

# Climate Change: Science, Society and the Problem of the Individual

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BUST “Climate of Change” Seminar Series  
Bristol University  
Tuesday 22nd February



University of the  
West of England

**better**together

# Overview

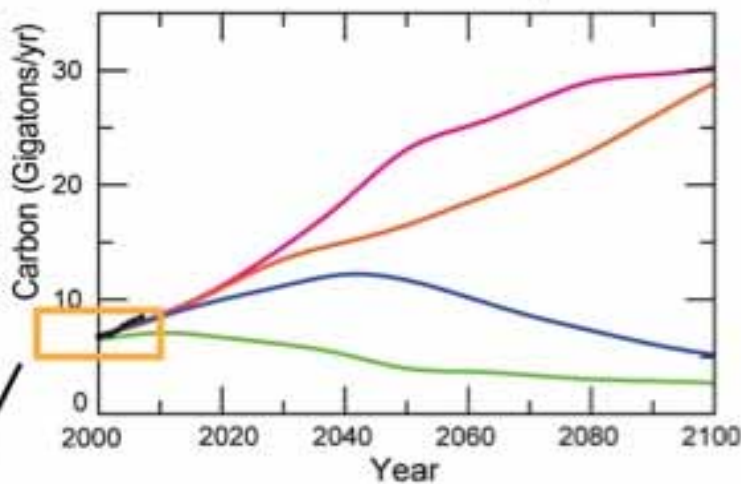
- The problem of climate science and policy
- Broadening our view of the carbon problem
- Do we get a 'choice'?
- Will we behave ourselves?
- Individual Change or Societal Change?
- The media as an example of the problem

**“...there is no such thing as society.** There are individual men and women, and there are families...”

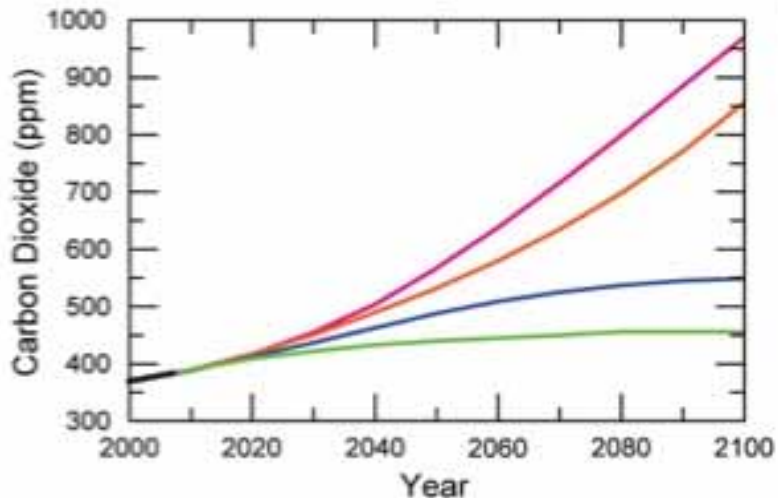


**“There is no such thing as society.** There is living tapestry of men and women and people and the beauty of that tapestry and the quality of our lives will depend upon how much each of us is prepared to take responsibility for ourselves and each of us prepared to turn round and help by our own efforts those who are unfortunate.”

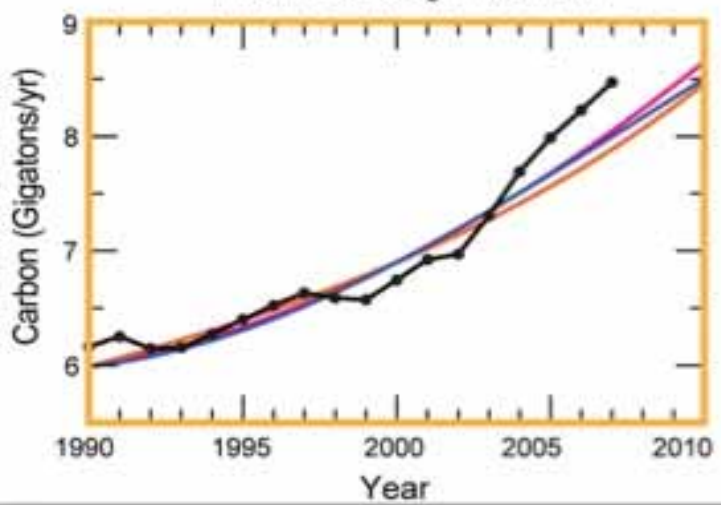
Carbon from Fossil Fuel CO<sub>2</sub> Emissions



Atmospheric CO<sub>2</sub> Concentrations



Carbon from Fossil Fuel CO<sub>2</sub> Emissions



- Even higher emissions scenario (A1FI)
- Higher emissions scenario (A2)
- Lower emissions scenario (B1)
- Stabilization 450 ppm
- Observations



(Mario Tama/Getty Images)







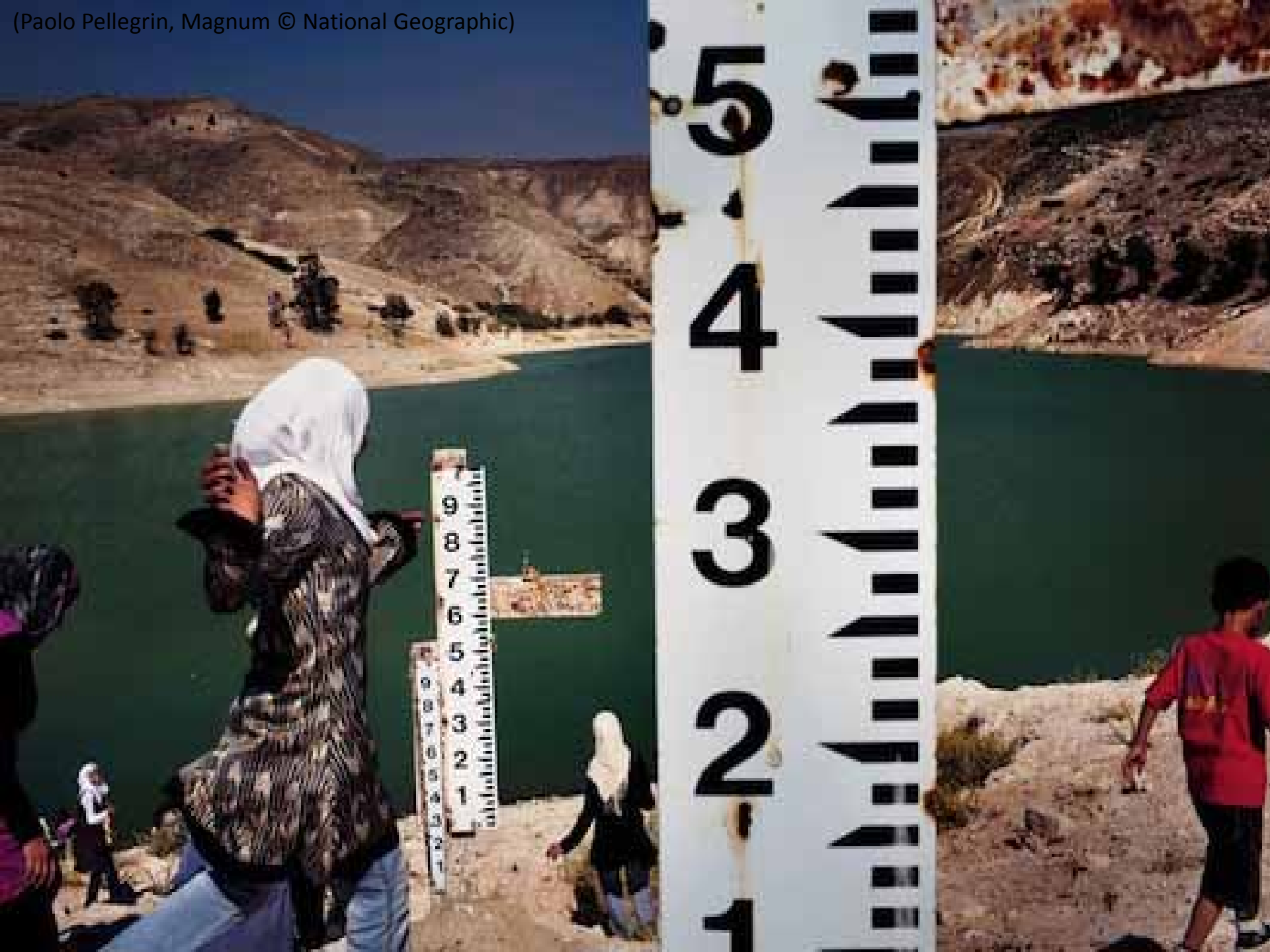




(Paula Bronstein/Getty Images)



(NATALIA KOLESNIKOVA/AFP/Getty Images)



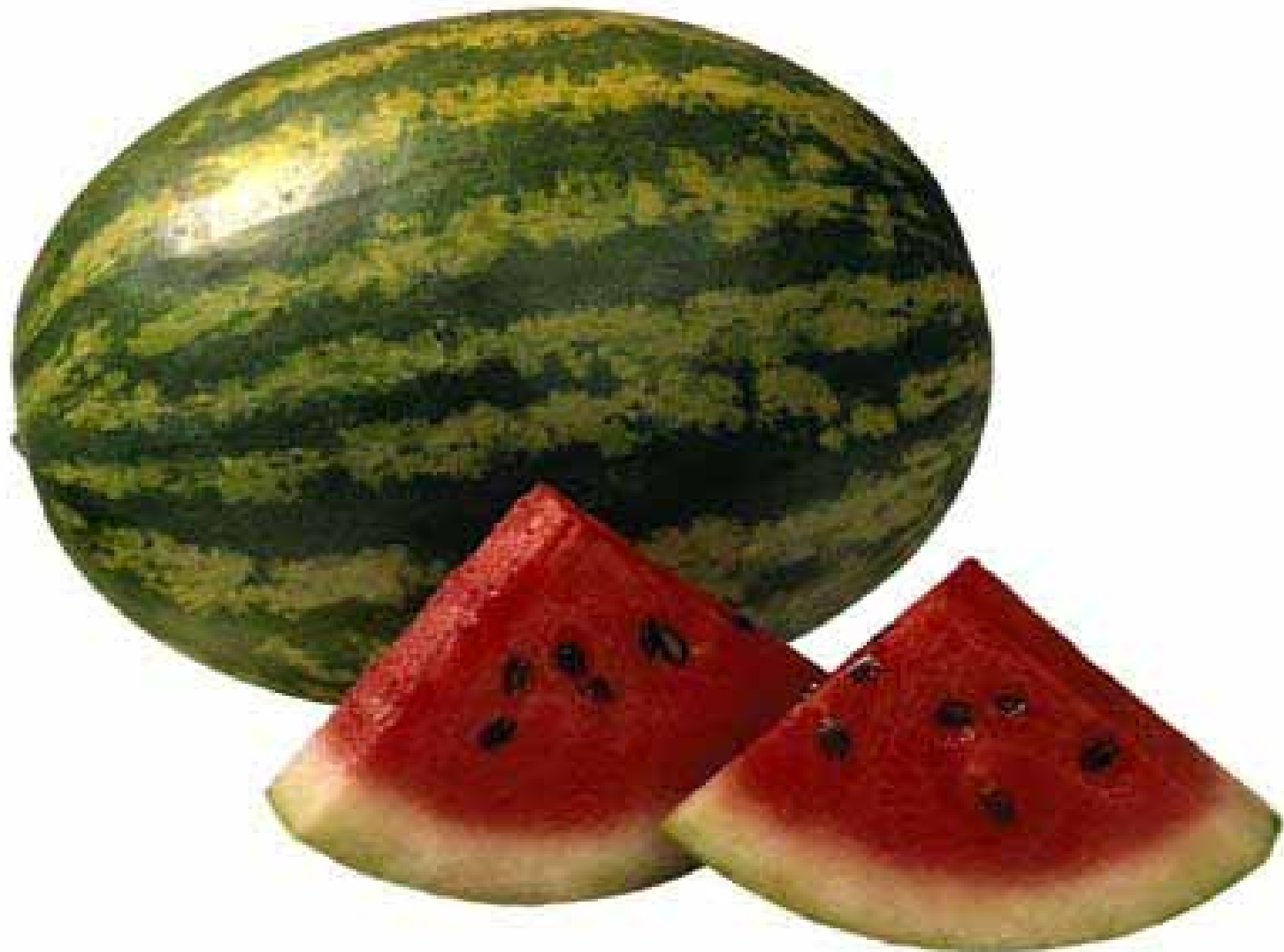
Philip Hammond – Transport Minister:  
*“It’s not the car that’s the problem, it’s the carbon”*



*“Philip is far from anti-car and sharp enough not to be too swayed by the whole man-made global warming lobby.”*

Cars UK <http://www.carsuk.net/>







# CLIMATE SUMMIT

WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?

- ENERGY INDEPENDENCE
- PRESERVE RAINFORESTS
- SUSTAINABILITY
- GREEN JOBS
- LIVABLE CITIES
- RENEWABLES
- CLEAN WATER, AIR
- HEALTHY CHILDREN
- ETC. ETC.



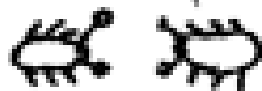
YEL PITT  
LIFE US TODAY

tales of 2036

Where did all  
the humans and  
Plants and ani-  
mals go again?



the humans destroyed  
the weather and then  
died off, taking most  
everyone else with  
them.



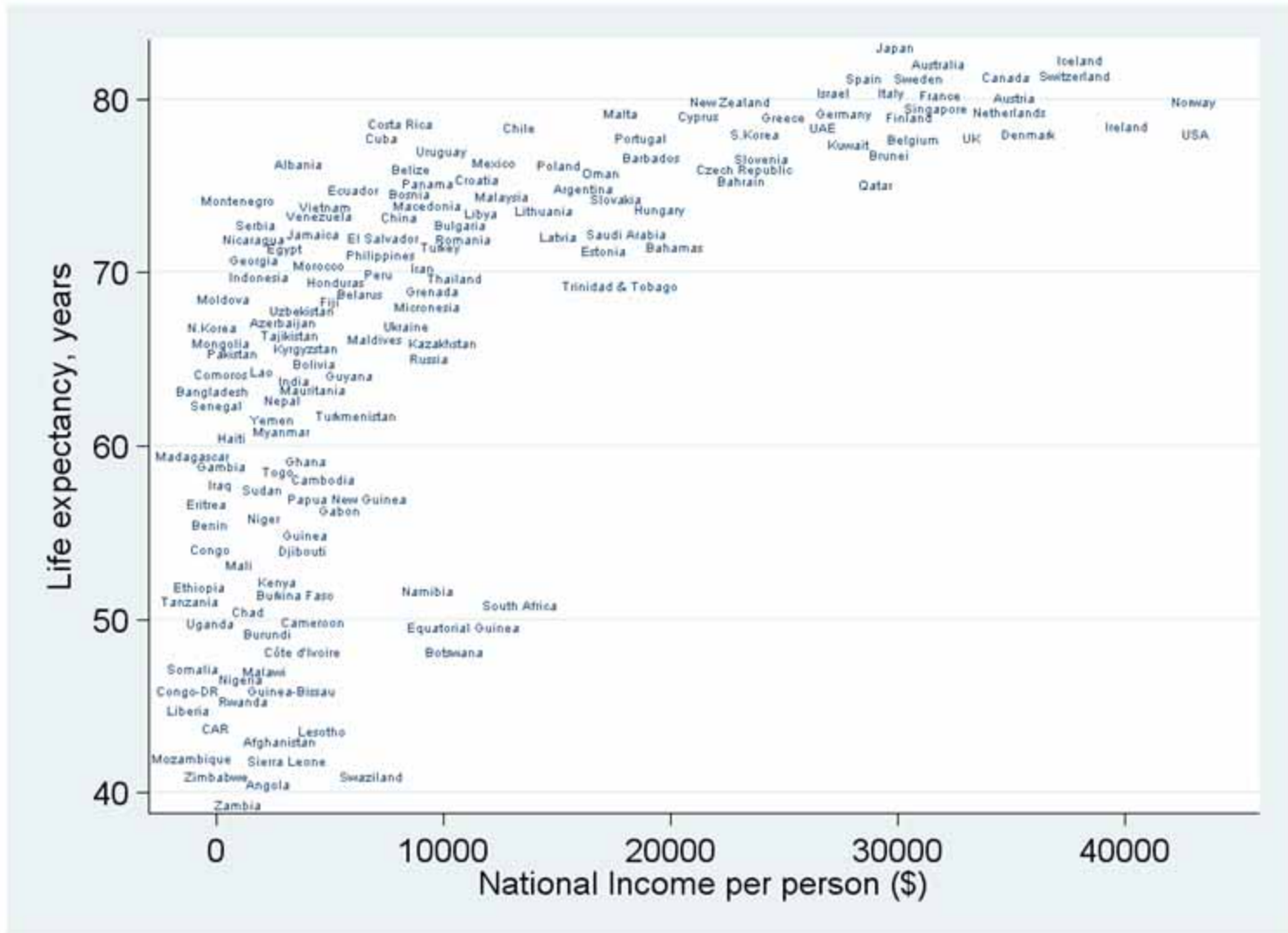
Oh yeah. let's  
go eat their  
brains.

The roaches  
are in  
charge now!





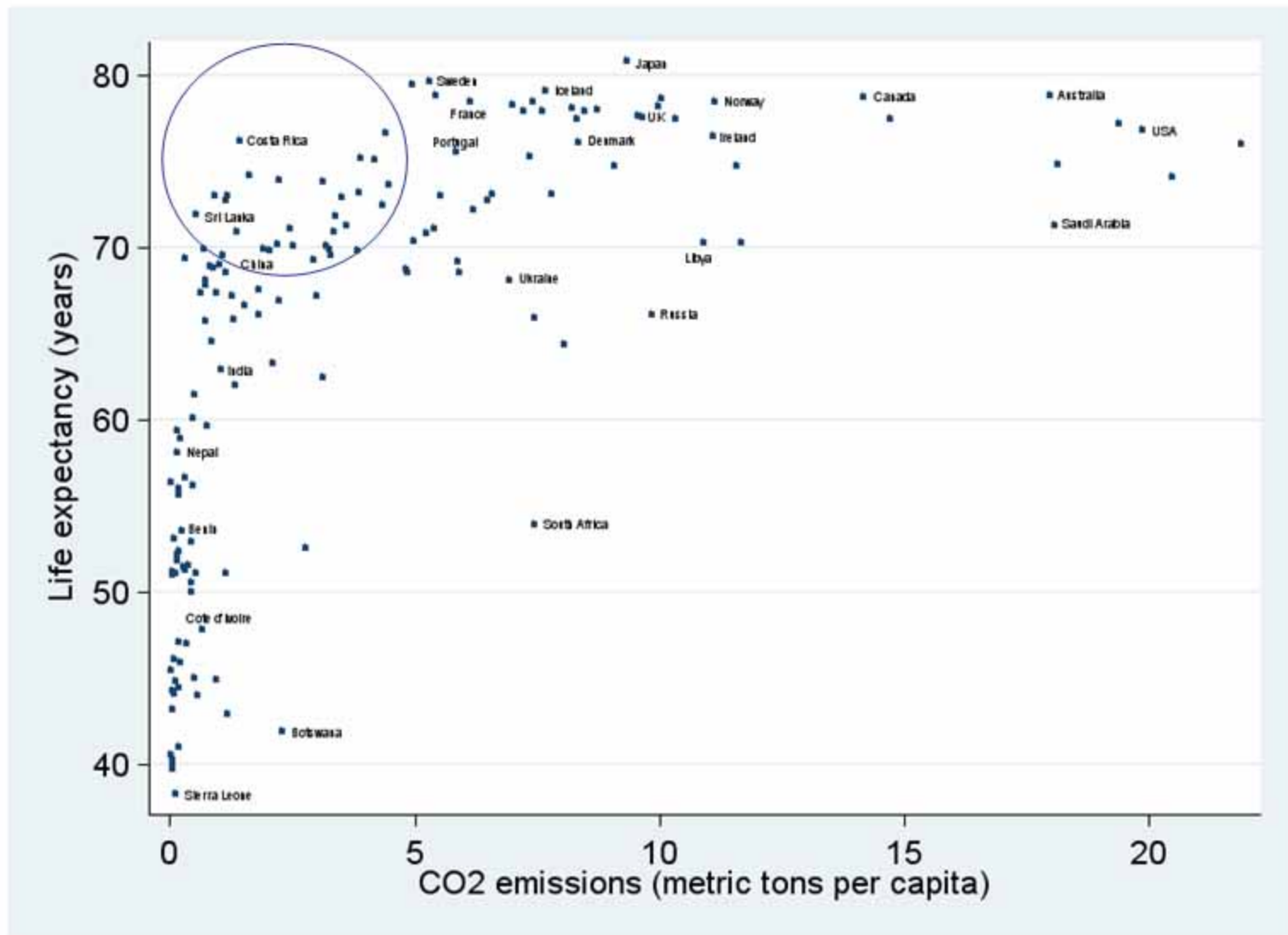
# Income per head and life-expectancy: rich & poor countries



Source: Wilkinson & Pickett, *The Spirit Level* (2009)

## Overdeveloped countries?

High life expectancy can be achieved with low CO<sub>2</sub> emissions

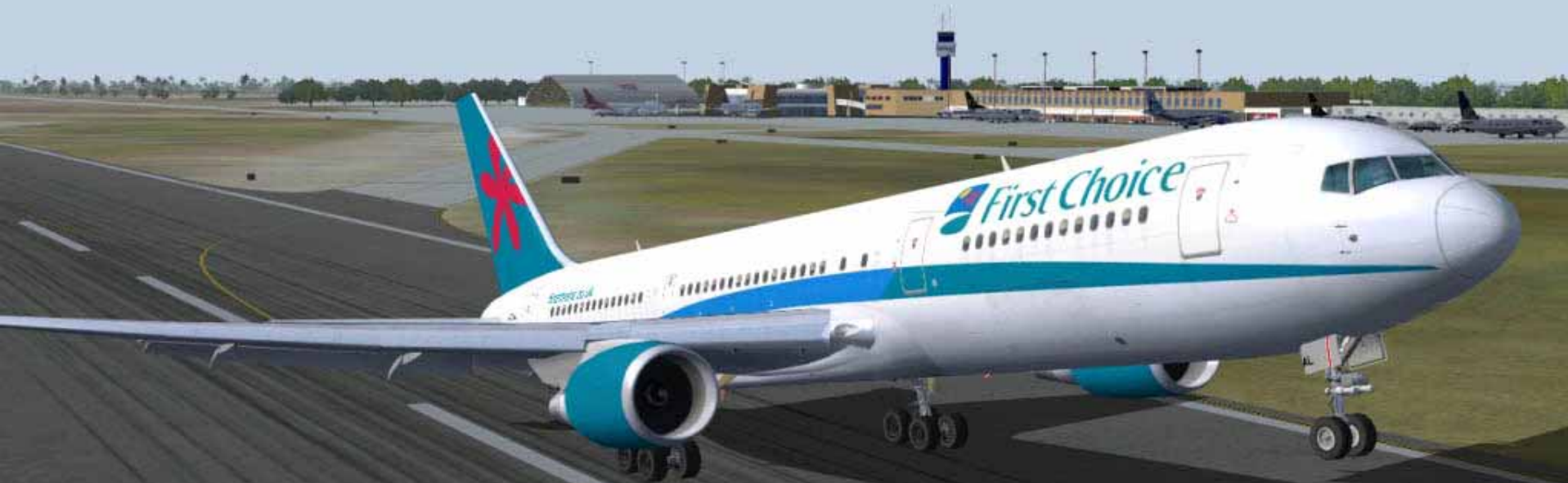


# A Choice of Different Futures?



or





**TAKEOFF REF** 1/2

FLAPS		V1
5°		162
THRUST		VR
15°C D-TO		167
CG TRIM		V2
24% 4.5		172
RWY/POS	GR WT	TOGW
35L / ---- FT	403.2	----

-----PRE - FLT  
< INDEX COMPLETE

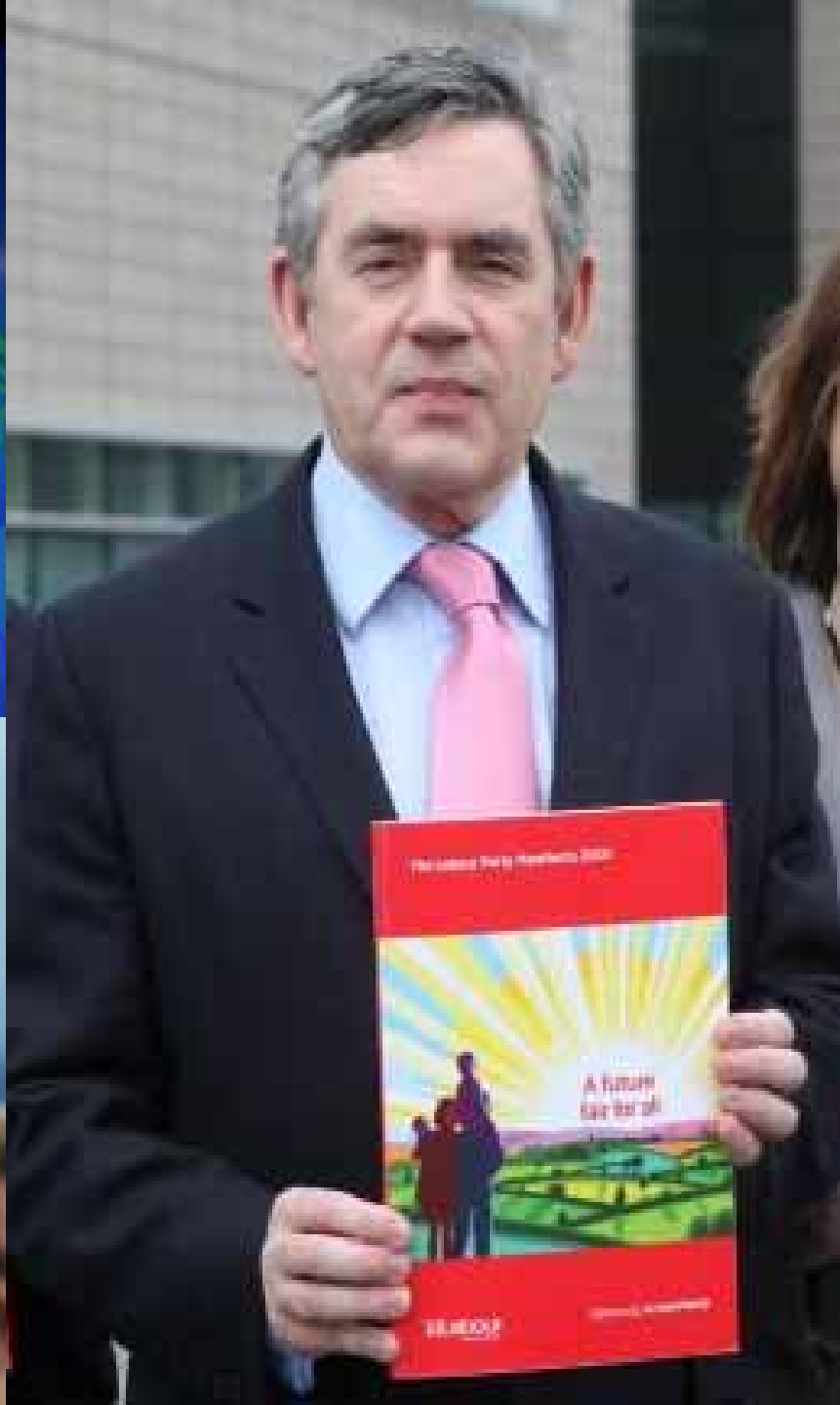
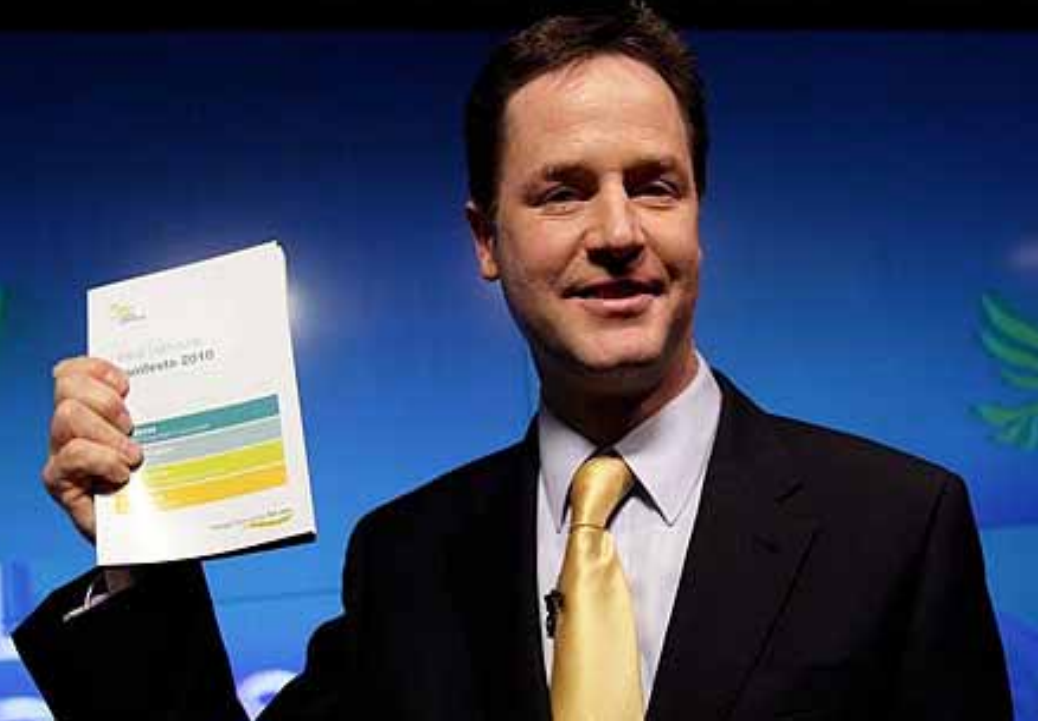
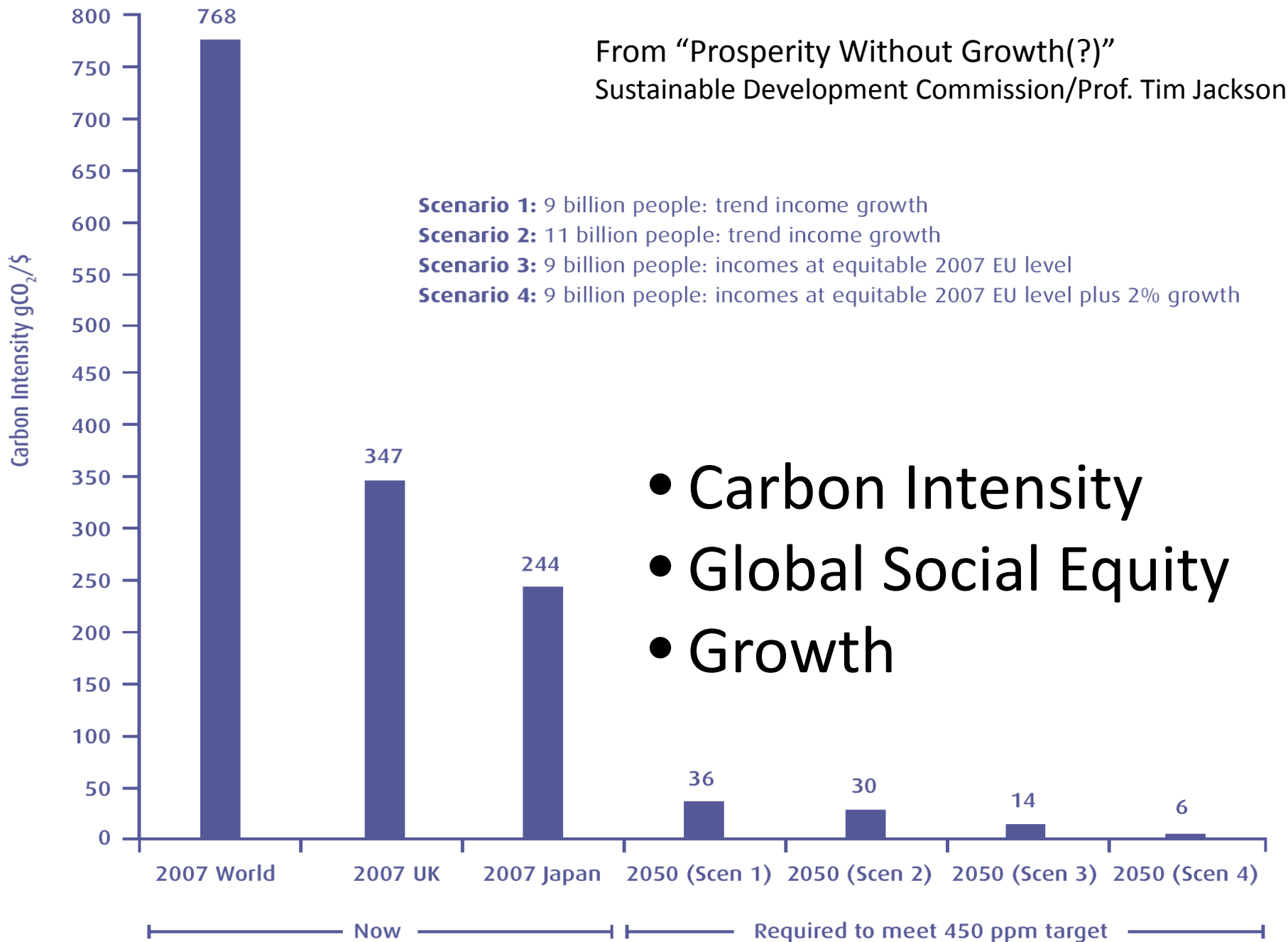


Figure 17 **Carbon Intensities Now and Required to Meet 450 ppm Target**<sup>25</sup>





# Behavior

The  
our p  
for gov

Richard H. Thaler  
Cass R. Sunstein

## Nudge



Improving Decisions  
About Health, Wealth,  
and Happiness

NEW YORK TIMES BESTSELLER  
"Hot stuff"  
"Hugely influential"

## nudge

Improving decisions  
about health,  
wealth and happiness

THALER & SUNSTEIN

d



More with  
Less.....



# Behaviour Models

- Homo Economicus – ***“a being who desires to possess wealth, and who is capable of judging the comparative efficacy of means for obtaining that end.”*** J.S.Mill, On the Definition of Political Economy
- ***“People are often unable to compute the right decision”*** Behavioural Economics – A Guide for Economists in Government
- ***“It is no surprise that such models have had little success for they are misguided in their approach as they are unable adequately to capture the role of context, values and power in social life”*** T. Hargreaves (2010) after Bent Flyvberg
- ***“Essentially, all models are wrong, but some are useful”***  
George E. P. Box

# 4 Energy Behaviour Theories

## **Economic Theory:**

*Energy is a commodity and consumers will adapt usage in response to price signals*

## **Psychological Theory:**

*Energy use can be affected by stimulus-response mechanisms and by engaging attention*

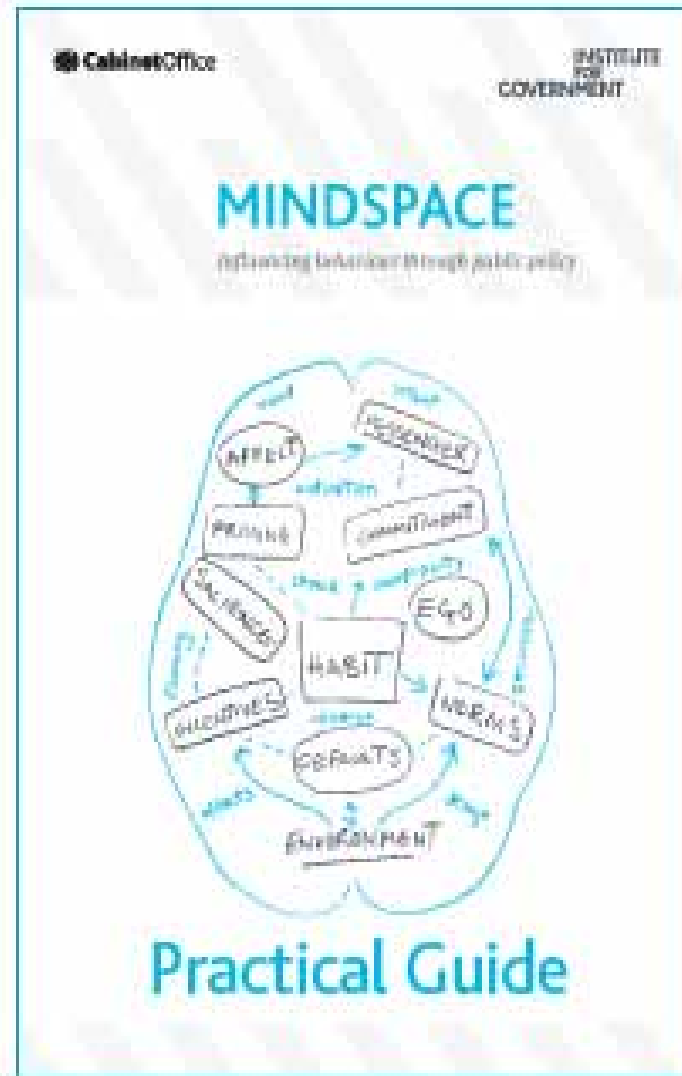
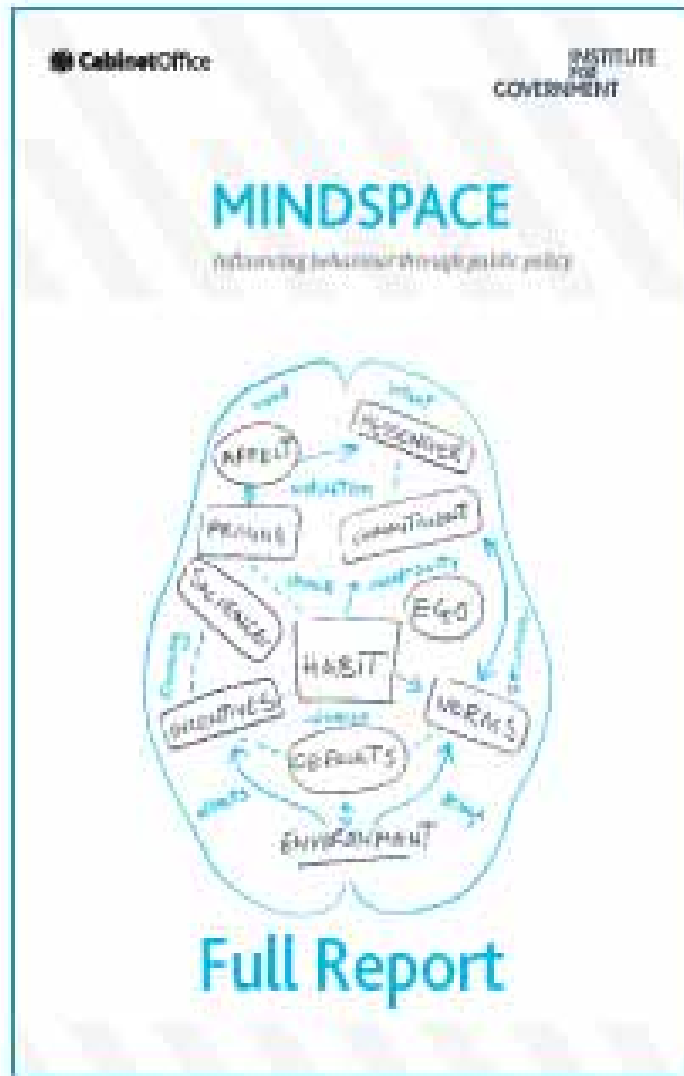
## **Sociological Theory:**

*Energy use is largely invisible, energy systems are complex, and daily practices are significant*

## **Educational Theory:**

*Energy use is a skill that is learned through experience in specific situations*

# MINDSPACE: Influencing behaviour through public policy



New insights from science and behaviour change could lead to significantly improved outcomes, and at a lower cost, than the way many conventional policy tools are used.

D'oh, the donuts  
are way  
over there.

Think I'll  
have fruit

My cunning  
choice architecture  
will soon have  
Homer eating  
healthy

HEALTHY  
FRESH  
FRUIT

JACK  
POT  
\$\$\$\$

KEEP OUT

\$\$\$

\$

**M** = Messenger

**I** = Incentives

**N** = Norm

**D** = Defaults

**S** = Salience

**P** = Priming

**A** = Affect

**C** = Commitments

**E** = Ego

<b>Messenger</b>	we are heavily influenced by who communicates information
<b>Incentives</b>	our responses to incentives are shaped by predictable mental shortcuts, such as strongly avoiding losses
<b>Norms</b>	we are strongly influenced by what others do
<b>Defaults</b>	<del>we 'go with the flow' of pre-set options</del>
<b>Salience</b>	<del>our attention is drawn to what is novel and seems relevant to us</del>
<b>Priming</b>	our acts are often influenced by sub-conscious cues
<b>Affect</b>	<del>our emotional associations can powerfully shape our actions</del>
<b>Commitments</b>	we seek to be consistent with our public promises, and reciprocate acts
<b>Ego</b>	we act in ways that make us feel better about ourselves

D'oh, the donuts  
are way  
over there.

Think I'll  
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My cunning  
choice architecture  
will soon have  
Homer eating  
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HEALTHY  
FRESH  
FRUIT



KEEP OUT



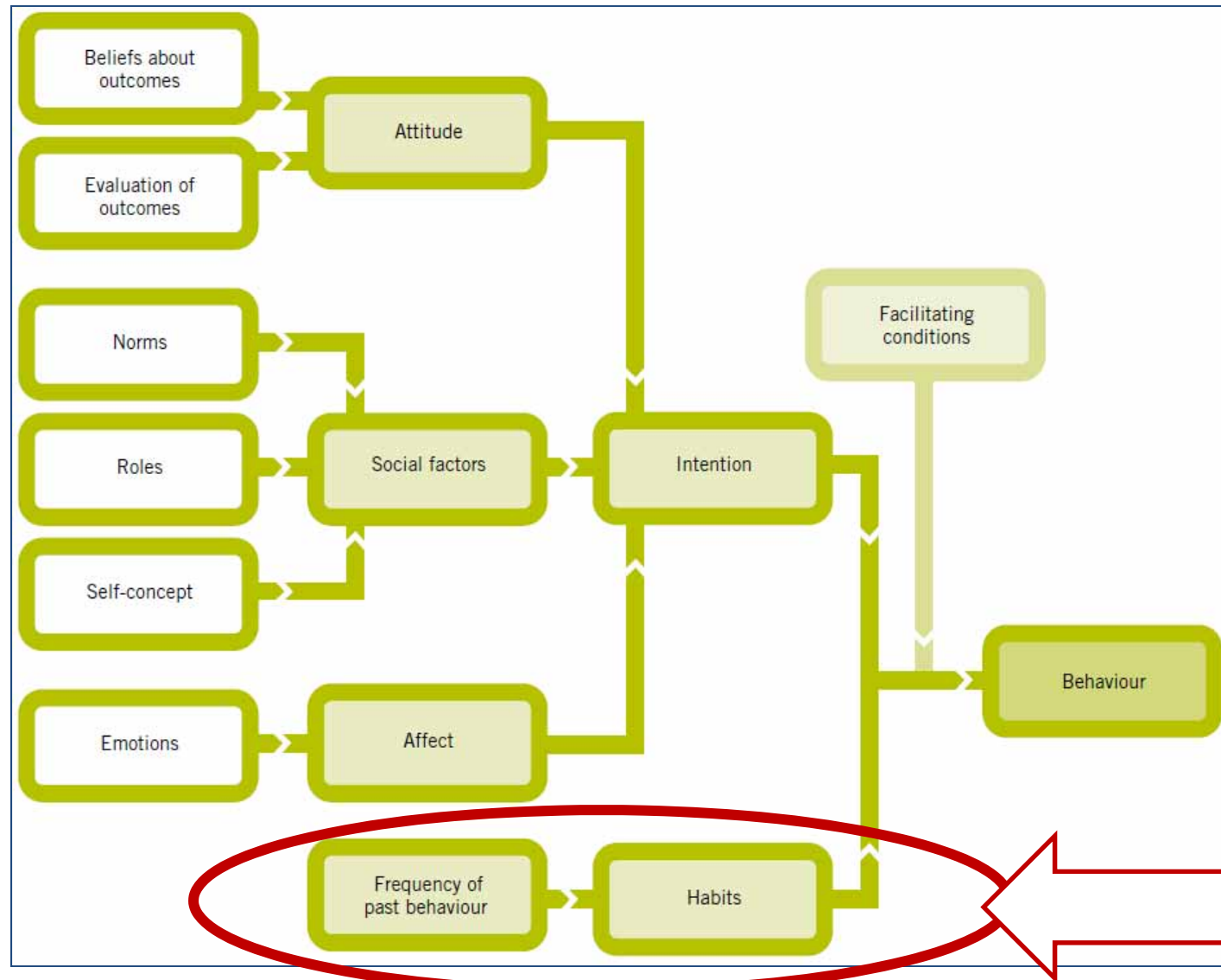
# Values and Identity

- Range of academics and campaigners working in this area (esp. Tom Crompton and Tim Kasser)
- **WWF Report looking at:**
  - Values and life goals
  - In-groups and out-groups
  - Coping with fear and threats
- Questions the “Save Money” message





# ABC: Attitude-Behaviour-Choice/Context/Constraint



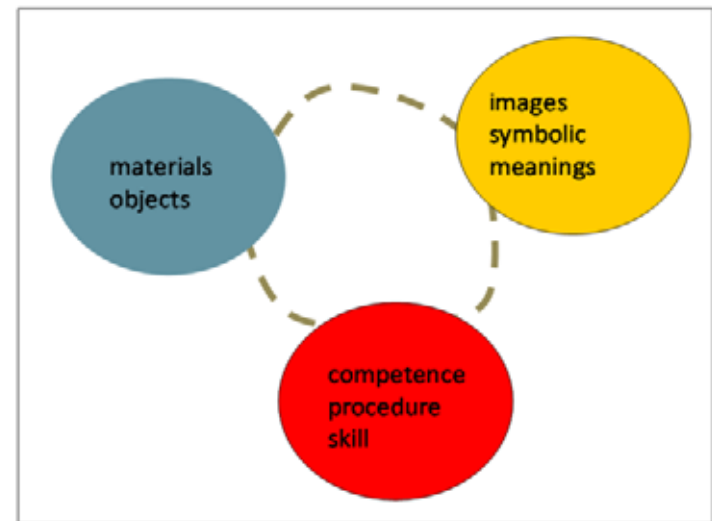
Triandis' Theory of Interpersonal Behaviour

**Habit  
as  
Construct**

# Habits as Practices

## The individual is no longer the unit of enquiry

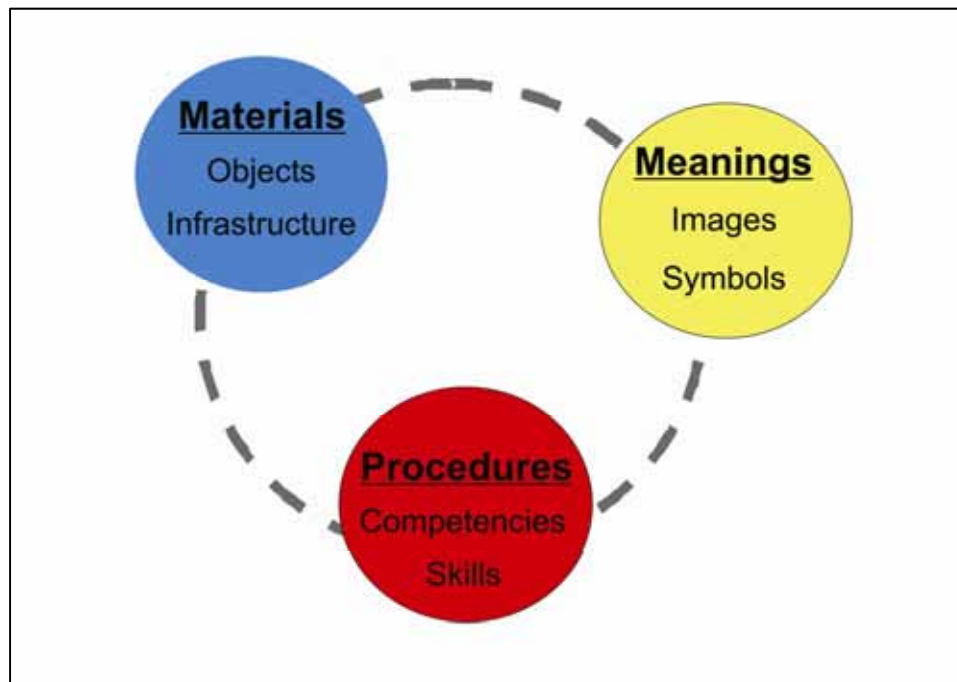
- *“We don’t have habits, habits have us”*
- *“The lives of habits, and us their creatures”* E. Shove
- Practices are an emergent property, arising from 3 Elements:
  - Materials (Infrastructure)
  - Meanings (Symbology)
  - Competencies (Skills)



Thanks to Elizabeth Shove, Andrew Darnton, Tom Hargreaves and Alexia Coke



<http://www.bbc.co.uk/programmes/b00v71qr>

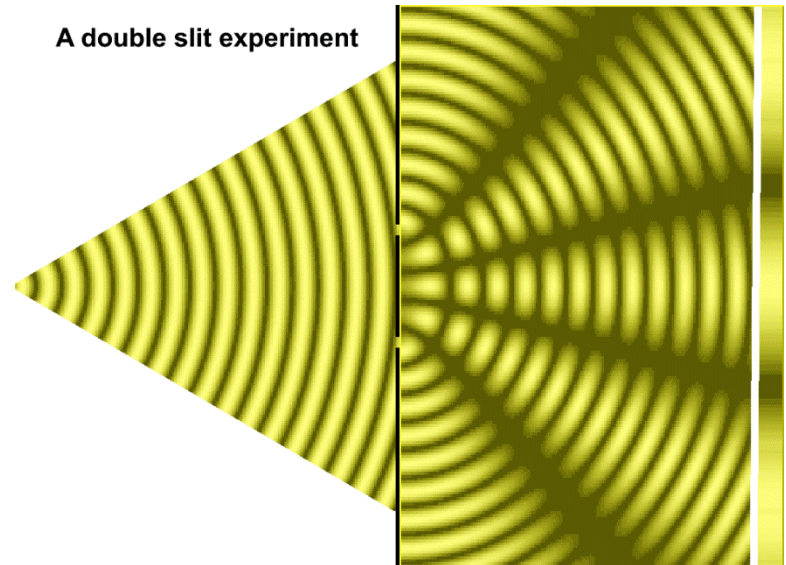


# Are we Individual or are we Social?

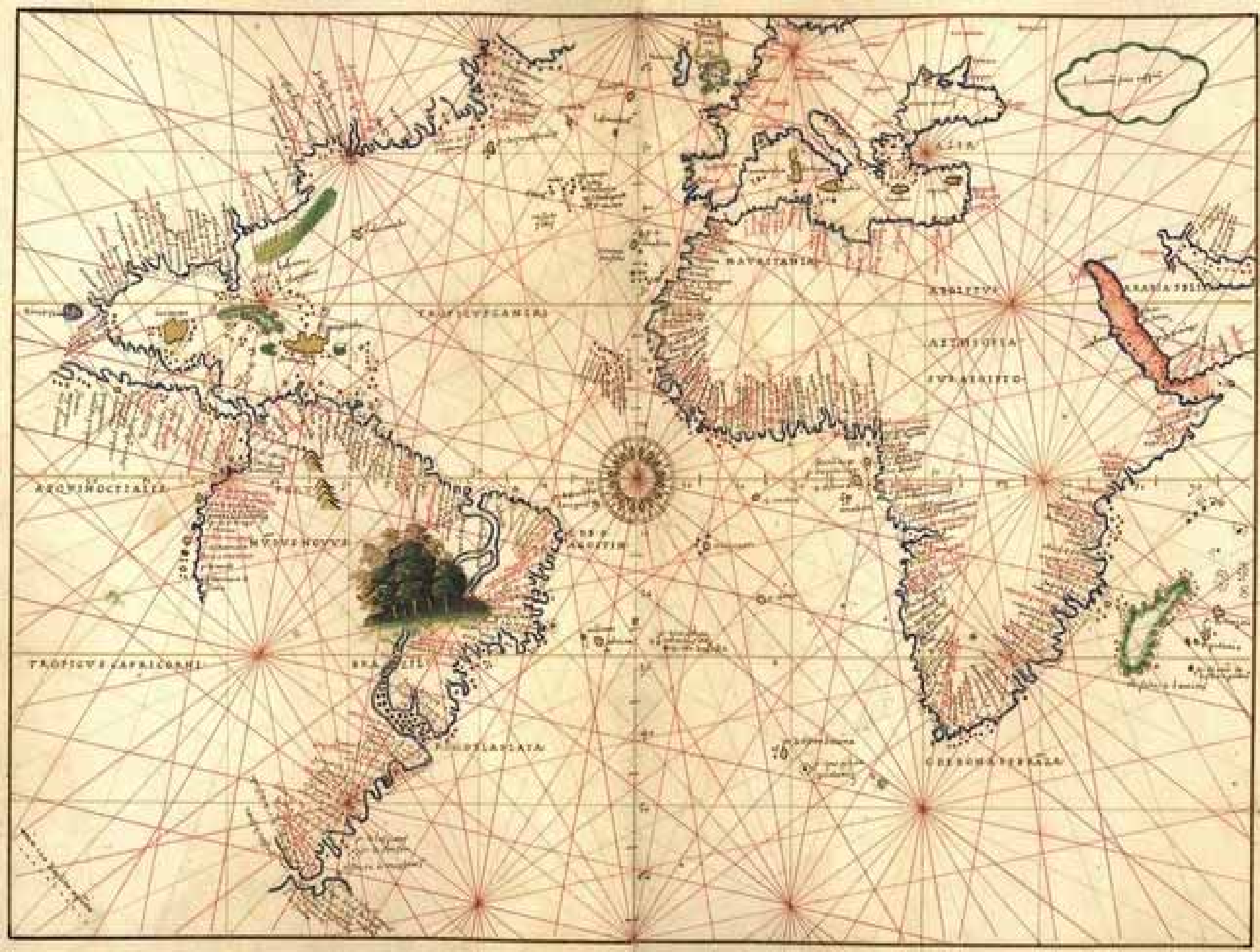
- **Wave–particle duality** postulates that all matter exhibits both wave and particle properties.
- A central concept of quantum mechanics, this duality addresses the inability of classical concepts like "particle" and "wave" to fully describe the behavior of quantum-scale objects. ....

.....wave–particle duality is one aspect of the concept of complementarity, that **a phenomenon can be viewed in one way or in another, but not both simultaneously.**

A double slit experiment







# The Problem of the Individual



**Believe nothing,**  
no matter where you read it  
or who has said it, not even if  
i have said it, unless it agrees  
with your own reason and  
**your own common sense.**

-Buddha

The background is a dense grid of small, square images. Each image is a different scene or subject, ranging from nature (flowers, trees) to human figures (people running, sitting, standing) to abstract patterns and close-ups of faces and eyes. The colors are vibrant and varied. Overlaid on this grid is the text 'THE MEDIA' in a large, bold, white-outlined font. The letters are slightly shadowed, giving them a 3D appearance as if they are floating above the grid. The word 'THE' is positioned above 'MEDIA'.

**THE  
MEDIA**





**CHRISTOPHER  
BOOKER**

# This is the worst scientific scandal of our generation

Do these  
matter?

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## James Delingpole



James Delingpole is a writer, journalist and broadcaster who is right about everything. He is the author of numerous fantastically entertaining books including *Welcome To Obamaland: I've Seen Your Future And It Doesn't Work*, *How To Be Right*, and the Coward series of WWII adventure novels. His website is [www.jamesdelingpole.com](http://www.jamesdelingpole.com).

### Climategate: the final nail in the coffin of 'Anthropogenic Global Warming'?



Fair & Balanced

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HOME U.S. WORLD BUSINESS POLITI

# Do E-Mails Reveal Scientist Claims On Climate Change are... **BUNK?**



NASA

Hackers break into servers of a major British climate change research facility and purportedly uncover e-mails urging scientists to 'hide the decline' of temperatures, manipulate data and silence skeptics.



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[Blog home](#)

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## Pretending the climate email leak isn't a crisis won't make it go away

Climate sceptics have lied, obscured and cheated for years. That's why we climate rationalists must uphold the highest standards of science

[Special investigation: The hacked climate emails](#)

[Exclusive: Scientist hid data flaws](#)

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 Comments (1160)

- 25/11/09 *“He has to go, and the longer he leaves it, the worse it will get”*
- 7/7/10 *“I think, in the light of everything I've now seen and read, that if I were to write that article again I'd conclude that Phil Jones should hang on – but only just.”*



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Page last updated at 12:02 GMT, Sunday, 7 February 2010

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## Climate scepticism 'on the rise', BBC poll shows

**The number of British people who are sceptical about climate change is rising, a poll for BBC News suggests.**

The Populus poll of 1,001 adults found 25% did not think global warming was happening, an increase of 10% since a similar poll was conducted in November.

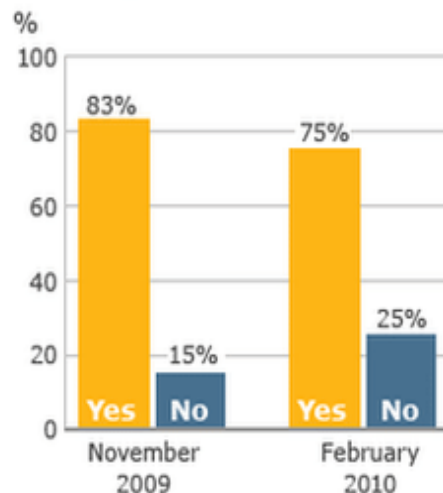
The percentage of respondents who said climate change was a reality had fallen from 83% in November to 75% this month.

And only 26% of those asked believed climate change was happening and "now established as largely man-made".

The findings are based on interviews carried out on 3-4 February.

In November 2009, a similar poll by Populus - commissioned by the Times newspaper - showed that 41% agreed that climate change was happening and it was largely the result of human activities.

**Do you think global warming is taking place?**



Source: BBC/Populus

### CLIMATE CHANGE

#### KEY STORIES

- ▶ [Embattled climate chief supported](#)
- ▶ [Climate body admits glacier error](#)
- ▶ [India attacks UN climate warning](#)
- ▶ [Climate data row man steps down](#)
- ▶ [Key powers in climate compromise](#)
- ▶ [World media reacts to climate deal](#)

#### ANALYSIS



**Profile: Rajendra Pachauri**  
Climate change head under pressure over report errors

- ▶ [What 'ClimateGate' means](#)
- ▶ [Harrabin: Reforming the IPCC](#)
- ▶ [Why did Copenhagen fail to deliver?](#)

#### BACKGROUND

- ▶ [Atmospheric change over 800,000 years](#)
- ▶ [Climate change glossary](#)

# Public loses faith in climate change science after leaked emails scandal

Surveys show increase in number of people who believe claims are exaggerated

---

**Jo Adetunji**

guardian.co.uk, Sunday 7 February 2010 20.36 GMT

[Article history](#)

# Having heard stories about flaws or weaknesses in the science of climate change, has your view of the risk of climate change changed at all?

<i>All respondents who have heard stories of flaws or weaknesses in the science (57%)</i>	Total	M	F
I am now less convinced of the risks of climate change	11%	12%	10%
I am now more convinced of the risks of climate change	16%	12%	21%
My view on the risk of climate change has not changed	73%	76%	69%

**Which, if any, of these have you heard anything about in the news recently?**

<i>ALL</i>	<b>Stories about flaws or weaknesses in the science of climate change</b>	<b>The Copenhagen Summit</b>	<b>The coldest winter on record</b>
<b>Yes</b>	57%	61%	83%
<b>No</b>	43%	39%	17%

*An*  
*Exact and lively Map*  
**OF**  
**REPRESENTATION**  
*Of Books and all the various of them and*  
*Animas spread out in the Court of*  
**FRANCE by LONDON**  
*During that remarkable Year in the 17<sup>th</sup> Year*  
*of the Reign of the said King*  
**THE PARLIAMENT**  
*of the 1<sup>st</sup> of JANUARY*  
*This is aographical Description of the*  
*most remarkable Year*



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## Coldest UK winter for over 30 years

[News](#)

1 March 2010

[Latest news](#)[Met Office in the news](#)[Releases archive](#)[Quick facts](#)[In-depth](#)

Provisional figures from the Met Office show that the UK winter has been the coldest since 1978/79.

The mean UK temperature was 1.5 °C, the lowest since 1978/79 when it was 1.2 °C.

Since mid-December cold weather has often dominated much of the country, with spells of snow and very low temperatures. From southern England to northern Scotland, heavy snow caused travel disruption at times through the season.

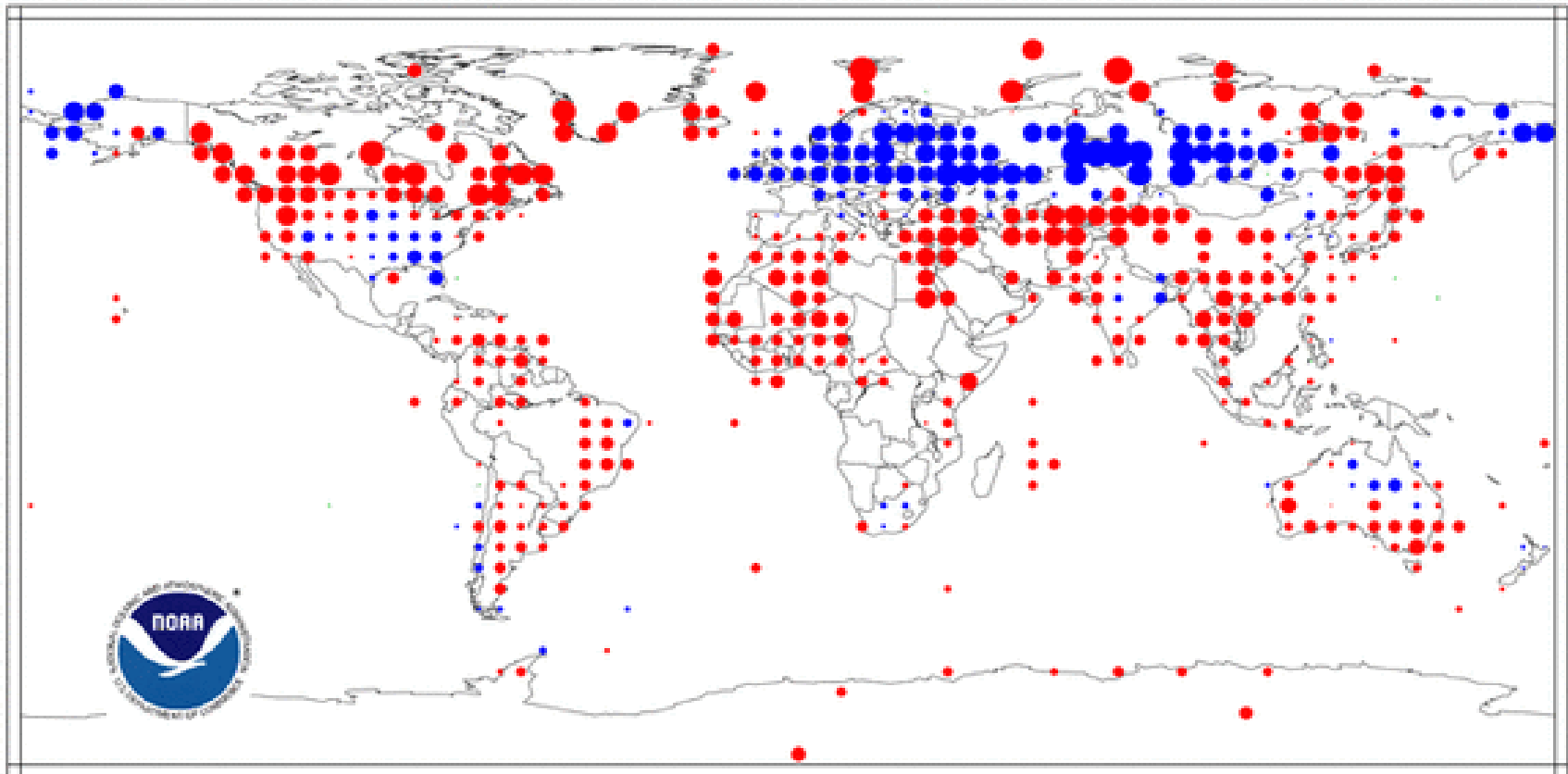
Overnight temperatures fell to -22.3 °C at Altnaharra, Highland – the lowest UK minimum since 1995.



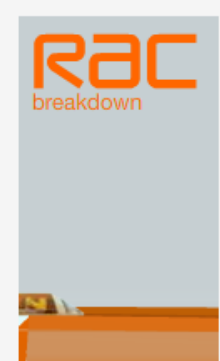
# Temperature Anomalies January 2010

(with respect to a 1961-1990 base period)

National Climatic Data Center/NESDIS/NOAA



Degrees Celsius



### WINTER OLYMPICS 2010:

**Where's all the snow gone? A week before Vancouver Games, trucks bring in some white stuff of their own**

By [NICK METCALFE](#)  
Last updated at 10:27 AM on 5th February 2010



Vancouver had warmest January on record.

Crete set new European record for January high temperature of 30.4°C on New Years Day.

# Which is more damaging?

This?

Or this?



## Why we're doing 10:10

Some of the celebrities who have pledged to support the 10:10 campaign are involved

The Guardian, Tuesday 1 September 2009

← 5 / 13 →



Anthony Horowitz, author

Photograph: Murdo Macleod

What are going to be the easiest things to change about your lifestyle? I can cut down one flight in 10, that should go a long way to meeting my target. That's not going to be hard – who in their right mind would want to travel by plane? You have to eat that awful processed food with plastic forks and spoons, and you get treated like a cross between a stupid child and a sheep. I was in Marrakech the other day, and my friend had arrived by train – a three-day journey. I absolutely wouldn't mind doing that.

What are going to be the easiest things to change about your lifestyle?

I can cut down one flight in 10, that should go a long way to meeting my target.



# Not just the glossies!

“The warning is of ‘abrupt and irreversible’ climate change.”

The “most beautiful luxury saloon”

From 15.8mpg

Up to 289 g/km CO<sub>2</sub>

New Scientist 24/11/2007

This week

## IPCC hardens stance on climate change

FRED PEARCE

THE warning is of “abrupt and irreversible” climate change. They are words we have heard often enough – but never before from the UN’s Intergovernmental Panel on Climate Change. Its “synthesis report” published last week – which is intended mainly as a summary of findings presented in three detailed studies released earlier this year – has in fact gone further than those reports.

IPCC chiefs headed by chairman Rajendra Pachauri were stung by criticisms from scientists that their report on the physical science of climate change, agreed in February, had painted too rosy a picture. The charge was that their efforts to concentrate on

“While the West Antarctic ice sheet is not likely to melt any time soon, it may physically break up”

findings with a 90 per cent certainty or better had resulted in them leaving out scarier but less certain scenarios. The synthesis report tries to make amends.

For instance, the February report predicted that sea levels will rise “between 18 and 59 centimetres” by 2100. Many climate scientists say that growing evidence of the instability of major ice sheets in Greenland and Antarctica, plus a doubling in the rate of sea-level rise, has made this an improbably low estimate, and the new report has responded to this. “This report does not assess the likelihood, nor provide a best estimate or an upper bound for sea level rise,” it says.

At the launch in Valencia, Spain, Pachauri explained what had changed since February. “It

became apparent that, concerning the melting of the Greenland and Antarctic ice sheets, we really don’t know enough. Given the uncertainty it was prudent and scientifically correct to remove the upper boundary,” he said.

The changing view is especially marked on the prognosis for Antarctica. In February, the IPCC said that “current model studies project that the Antarctic ice sheet will remain too cold for widespread surface melting and is expected to gain mass due to increased snowfall”. This would, if anything, lead to lower sea levels.

The new report is much more cautious about those modelling studies, and acknowledges that while the West Antarctic ice sheet is not likely to melt any time soon, it may physically break up. As the report itself puts it: “The risk of additional contributions to sea level rise [from Antarctica] may be larger than projected by ice sheet models... because ice dynamic processes seen in recent observations [are] not fully included in ice sheet models and could increase the rate of ice loss.”

The changes follow fierce debate within the IPCC. Scientists writing a report on the impacts of climate change, which came out in April, were upset that they could not explore the effects of more severe rises in sea level that had been ruled out in the earlier report.

The more urgent tone is reflected elsewhere. The new report says that “anthropogenic warming could lead to some impacts that are abrupt and irreversible”, and for the first time highlights the risk of “very large impacts” and “large singularities”. Such events, it suggests, could include collapsing ice sheets, a shutdown of the Gulf Stream and runaway warming. ☉

DESIGN

## THE JAGUAR XJ HAS BEEN VOTED THE MOST BEAUTIFUL LUXURY SALOON

in Germany’s prestigious *Auto Motor und Sport* annual readers’ poll, triumphing over the most respected names in European motoring.

THE NEW XJ REPRESENTS THE PERFECT HARMONY OF ELEGANT BEAUTY WITH STATE-OF-THE-ART TECHNOLOGY.

Revised upper and lower chrome-accented mesh grilles and stylish power vents draw the eye along the sleek chassis to the beautiful rear styling, where a sleeker bumper, subtle aero spoiler and revised tailpipe finishers complete the transformation.

Inside is just as breathtaking with intuitive, leading-edge technology like adaptive cruise control and an incredibly refined twin-turbo diesel engine for the ultimate high-performance driving experience.

*This is a car as beautiful as it is technologically advanced.*

» THIS IS THE NEW JAGUAR.

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# JAGUAR

PLUG CONSUMPTION FIGURES FOR JAGUAR XJ (ICE MPO) (L/100KM) URBAN 15.8 (17.7) 26.0 (30.0) EXTRA URBAN 32.1 (38.7) 43.7 (63.1) COMBINED 21.4 (25.1) 35.0 (40.1) CO<sub>2</sub> EMISSIONS 214 – 289 G/KM

# Catastrophe comes to those who wait

BY GILES

WE SHOULD not wait to cut back on burning fossil fuels until we have developed greener technology to supply our energy needs, despite what many economists are saying.

economic growth. Their respective governments. Such a waiting game may have deadly consequences.

The US administration often objects to emissions cuts on the grounds that it is cheaper to delay until low-carbon technologies are available. Now a study by some of the most respected climate-policy researchers has unveiled the

impact of every year of delay. It concludes that reducing greenhouse gas concentrations in subsequent decades will be far harder than we thought – not that anyone thought it was going to be easy in the first place. What's more, the team says that current delays mean the world is virtually certain to overshoot the limits of greenhouse gas concentration advocated by the European Union and many environmental groups. "It's a sobering assessment of where we are," says Bryan Mignone, a climate policy expert at Princeton University. Mignone and his colleagues

examined how levels of greenhouse gases in the atmosphere will change if emissions increase, flatten out sometime later this century and then decline. Most policy experts assume this will happen, but the effect on global temperatures will be determined by two key unknowns: how long it will take before emissions peak, and how quickly will they fall thereafter.

**"If our ability to reduce emissions is constrained to less than 3 per cent per year, then mitigation had better start soon, very soon"**

Even immediate and drastic cuts will not prevent dangerous temperature rises, the researchers warn. The EU, for example, hopes to limit global temperature increases to 2°C – a rise that could avoid the more catastrophic

consequences of climate change. To achieve that, carbon dioxide concentrations in the atmosphere must stabilise at about 450 parts per million – levels are currently at about 380ppm. But to keep concentrations under that limit, Mignone's analysis shows, global emissions would have to peak within a decade and then keep falling at 3 per cent every year – a rate many consider unfeasible. Experts have little faith in such a turnaround. "Even if aggressive mitigation were to begin today, 450ppm appears to be virtually impossible," say the authors (Climate Change, DOI: 10.1007/s10584-007-9391-9).

A limit of 50ppm is seen by some as more realistic, but Mignone says that we are already on the verge of ruling that out, too. And emissions are still increasing, so delays will become more and more costly in the future. At



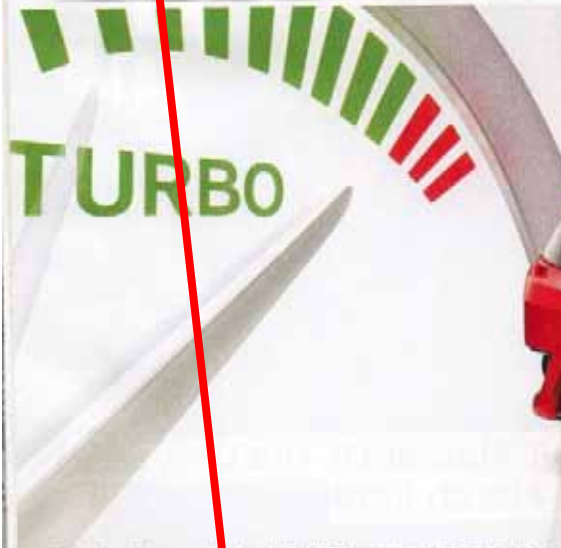
This tale for CO<sub>2</sub> targets?

current rates of emissions, a five-year delay before the peak would lead to an increase of 34ppm in CO<sub>2</sub> levels. If the peak has still not been reached 40 years from now, a five-year span of emissions at that time would result in a further leap of 54ppm. Even if new technology means emissions fall faster, the concentration of CO<sub>2</sub> may already be too great by then for some stabilisation targets to be met. To keep levels below 50ppm, for instance, emissions should start falling much sooner, probably within 10 years, the study concludes.

"One message to take away is that if our ability to reduce emissions is constrained to less than 3 per cent per year, then mitigation had better start soon, very soon," says Roger Pielke, a climate policy expert at the University of Colorado in Boulder. "Another message is that effective

mitigation requires that we explore options to more rapidly reduce emissions." Pielke points out that the new model ignores the possibility that future technologies may allow for more rapid cuts. Direct removal of CO<sub>2</sub> from the atmosphere – a process known as air capture – might provide one such solution. Mignone also notes that his model does not deal with complexities that could impact the results, such as the amount of carbon taken up by land.

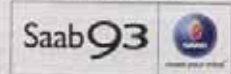
For some experts, Mignone's analysis is simply another indication that we have already forfeited our chance to limit greenhouse gases to some predetermined level. "We may be at the point at which the luxury of choosing a target has disappeared," says Hugh Fischer, an emissions modeller at the University of Maryland in College Park. ☻



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# Recommended Reading List

## Social Practices

Elizabeth Shove – Beyond the ABC: climate change policy and theories of social change <http://action-town.eu/wp-content/uploads/2010/02/BEYONDTHEABCRevised1.pdf>

Elizabeth Shove - Converging Conventions of Comfort, Cleanliness and Convenience <http://www.lancs.ac.uk/fass/sociology/papers/shove-converging-conventions.pdf>

Elizabeth Shove – Comfort, Cleanliness and Convenience – The social organisation of normality <http://www.bergpublishers.com/Default.aspx?TabId=1097&currentreview=1>

## Behavioural Economics

MINDSPACE - <http://www.instituteforgovernment.org.uk/content/133/mindspace-influencing-behaviour-through-public-policy>

## Values and Identity

WWF (Crompton and Kasser) - Meeting Environmental Challenges: The Role of Human Identity [http://www.wwf.org.uk/wwf\\_articles.cfm?unewsid=3105](http://www.wwf.org.uk/wwf_articles.cfm?unewsid=3105)

Common Cause: The Case for Working with our Cultural Values [http://www.wwf.org.uk/wwf\\_articles.cfm?unewsid=4224](http://www.wwf.org.uk/wwf_articles.cfm?unewsid=4224)

## Media

How TV Ruined Your Life - Charlie Brooker <http://www.bbc.co.uk/programmes/b00y6mz2>

Adbusters <http://www.adbusters.org/>

## Buddhism

What the Buddha Taught – Wapola Rahula [http://www.amazon.co.uk/What-Buddha-Taught-Walpola-Rahula/dp/1851681426/ref=sr\\_1\\_1?s=books&ie=UTF8&qid=1298570111&sr=1-1](http://www.amazon.co.uk/What-Buddha-Taught-Walpola-Rahula/dp/1851681426/ref=sr_1_1?s=books&ie=UTF8&qid=1298570111&sr=1-1)