreliable cognitive heuristics to assess risk[2]. We conducted a study to test this account and found no support for it. Members of the public with the highest degrees of science literacy and technical reasoning capacity were not the most concerned about climate change. Rather, they were the ones among whom cultural polarization was greatest. This result suggests that public divisions over climate change stem not from the public's incomprehension of science but from a distinctive conflict of interest: between the personal interest individuals have in forming beliefs in line with those held by others with whom they share close ties and the collective one they all share in making use of the best available science to promote common welfare.

literacy—that is, concern should increase as people be more science literate.

Second, and even more important, SCT attributes low cern with climate change to limits on the ability of ord members of the public to engage in technical reasoning. R research in psychology posits two discrete forms of inform processing: system 1, which involves rapid visceral judgment manifest themselves in various decision-making heuristics; system 2, which requires conscious reflection and calculati Most members of the public, according to this research, typ employ system 1 reasoning without resorting to more effe system 2 processing. Although system 1 works well for most contingencies, ordinary citizens' predominant reliance on heu rather than analytic modes of reasoning is viewed as leading th underestimate climate change risks, which are remote and ab compared with a host of more emotionally charged risks example, terrorism) that the public is thought to overestimate[2]

Dr. Mike Hulme

EAU, UK



He uses different standpoints from science, economics, faith, psychology, communication, sociology, demography, politics and development to explain why we disagree about climate change.

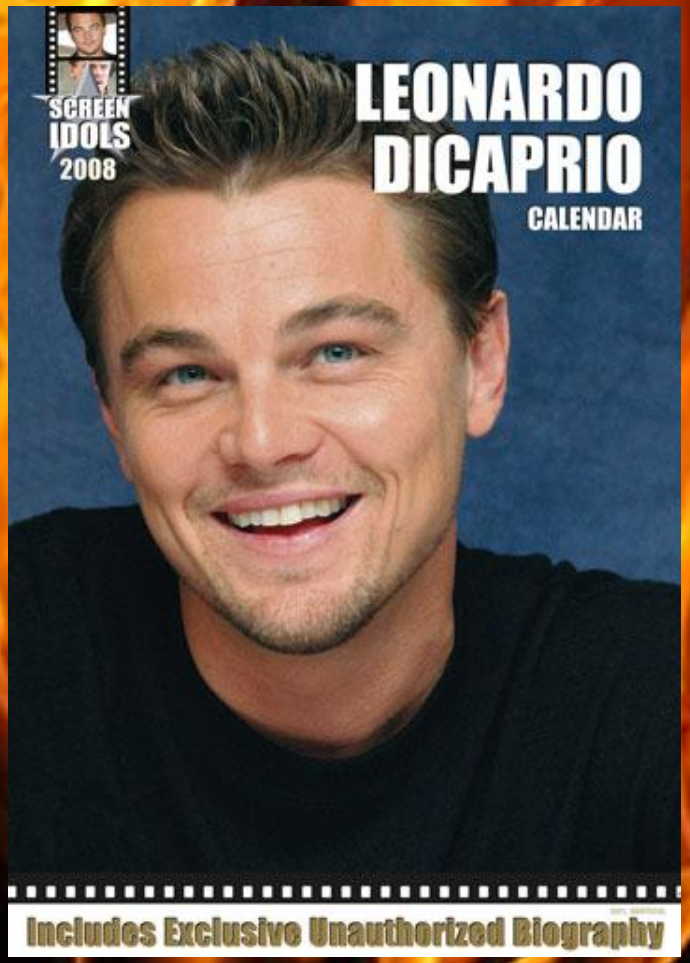
Stop to polarization, demonization, labelism & tribalism

Medicin: Fear Factor

Global Warming

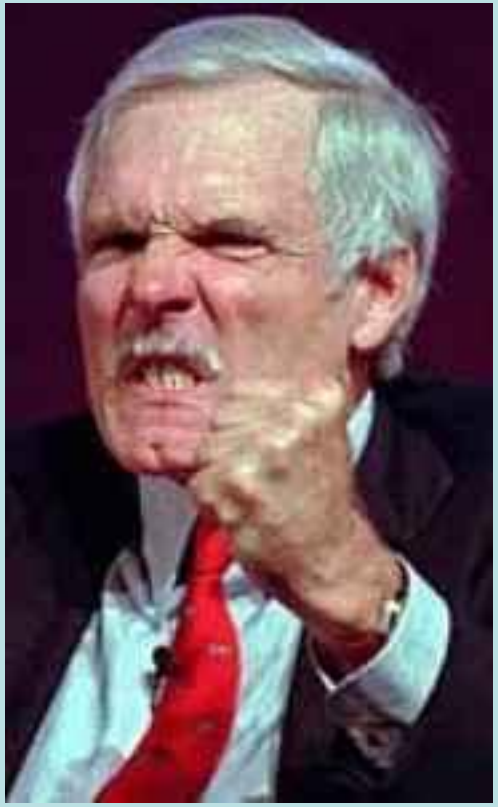
Leonardo:

- 54,000 species a year are becoming extinct due to global warming - homo sapiens sapiens may not be far behind.



CNN channel founder Ted Turner

“Global warming will be catastrophic and those who don't die will be cannibals”



Al Gore

The Guardian, Saturday 14 March 2009

"They're seeing the writing on every wall they look at. They're seeing **the complete disappearance of the polar ice caps** right before their eyes in just a few years."

Prof. Hans Joachim Schellnhuber

Director of the Potsdam Institute for Climate Impact Research

- “If earth temperature rises 5 degrees only one billion people can survive"

The front-page climate change headlines in the ten main national UK newspapers

M. Hulme, 2007. *Nature* 445:818.

- “Unprecedented“
- ”Unusual”
- ”For the first time ever”
- "Worse than we thought“
- “Disaster"
- “Catastrophic"
- “Shocking“
- “Terrifying“
- “Devastating"

Evolution of climate change

- Greenhouse effect
- Strengthening of the greenhouse effect
- Climate change
- Climate warming
- Global warming
- Climate crisis
- Climate chaos
- Climate catastrophe
- Global climate disruption
- Destruction of the Planet
- ?
- Thermaggedon, Post Traumatic Weather Syndrom, Frankenclimate

Apocalyptic framing of climate change does two things:

Foust,C.R. & Murphy,W.O. 2009. Revealing and reframing apocalyptic tragedy in global warming discourse. *Environ. Comm.* 3(2):151-167.

1. It endows experts and elites – the modern-day gnostic prophets – with the 'hidden knowledge' to understand and foretell the future.
2. It reinforces the feeling that ordinary citizens can do little to reduce global warming. Such rhetoric both excludes and paralyses.

Why is it important to avoid unnecessary exaggeration and acknowledge uncertainties?

1. We are going to need climate science for many decades, so we should take care that it maintains its credibility;
2. The means to mitigate global warming must be updated continuously

The voice of science: let's agree to disagree

Consensus reports are the bedrock of science-based policy-making. But disagreement and arguments are more useful, says **Daniel Sarewitz.**

When scientists wish to speak with one voice, they typically do so in a most unscientific way: the consensus report. The idea is to condense the knowledge of many experts into a single point of view that can settle disputes and aid policy-making. But the process of achieving such a consensus often acts against these goals, and can undermine the very authority it seeks to project.

My most recent engagement with this form of penance is marked this week with the release of *Geoengineering: A National Strategic Plan for Research on Climate Remediation*. Sponsored by the Bipartisan Policy Center in Washington DC, the report reflects more than a year of discussion between 18 experts from a diverse range of fields and organizations. It sets out, I think, many valuable principles and recommendations.

The discussions that craft expert consensus, however, have more in common with politics than science. And I don't think I give too much away by revealing that one of the battles in our panel was over the term geoengineering itself.

This struggle is obvious in the report's title, which begins with 'geoengineering' and ends with the redundant term 'climate remediation'. Why? Some of the committee felt that 'geoengineering' was too imprecise; some thought it too controversial; others argued that it was already commonly used, and that a new term would create confusion.

I didn't have a problem with 'geoengineering', but for others it was a do-or-die issue. I yielded on that point (and several others) to gain political capital to secure issues that had a higher priority for me. Thus, disagreements between panellists are settled not with the 'right' answer, but by achieving a political balance across many of the issues discussed.

This political essence of consensus leads to other difficulties. Ask a clarifying anything, the key recommendation — that mammograms were being overutilized — became instant ammunition for reform opponents, who viewed it as a threat to patient autonomy.

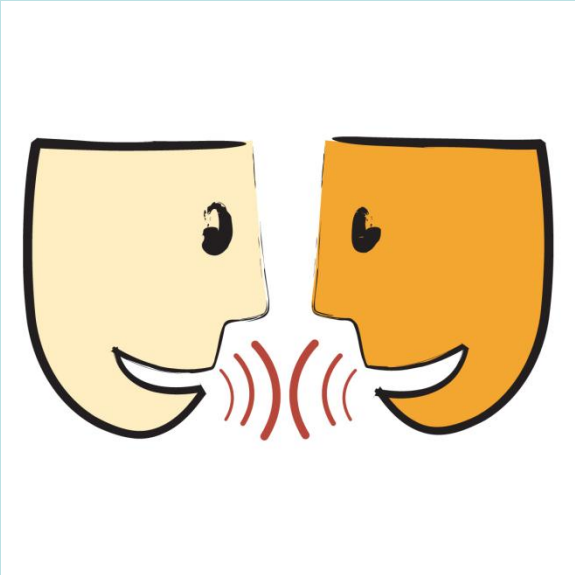
The fuss over mistakes in the 2007 reports by the Intergovernmental Panel on Climate Change highlights a related problem: a claim of scientific consensus creates a public expectation of infallibility that, if undermined, can erode public confidence. And when expert consensus changes, as it has on health issues from the safety of hormone replacement therapy to nutritional standards, public trust in expert advice is also undermined.

The very idea that science best expresses its authority through consensus statements is at odds with a vibrant scientific enterprise. Consensus is for textbooks; real science depends for its progress on continual challenges to the current state of always-imperfect knowledge. Science would provide better value to politics if it articulated the broadest set of plausible interpretations, options and perspectives, imagined by the best experts, rather than forcing convergence to an allegedly unified voice.

REAL SCIENCE DEPENDS FOR ITS PROGRESS ON CONTINUAL CHALLENGES TO THE CURRENT STATE OF ALWAYS-IMPERFECT KNOWLEDGE.

Yet, as anyone who has served on a consensus committee knows, much of what is most interesting about a subject gets left out of the final report. For months, our geoengineering group argued about almost every issue conceivably related to establishing a research programme. Many ideas failed to make the report — not because they were wrong or unimportant, but because they didn't attract a political constituency in the group that was strong enough to keep them in. The commitment to consensus therefore comes at a high price: the elimination of proposals and alternatives that might be valuable for decision-

Circular model of communication



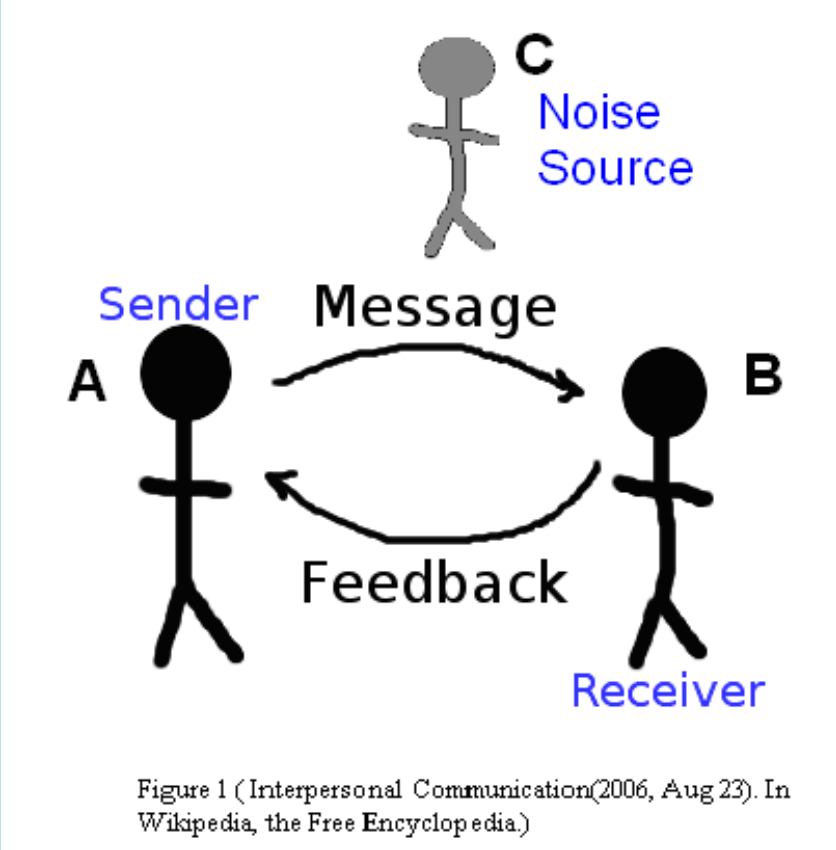


Figure 1 (Interpersonal Communication(2006, Aug 23). In Wikipedia, the Free Encyclopedia.)

Addressing complexity, Uncertainty

Raising the level of the public dialogue

HONEST BROKERS

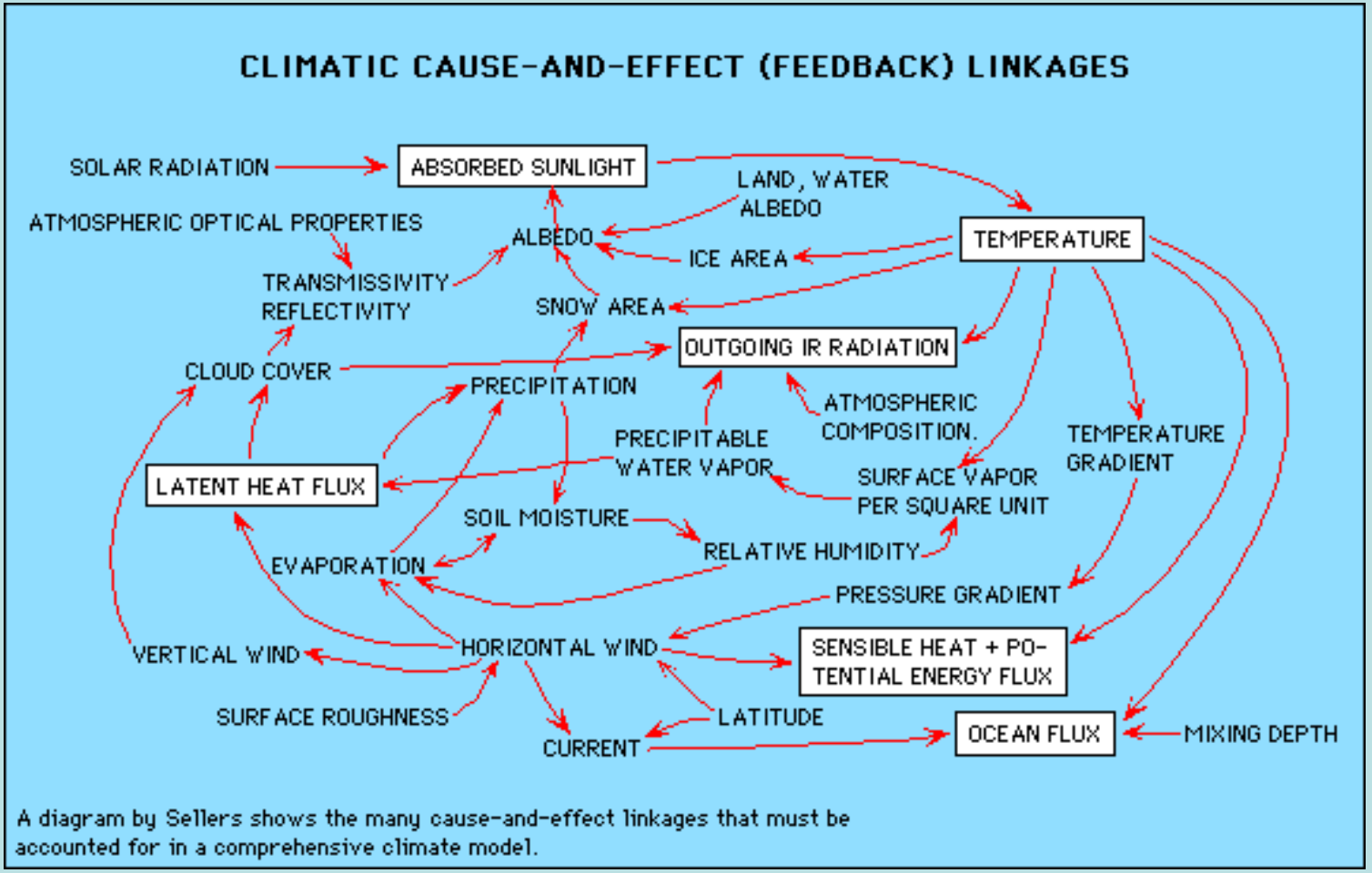
DAGENS NYHETER DN.

27 September 2013

The main function of expert advisory bodies is not to tell the public what ***should*** be done, but rather what ***could*** be done

Björn-Ola Linnér & Roger Pielke, Jr.


WICKED
THE UNTOLD STORY OF THE WITCHES OF OZ



A diagram by Sellers shows the many cause-and-effect linkages that must be accounted for in a comprehensive climate model.

Kellog & Schneider 1974

Wicked problem

Rittel and Webber (1973)

- There is **no definitive formulation** of a wicked problem (defining wicked problems is itself a wicked problem).
- Wicked problems have **no stopping rule**
- **Solutions** to wicked problems are **not ture-or-false, but better or worse**.
- There is no immediate and **no ultimate test of a solution** to a wicked problem.
- Wicked problems **do not have an enumerable** (or an exhaustively describable) **set of potential solutions**, nor is there a well-described set of permissible operations that may be incorporated into the plan.
- Every wicked problem is essentially **unique**.
- Every wicked problem can be considered to be a **symptom of another problem.**
- The existence of a discrepancy representing a wicked problem can be **explained in numerous ways**. The choice of explanation determines the nature of the problem's resolution.

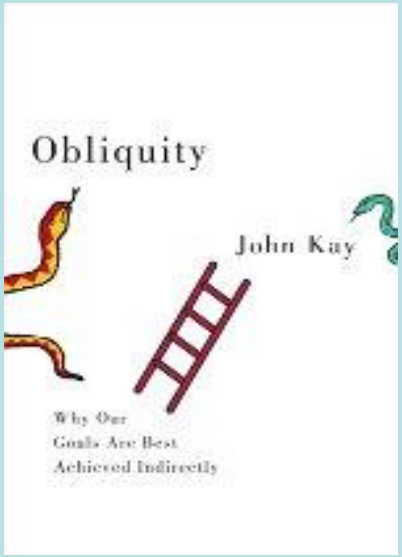
Super wicked problems

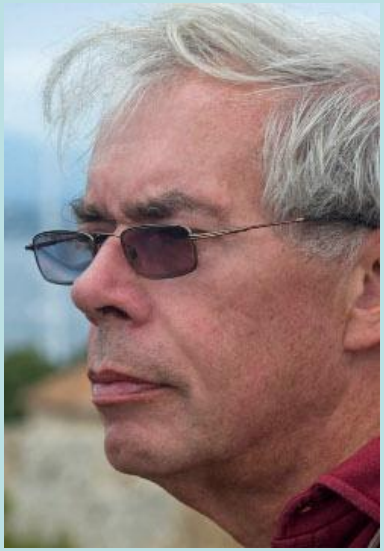
(Levin et al. 2007)

- Time is running out.
- No central authority.
- Those seeking to solve the problem are also causing it.
- Hyperbolic discounting occurs.

Obliquity – why our goals are best achieved indirectly?

Obliquity is the principle that **complex goals are best achieved *indirectly*.** This book explains why the happiest people aren't necessarily those who focus on happiness, and how the most successful cities aren't planned (look at Paris versus Brasilia). And if a company announces shareholder return as its number one goal, perhaps we should beware: the most profit-orientated companies aren't usually the most profitable.





John Kay

INSTITUTE FOR SCIENCE, INNOVATION AND SOCIETY
UNIVERSITY OF OXFORD

LSE Mackinder programme
for the Study of Long Wave Events

The Hartwell Paper

A new direction for climate policy after the crash of 2009

Hartwell House, Buckinghamshire, where the co-authors conceived this paper, 2-4 February 2010

May 2010

http://www.lse.ac.uk/collections/mackinderProgramme/theHartwellPaper/

COMMENTARY

Time to ditch Kyoto

Climate policy after 2012, when the Kyoto treaty expires, needs a radical rethink. More of the same won't do, argue **Gwyn Prins** and **Steve Rayner**.

The Kyoto Protocol is a symbolically important expression of governments' concern about climate change. But as an instrument for achieving emissions reductions, it has failed[1]. It has produced no demonstrable reductions in emissions or even in anticipated emissions growth. And it pays no more than token attention to the needs of societies to adapt to existing climate change. The impending United Nations Climate Change Conference being held in Bali in December — to decide international policy after 2012 — needs to radically rethink climate policy.

Kyoto's supporters often blame non-signatory governments, especially the United States and Australia, for its woes. But the Kyoto Protocol was always the wrong tool for the nature of the job. Kyoto was constructed by quickly borrowing from past treaty regimes dealing with stratospheric ozone depletion, acid rain from sulphur emissions and nuclear weapons. Drawing on these plausible but partial analogies, Kyoto's architects assumed that climate needs to open up new approaches, not to close them down as Kyoto did.

Economic theory recognizes the futility of throwing good money after bad. In politics, however, sunk costs are often seen as political capital or as an investment of reputation and status. So we acknowledge that those advocating the Kyoto regime will be reluctant to embrace alternatives because it means admitting that their chosen climate policy has and will continue to fail. But the rational thing to do in the face of a bad investment is to cut your losses and try something different.

No silver bullet

Influenced by three major policy initiatives of the 1980s, the Kyoto strategy is elegant but misguided. Ozone depletion, acid

Two kinds of global change policies

- Carbon policy (greenhouse gases)
- Climate policy
  - Carbon sinks (forest, ecosystems)
  - Air quality (aerosols – black carbon, soot)
  - Land use changes (1st degree forcing, albedo)
  - Adaptation
    - Making societies more resilient and less vulnerable

A radical reframing - an inverting - of approach:

- decarbonisation will only be achieved successfully as a benefit contingent upon other goals which are politically attractive and relentlessly ***pragmatic***.
- raising up of ***human dignity*** via three overarching objectives:
  - ensuring ***energy access for all*** (1.5 billion people have no access to electricity);
  - ensuring that we develop in a manner that does not undermine the ***essential functioning*** of the Earth system;
  - ensuring that our societies are adequately equipped to ***withstand the risks and dangers*** that come from all the vagaries of climate, whatever their cause may be.

The Hartwell Paper

- Improved climate ***risk management*** is a valid policy goal, and is not simply congruent with carbon policy;
- Vigorous and early action on ***non-CO_2 climate forcing agents*** like black carbon and tropospheric ozone;
- Very substantially increased investment in ***innovation*** in non-carbon energy sources in order to diversify energy supply technologies,
- The ultimate goal of doing this is to develop non-carbon energy supplies at ***unsubsidised costs*** less than those using fossil fuels.

The Hartwell Paper:

- We currently pursue climate change policies with the idea that ***any co-benefits are secondary***; we need to invert this thinking and seek to improve ***the quality of life***, which in many cases can concomitantly help us reduce emissions. For example:
  - Black carbon emissions result in 1.8 million deaths annually, while also contributing to 5-10% of total human forcing of the climate system, with particular implications for Arctic ice loss. One ton of black carbon causes about 600x the forcing one ton of carbon over a 100 year period. There are feasible ways to eradicate black carbon emissions, which would produce large public health benefits, especially in developing countries;
  - Tropospheric ozone emissions exact serious health costs and diminution of agricultural productivity, while also contributing about 5-10% of human forcing of the climate system. Rigorous implementation of air quality standards can halve these emissions;
  - Forests are not only a carbon sink but contribute substantially to livelihoods and biodiversity. Forest management need not be effectuated within a climate framework, but rather could be managed in a way that recognizes its integrated values;

Simultaneously Mitigating Near-Term Climate Change and Improving Human Health and Food Security

Drew Shindell,[1]* Johan C. I. Kuylenstierna,[2] Elisabetta Vignati,[3] Rita van Dingenen,[3] Markus Amann,[4] Zbigniew Klimont,[4] Susan C. Anenberg,[5] Nicholas Muller,[6] Greet Janssens-Maenhout,[3] Frank Raes,[3] Joel Schwartz,[7] Greg Faluvegi,[1] Luca Pozzoli,[3]† Kaarle Kupiainen,[4] Lena Höglund-Isaksson,[4] Lisa Emberson,[2] David Streets,[8] V. Ramanathan,[9] Kevin Hicks,[2] N. T. Kim Oanh,[10] George Milly,[1] Martin Williams,[11] Volodymyr Demkine,[12] David Fowler[13]

Tropospheric ozone and black carbon (BC) contribute to both degraded air quality and global warming. We considered ~400 emission control measures to reduce these pollutants by using current technology and experience. We identified 14 measures targeting methane and BC emissions that reduce projected global mean warming ~0.5°C by 2050. This strategy avoids 0.7 to 4.7 million annual premature deaths from outdoor air pollution and increases annual crop yields by 30 to 135 million metric tons due to ozone reductions in 2030 and beyond. Benefits of methane emissions reductions are valued at $700 to $5000 per metric ton, which is well above typical marginal abatement costs (less than $250). The selected controls target different sources and influence climate on shorter time scales than those of carbon dioxide–reduction measures. Implementing both substantially reduces the risks of crossing the 2°C threshold.

Tropospheric ozone and black carbon (BC)

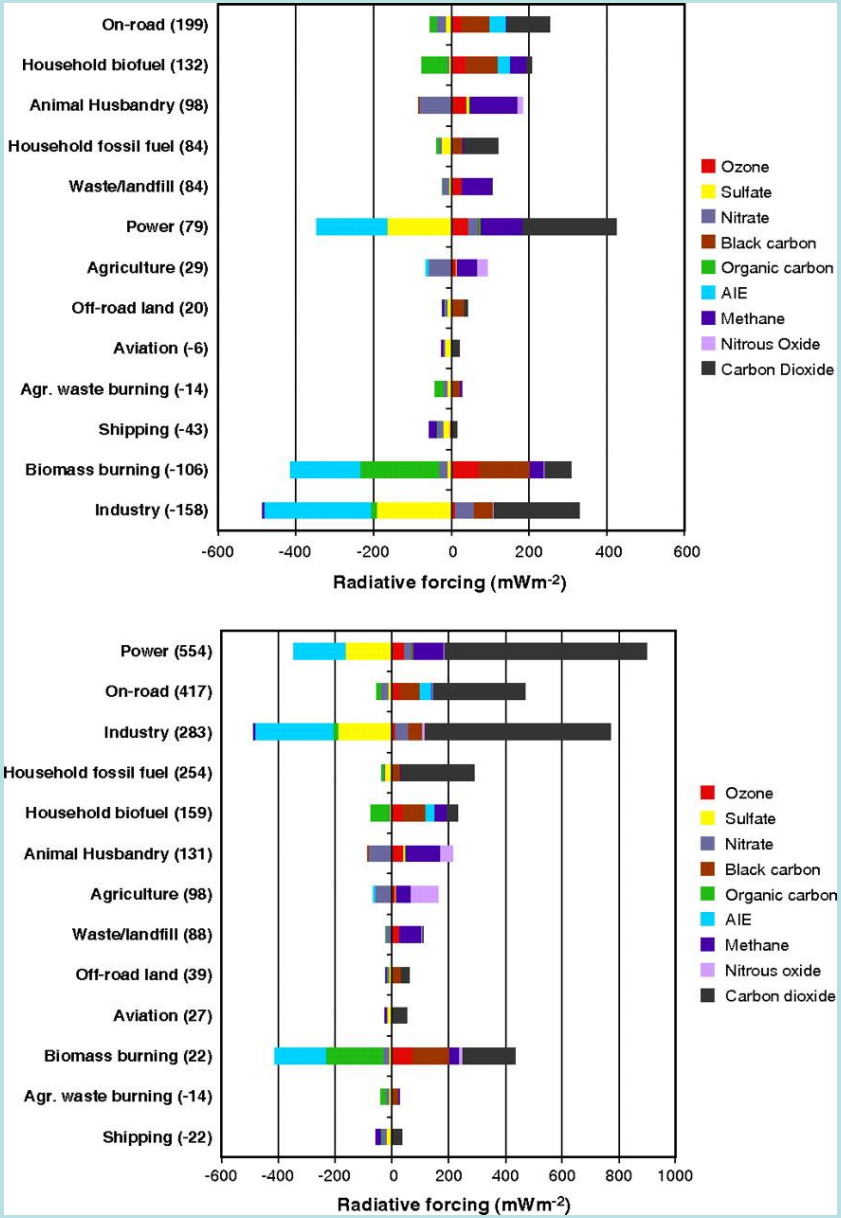
agents such as BC, including the G8 nations

Measures targeting methane and BC emissions

Schindell et al. SCIENCE VOL 335 13 JANUARY 2012

- This strategy reduce projected global mean warming ***~0.5°C by 2050.***
- Avoids ***0.7 to 4.7 million annual premature deaths*** from outdoor air pollution and ***increases annual crop yields by 30 to 135 million metric tons*** due to ozone reductions in 2030 and beyond.
- Benefits of methane emissions reductions are valued at ***$700 to $5000 per metric ton***, which is well above typical marginal abatement costs (less than $250).
- The selected controls target different sources and ***influence climate on shorter time scales*** than those of carbon dioxide–reduction measures.
- ***Implementing both substantially reduces the risks of crossing the 2°C threshold.***

Radiative forcing due to perpetual constant year 2000 emissions grouped by sector at (a) 2020 (b) 2100 showing the contribution from each species.



Unger N et al. PNAS 2010;107:3382-3387

New Debate Climate
Conformists *versus* reformists

Conformists

- ”Pollution control”
- International binding agreement
- Solution technology already available
- Potential for already existing renewable energy sources
- Regulation, incentives
- Changes in our way of life
- Kioto – the one and only

Reformists (Harwellians)

- Not a pollution problem
- Massive clean energy technology push needed
- ***R&D***, demos and deployment in key position
- Emission reduction where they are increasing most rapidly (***sectorial approach***)
- Focus on ***carbon consumption***, not only carbon production
- Focus on ***non-CO_2 emissions***
- A slowly rising but initially low ***carbon tax***
- Not less - but different!

Conclusions

- There is a need to separate energy policy from climate policy.
- The primary goal of energy policy should be to ensure that the energy demands of the world's growing population are adequately met.
- Major investment in R&D to make low-carbon power, including nuclear power, cheaper than coal.
- Separate policy frameworks and interventions are needed for short-lived and long-lived climate forcing agents.
- An innovation-focused strategy, funded by an hypothecated low carbon tax, is needed
- The overall climate policy needs to be broken up into separate issues again (e.g. adaptation, forests, biodiversity, air quality, equity) each addressed on its merits and each in its own ways.

Thank you!