FRAMING THE CLIMATE CHANGE DEBATE: The role of science

The UCL Environment Institute Seminar Series Report

UCL ENVIRONMENT INSTITUTE

UCL Environment Institute, University College London
Pearson Building, Gower Street, London, WC1E 6BT

UCL Environment Institute

UCL Environment Institute

Framing the Climate Change Debate: The Role of Science

A symposium co-hosted by the UCL Environment Institute and UCL Public Policy in cooperation with the Institute for Public Policy Research (IPPR)

University College London
16th May 2011

Report by

Andrew Pendleton (IPPR)
Professor Mark Maslin (UCL Geography)
Professor Nick Pidgeon (Cardiff University)
Professor Chris Rapley (UCL Earth Sciences)
Dr. Matthew Lockwood (Institute of Development Studies, University of Sussex)
Professor Maria Lee (UCL Laws)
Dr. Slava Mikhaylov (UCL Political Science)
Professor Yvonne Rydin (UCL Bartlett School of Planning)

IPPR

Introduction

Andrew Pendleton (IPPR) chaired the event and made the opening remarks. He referred to the emerging difficulties in obtaining an international agreement to follow on from the Kyoto protocol and how this changed the context for the debate on climate change science. He identified two questions: one about how we frame climate science, the other about how climate policy is framed. He suggested that time is right to move on from the first to the second aspect at the same time recognising that lack of agreement over the climate science within the public sphere has not been eliminated. The issue of securing wide public consent on climate change remains.

Professor Mark Maslin (UCL Geography)

Mark Maslin argued that science is not a belief system. So it cannot be compared to a sweet-shop where you can choose some science you like while rejected others. He emphasised the need to communicate that science is a rational process of observation and deduction - this view of climate science needs to be communicated more clearly to the public.

He emphasised the observation of data within climate science; both the data and the analysis of data needs to be communicated clearly. There is an issue with regard to communication of the different datasets and predictions that arise from different research institutes. He pointed to the difference in measurements and how present and past measurements need reconciling. For example, sea surface temperature data collected in 19th century was gained from dropping wooden buckets over the side of a wooden ship, hauling the water up and using a thermometer. In the 20th century there was a shift to metal ships and metal buckets. More recently water is measured as it enters the ship's bilge below the surface. This produces three different datasets; analysis is needed to match them up over a long time series. Even today, answers to specific questions – was 2010 the warmest year on record? – have different answers deriving from different analyses of datasets. The weight of evidence is important though, and this also needs to be communicated clearly. This all becomes more complex as we move from analysis of the past to prediction of the future. Science contributes possible scenarios rather than sophisticated forecasts, and scenarios inevitably differ and do not offer certainties.

Science can also identify the threats that will challenge society a given society's coping range. This coping range varies across cultures and countries. Athens copes better with heat stress than London; Stockholm copes better with snow than London. In the heat wave of 2003, temperatures in central London reached 1000°C (which is only spring time temperature in Texas), yet 35,000 people died across Northern Europe because of the inability of some societies to cope with heat that for them was an extreme. The heat wave emphasised the need to identify extreme episodes as well as the changing baseline. Another important threat concerns the situation in the Bangladesh delta. 20-25% area of the country could be lost to sea level rise in the context of the delta area sinking (due to loss of sediment arising from HEP schemes in India and ground water extraction for drinking water needs). Science can raise awareness of this threat.

Science can also provide solutions. Professor Maslin was of the view that no possible solution should be out of bounds. He emphasised the role of scientists in proposing 'mad and bad' solutions and in thinking the unthinkable in terms of solutions and policy responses. This means that scientists have

UCL Environment Institute

Framing the Climate Change Debate: The Role of Science

to take some responsibility for considering the ethical and moral dimensions of climate change. For example, they can draw attention to the likelihood that loss of live due to climate change in Africa will be 500 times that in other global regions. But he drew a distinction between this and being an advocate; given their lack of political mandate, scientists should not be advocates. Rather they should seek to provide policy-makers with the best available information and evidence to be weighed in decision-making.

Professor Maslin also noted that major societal challenges and societal change is more complicated than just climate change; for example, 1 billion people do not have access to clean water today and this has to be considered a policy priority too. Scientists can balance up these alternative priorities, but it is elected politicians that must make decisions.

Professor Maslin offered 10 key points for climate change science which were:

- Explain how science works
- Communicate the science of climate change clearly
- Report observations – clearly and objectively
- Analyse climate data – clearly and objectively
- Model potential futures
- Explain potential threats
- Offer potential solutions
- Think the unthinkable
- Communicate ethical and moral issues.

Communicate, communicate, communicate.

Professor Nick Pidgeon (Cardiff University)

Nick Pidgeon raised the question of: why are we discussing climate change communication at all? He reminded us that science shows us that we have already had 0.8°C increase in global temperature since pre-industrial times. Another 0.7°C is in the system. But we are likely to hit 4°C by 2011, whilst it is 2°C that is accepted as the limit to 'safe' in international policy. Hence the importance of carbon reductions as set out in key targets under the Climate Change Act and the importance of nearer targets.

But Professor Pidgeon brought a psychologist's perspective to the issue. Solutions are often seen in terms of new technology or economic instruments. These are not going to be sufficient and so lifestyles will need to change. 30% of current household carbon emissions could be saved by simple behavioural changes. However, simply providing people with more information about science in a contested area does not change behaviour. Sometimes there is a specific area of scientific knowledge

(for example phenomena that are not clearly understood) that is needed to determine policy options, but today communication with the public needs to be on areas other than climate science.

The evidence shows that generally people in the UK believe in climate science and are concerned about it. (There are some confusions (e.g. between the ozone hole as a cause of global warming) but this is receding.) However, people see the impact of climate change as spatially and temporarily distant and the responsibility of others. It is not seen as a priority concern for policy, particularly in the current context of fears over recession. They are also concerned over the costs of measures to address climate change.

So what should science communication be about? Professor Pidgeon argued there should be a shift from whether climate change is happening to discussing uncertainty and risk resulting from climate change – essentially reframing the question. Helping people to see the questions of uncertainty and risk that are promoted by climate change in a personal context will also engage them in the consequences of climate change. Climate adaptation also poses many risk-based problems for government, communities and individuals. Such risk communication is not just about changing attitudes to science but is about supporting decision making. We need a strategic approach involving climate scientists, decision scientists, social and communication scientists and programme designers. Professor Pidgeon also noted that there is a significant challenge in communicating science that has key policy implications without appearing partisan.

Professor Chris Rapley (UCL Earth Sciences)

Nick Pidgeon raised the question of: why are we discussing climate change communication at all? He reminded us that science shows us that we have already had 0.8°C increase in global temperature since pre-industrial times. Another 0.7°C is in the system. But we are likely to hit 4°C by 2011, whilst it is 2°C that is accepted as the limit to 'safe' in international policy. Hence the importance of carbon reductions as set out in key targets under the Climate Change Act and the importance of nearer targets.

Chris Rapley pointed to the role of three different sectors in shaping the future: business, people and government. The role of business was crucial, but also problematic because it was shaped by the constraints set by government; this was also problematic given the hostility among some people regarding the role of the state. Ultimately, the public has to consent to the legislation that will frame business action, so public attitudes are important.

What do people know or think about climate change? Research suggests the following:

- They don't know very much and they are embarrassed about this
- Generally people accept human influence on the climate system and that this is a problem
- Similarly, large numbers of people think something needs to be done about this
- These figures are quite stable

- But people don't prioritise climate change measures against the economy and other pressing issues
- In addition there is often strong resistance to specific measures such as wind farms or nuclear power
- The level of general support for tackling climate change is similar to or greater than for other controversial issues where political action has been taken such as the Montreal Protocol, the invasion of Iraq, or rescuing the banks
- However, there has been a significant decline in conviction in recent years, and a strong increase in political partisanship in US.

It is notable that political action on many issues is taken with a similar level of acceptance and support to that currently found in relation to climate change. Political leadership can happen on this basis. However this depends on the political context. In the USA recently we have seen an increase in partisanship in USA which is constraining action.

What determines people's attitudes? There are a number of factors:

- People's direct experience (which is necessarily limited in the case of climate change)
- Peer groups and those they esteem
- Underlying ideologies; people can filter out conflicting knowledge to fit with their prevailing values and ideology
- Emotions.

Generally people want to be 'in' with a high status group whose thinking is accepted. People like to avoid distressing facts and use denial and disavowal to avoid unpleasant emotions. In this context, rational debate does not always sway people. Rhetoric can be more important. Professor Rapley also recognised that people's ideology and political beliefs framed their views on issues.

So scientific evidence is necessary but not sufficient to advance policy. Public acceptance is also important. Professor Rapley was concerned that public awareness over scientists not acting in accordance with the prevailing ideal of good science is affecting public perceptions. Analysis from Bloomberg had shown that whilst the impact of recent allegations against climate science had generally had no or minimal impact on science, they had had major or significant impact on public perception.

Professor Rapley considered where people get currently their information from. It was mainly from the mass media, which focuses on strong emotions, such as fear, hope, compassion, and nostalgia, in telling its stories. This does not lead to understanding or motivation within the public. Indeed it can generate a backlash and scientists should be wary of engaging with the mass media on this basis. He also noted the role of the media in stoking speculation. One way to counter this is to get key opinion-formers whom people admire or respect to communicate on climate science. Scientists could work with those in society whose role is to challenge perceptions and encourage new thinking.

Professor Rapley's key points for climate scientists were:

- Avoid scientific terminology
- Use the familiar (e.g. refer to Fahrenheit not Centigrade in USA or the climate risks are under-emphasised)
- Focus on risk not uncertainty
- Disallow tribalism; avoid the language of 'deniers' and 'warmists'; focus on the degree of agreement (since it is everyone's democratic right to agree or disagree)
- Re-appropriate scepticism for scientists (who by definition are sceptical)
- Translate abstract climate science into social representations of common sense
- Provide some safe space (of hope); don't do bad news stories
- Use metaphors and stories and images to communicate ideas
- Be honest
- Connect to deeper shared values such as social responsibility and fairness
- Recognise the distinction between dogma (closed) and scepticism (open)
- Challenge the confirmation bias (i.e. data fitting the scientist's hypothesis); and exercise self-vigilance.

In general, 'debate' is the wrong framing because it is combative and about getting the right answer. Instead what is needed is a dialogue, which is a more collaborative process aimed at finding common ground. Within this dialogue, scientists should not be activists or advocates. Their role is to be impartial and open-minded seekers and evaluators of information, and communicators of scientific knowledge and evidence-based conclusions. The key objective is greater engagement between scientists and others to let others make up their own minds. The important thing is not to get people to think alike, but to get people who think differently to act alike.

Dr. Matthew Lockwood (Institute of Development Studies, University of Sussex)

Matthew Lockwood stressed the importance of politics and policy in tackling climate change. He saw it as a political problem; we cannot rely on behavioural change but require changes in policy frameworks. Scepticism among the public is not the main problem: rather it is fatigue and lack of attention. Climate change is a high valence but low salience issue. People accept it is important but British election survey data show that they vote on economic issues, crime, immigration, etc. rather than environmental issues. Additionally, there is a cost to addressing it, both financially and in terms of political popularity (eg taxes on flying and driving aren't popular). This means that politicians will talk about climate change but will not rush to take costly action on it, as they are driven primarily by a desire

Framing the Climate Change Debate: The Role of Science

to get elected. Dr Lockwood described this as a combination of hot air but cold feet.

This could be getting worse because of the attention cycle in politics that Anthony Downs drew attention to. Climate change may be going into a post-attention phase. Issues in this phase are typically problems which are complex and costly, lack novelty for the media and don't directly affect lots of people lots of the time. Climate change is typical of such issues; indeed media attention is already waning. Given the broad consensus but lack of attention to the problem among the public, more science will not alter saliency. In a post-attention phase, it is probably best to focus the science on the policy-makers, not the public.

Indeed, it is not necessary for everyone to buy into political action. However, although there is broad consent on lots of policies, politicians are worried about breaching the limits of consent.

As the cost of dealing with climate change remains a major political problem there is a role for science and technology in finding ways to reduce the cost of climate change (although Dr Lockwood noted that the UK doesn't spend a great deal proportionally tackling climate change).

Professor Maria Lee (UCL Laws)

Professor Lee observed how crowded the climate change policy arena is. There are multiple levels of governance and multiple actors within these (e.g. UNFCCC, EU institutions, the WTO, the UK government, the IPPC, and other sectors such as energy and agriculture). This is a crowded 'public' arena before we even reach private actors such as individuals, or universities. Furthermore there is no hierarchy between actors, so interaction is complicated. This can seem to be a chaotic policy landscape, but it is important that all levels are involved. Climate change is a global issue, which manifests itself locally, and responses are physically located.

Because of the complexity in climate change policy and because it is predominantly an issue of political (rather than legal) accountability, external scrutiny of policy is essential. However, the complexity of the policy field complicates scrutiny: it is not clear who is responsible for scrutiny, who should be scrutinised, or how problems will be addressed.

There are a number of well-publicised climate change targets at EU and national government level. Targets set in policy can be so opaque that it's difficult to see if those targets are an appropriate or meaningful way to tackle climate change. Although there is a high level of agreement at all governmental levels about climate change (it occurs, it is bad and we need to take action) - especially compared with other environmental topics - and agreement on the value of legally embedded targets, targets are not policy in themselves. Rather, they are driving poorly defined policy in many different sectors.

Professor Lee noted the recent debate on whether the UK government was going to follow advice from the Climate Change Committee. This looked unlikely with regard to near-term targets (much of the UK's emissions reductions recently had been made through recession rather than policy intervention) and with regard to making cuts domestically rather than overseas.

If framing the climate change debate is about how we present and organise policy, there will be many different framings, which in such a crowded arena cannot be readily mapped.

Framing the Climate Change Debate: The Role of Science

Official UK Government policy generally frames climate change in two closely connected ways:

- as a technological problem (most detailed policy work focuses on technological challenge and big infrastructure solutions)
- as an economic market failure.

Climate change is rarely framed as, for example, an environmental issue, or in terms of individual or collective morality. Even the role of individuals is generally framed only in economic terms (individual choice, consumer behaviour) or technological terms (individuals as barriers to technological solutions).

The current framing of climate change as a technological challenge separate from its social contexts leaves ethical and practical dilemmas open – such as environmental impacts, distribution of burdens and benefits, conversion of technology to carbon savings.

Professor Lee suggested that the green economy approach, which is gaining dominance, could provide a stable core framing at national and European levels, in the context of little progress at international level. This framing also presents climate change as ultimately manageable.

Professor Lee concluded that discourse on climate change is technical and rather alienating and leaves little space for public voices. A complex governance system and unclear targets is compounded by a tendency to see governance arrangements as an afterthought for implementation. Rather, governance needs to be embedded and the public engaged in implementing potential solutions. It's also important not to be dazzled by the beauty of new institutions which may mean we forget the reason they were established is to cut carbon. Finally, we need to accept that there are multiple framings of the issue, for multiple audiences (there is no one correct framing.)

Dr. Slava Mikhaylov (UCL Political Science)

Dr. Mikhaylov discussed how one way of determining the 'saliency' of climate change as an issue is the frequency of its occurrence in the media.

He noted that the election of Obama in the US had marked a step-change, with expectations that his administration would tackle climate change. However, President Obama has talked less about climate change over time (e.g. his last State of the Union address contained fewer mentions than George Bush had previously made). The interesting thing was that whilst the current rhetoric in the US (which would seem to indicate the saliency of an issue) doesn't reflect a commitment to tackling climate change, the implementation of policies that encourage actions to reduce carbon emissions is increasing.

This was a clear example of framing the issue so it was less visible whilst implementing policies to address it. In political science, this is known as 'heresthetics' – a term coined by Riker to describe the art of political manipulation to influence the outcome of a debate. Because the US public doesn't care about climate change, the Obama administration has shifted the rhetoric from climate change to energy: e.g. energy mix and energy security. This seems to have been a successful way of framing the debate to influence outcomes. So it may not always be better to have high saliency of an issue.

UCL Environment Institute

Framing the Climate Change Debate: The Role of Science

The framing of the political debate in this way is important. The environment only became part of the political discourse in Germany when a member of the Green Party was elected to the parliament. It seemed clear that energy security was major way to manipulate political debate and allow discussion of climate change policies.

Professor Yvonne Rydin (UCL Bartlett School of Planning)

Yvonne Rydin summed up the discussion. For her the discussion was about the legitimacy of public or collective decision making. The questions which had been behind much of the discussion were: Can we leave this issue to public values and democratic decision making? What is the legitimate role of science? She focused in her concluding remarks on the discussion about the media and about policy making, trying to bring out key points for climate science and for UK Science more generally.

On the role of the mass media, we had heard how the media like disagreement and feelings; they frame stories in terms of conflicts and emotions. So do we need to sensationalise climate change in order to get the media to cover it? There seemed to be general agreement that this was not the way to go. It is a dangerous game for climate scientists to play.

Furthermore there is a question of how important the media is in terms of policy making anyway? The influence of the media on policy depends on the salience of issues covered for communities and the public generally. We have heard that climate change is a low salience topic. So media framing may not be so important.

The problem is not what media is saying but what it is not saying. There are stories around climate change that are not receiving coverage. Can new avenues of story-telling be opened up? There may be opportunities to use the new internet-based media and the arts to get these stories told. The aim should be to normalise rather than sensationalise the climate change story. This fits with the pragmatics of a post-attention period.

Turning to politics and policy, two rather different approaches emerged. In the first, not everyone needs to be convinced because many tough decisions are taken by those with a democratic political mandate even where the public is ignorant or un-convinced. According to this view people don't need to know the climate change science. Instead this puts the emphasis on influencing key decision makers, the political elite. This can be highly attractive to UK Science. It is high status and fits with institutional incentives (such as the Research Excellence Framework).

The alternative approach is to recognise that the political and policy system is complex. It is multi-level, multi-actor and multi-sectoral. There will be multiple points where climate change policy is actually being formulated and implemented. And there will be multiple points of access to decision making in such a landscape. Legitimacy is therefore spread across this complex policy landscape. So the important issue is how scientific knowledge is spread across this system. Some of this is much more applied and dispersed; e.g. EIA and SEA processes, local policy and plan making. This is a low status but important way for science to get involved.

The often-unspoken issue is how electoral politics and the policy process is influenced by economic self-interest, as that applies to communities, public bodies and corporate business. The influence of

such economic self-interest is not just causing disagreement with climate science but it is also driving the tendency towards big infrastructure/technology solutions in the climate change agenda. How complicit is UK Science in this? Again the incentive structures for UK Science support this tendency.

We need to tackle this paradigm and think about ways of focusing science on finding cheaper and more acceptable solutions within the climate change agenda. This will involve considering head-on whether these are currently low status pathways for science and how to change that. There are plenty of problematic for UK Science to get involved in. We need to understand how to improve the take-up of solutions (as even cheap solutions don't get adopted). We need to identify win-win outcomes such as solutions that deliver energy security, fuel poverty as well as carbon reduction. We need to find solutions that provide financial returns, empowerment and kudos for local communities to encourage them to support local renewable energy schemes. Here scientists can offer their expertise of the invisible problem of climate change and harness it to other expertise to provide more visible paybacks and benefits. This may be a new model for science but one, if appropriately rewarded that could deliver new pathways within climate change policy.

Notes by Yvonne Rydin (Director of UCL Environment Institute) and Sarah Chaytor (UCL Public Policy).

List of Contributors

Professor Maria Lee

Professor Lee's main research interests lie in the law and policy of environmental protection. She is particularly interested in the ways we make decisions on risk, especially in areas of high technological complexity and controversy. She concentrates on the governance of decision making, examining the use of expertise, public participation and varied regulatory approaches. She has applied this work in a range of areas, including genetically modified organisms, nuclear energy, nanotechnology and water. Maria's main focus is regulation at EU level, but the relationships between EU, national and international actors are inevitably significant.

Dr. Matthew Lockwood

Dr. Lockwood is Head of the Institute of Development Studies at Sussex university. The Institute is one of the world's leading organisations for research, teaching and communications on international development. Founded in 1966, the Institute enjoys an international reputation based on the quality of its work and the intellectual rigour with which it applies academic skills to real world policy challenges. Its purpose is to understand and explain the world, and to try to change it - to influence as well as to inform. In all of its work, IDS aims to challenge conventional thinking, to generate fresh ideas that foster new thinking on development policy and practice. Such problem-focused thinking requires a commitment to interdisciplinary, not just across social sciences or even sciences, but across research, communication and learning.

UCL Environment Institute

Framing the Climate Change Debate: The Role of Science

Professor Mark Maslin

Professor Maslin is Executive Director of Carbon Auditors Ltd./Inc. He is science advisor to the Global Cool Foundation and Carbon Sense Ltd. He is a trustee of the charity TippingPoint and a member of Cheltenham Science Festival Advisory Committee. Mark is a leading scientist with particular expertise in past global and regional climatic change and has published over 100 papers in journals such as Science, Nature, and Geology. He has been awarded grants of over £28 million, twenty-six of which have been awarded by NERC. His areas of scientific expertise include causes of past and future global climate change particularly ocean circulation and gas hydrates. He also works on monitoring land carbon sinks using remote sensing and ecological models and international and national climate change policies.

Dr. Slava Mikhaylov

Dr. Slava Mikhaylov joined the Department in September 2010 as a Lecturer in Research Methods. He received his doctorate in Political Science from Trinity College, University of Dublin. He has previously taught at Trinity College and London School of Economics. His research interests include political methodology, comparative and international political economy, leadership, and energy politics.

Andrew Pendleton

Andrew Pendleton is Associate Director for Climate Change, Transport and Energy at IPPR. His areas of expertise are: UK, European and international climate change and energy policy; UN climate change negotiations; Public attitudes and the politics of climate change policy; Low-carbon technology and innovation; Low-carbon finance.

Andrew is an experienced contributor to print and broadcast media. He has written for the Sunday Times, Guardian, Independent and recently for the New Statesman. He has also developed a strong, international new media profile through outlets such as OpenDemocracy. Andrew has appeared on many broadcast current affairs shows, including BBC Radio 4's Today Programme, Sky News, CNN and Channel 4 News. He is a very experienced public speaker and event chair with recent experience as a panellist alongside Transport Secretary Phil Hammond in a public debate at the Daily Telegraph and chairing UCL's landmark Framing the Public Debate on Climate Change symposium. Andrew also blogs at www.politicalclimate.net

Professor Nick Pidgeon

Professor Pidgeon is Professor of Environmental Psychology and Director of the Understanding Risk Research Group within the School. I work on risk, risk perception, and risk communication and as such my research is interdisciplinary at the interface of social psychology, environmental sciences, and

science and technology studies. I am currently researching public responses to energy technologies (e.g. nuclear power, renewable energy), climate change risks, and climate geoengineering. I have in the past led numerous policy oriented projects on issues of public responses to environmental risk issues and on 'science in society' for UK Government Departments, the Research Councils, the Royal Society, and Charities. I am currently a member of the UK Department for Energy and Climate Change's Science Advisory Group (SAG), and theme leader for the Climate Change Consortium for Wales.

Professor Chris Rapley

Professor Rapley CBE is Director of the Science Museum. Prior to this he was Director of the British Antarctic Survey (BAS), and before that the Executive Director of the International Geosphere-Biosphere Programme (IGBP) at the Royal Swedish Academy of Sciences in Stockholm. This followed an extended period as Professor of Remote Sensing Science and Associate Director of University College London's Mullard Space Science Laboratory. He has a first degree in physics from Oxford, an M.Sc. in radioastronomy from Manchester University, and a Ph.D. in X-ray astronomy from University College London (UCL). He has been a Principal Investigator on both NASA and European Space Agency satellite missions and was a member of the NASA JPL Cassini mission Science Team. He has been a member of numerous national and international committees and boards including Vice President of the Scientific Committee for Antarctic Research and Chair of the International Council for Science's (ICSU) International Polar Year 2007-2008 (IPY) Planning Group. He is currently a member of the European Polar Board's Executive and ICSU - World Meteorological Organisation (WMO) Joint Committee for IPY. He is a Fellow of St Edmund's College Cambridge, and is an Honorary Professor at University College London (UCL) and at the University of East Anglia.

Professor Yvonne Rydin

Professor Rydin's research is within an institutionalist paradigm looking at the networks and discourses of local planning. She has studied housing land policy, urban redevelopment, transport management, local air quality policy, countryside protection and water management. Particular interests are processes of strategy development, public participation, the role of social capital in planning, and the analysis of of policy discourses. She has also worked on urban sustainability and its relationship to urban governance in a multi-level context. Here there has been a particular focus on sustainability indicators and on the promotion of sustainable construction. Learning how to be sustainable within organisations and governance structures is a current emphasis, looking across the public and private sectors. This includes consideration of the response of the property sector to the climate change agenda, including adaptation to climate risks.