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Source: *Energy & Environment*, Vol. 17, No. 4 (2006), pp. 619-632

Published by: Sage Publications, Inc.

Stable URL: <https://www.jstor.org/stable/44397268>

Accessed: 22-01-2022 01:26 UTC

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## GOVERNMENTS AND CLIMATE CHANGE ISSUES: THE CASE FOR A NEW APPROACH

David Henderson<sup>1</sup>

*(This text formed the basis for a talk given in Stockholm on 5 May 2006 at a meeting convened by Timbro Annex II takes account of two pertinent reports that have appeared since then)*

### INTRODUCTION

I would like to begin with a twofold tribute.

First, I would like to congratulate Timbro on convening this meeting. Second, I would like to congratulate Professor Richard Lindzen on being the first recipient of the Leo Prize, and to say that I consider it an honour to appear alongside him as a principal speaker in today's programme.

Unlike Richard Lindzen, I am not a climate scientist, and I am a relative newcomer to climate change issues. I am an economist, and I became involved with the subject, almost by accident, three and a half years ago. My initial main involvement was with some economic and statistical aspects of this vast array of topics, but over time my interests and concerns have broadened. Increasingly, I have become critical of the way in which issues relating to climate change are being viewed and treated by governments across the world. In particular, I have become a critic of the role and conduct of the chosen instrument of governments in this area of policy, namely, the Intergovernmental Panel on Climate Change (IPCC).

I believe that established official procedures, positions and policies with respect to climate change are not soundly based. A new approach is called for, in which the issues are treated more objectively and more professionally.

My presentation comes in three parts. Part 1 is largely *descriptive*: I set out some basic facts about the IPCC and the economic dimensions of its work, and mention two recent sources of criticism. Part 2 is *diagnostic*: I outline some reasons for concern about the handling of issues by the IPCC, as also by the official departments and agencies, national and international, that it reports to.

Part 3, which is *prescriptive*, comes in two unequal sections. First and foremost, I deal with governments, since only they can reform the process which they have created and over which they have full control. Hence I begin by outlining the various remedial measures that I think governments should now take, individually and collectively. However, there is also an important unofficial dimension. There is little immediate prospect that governments will mend their ways, and meanwhile an effective critique

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<sup>1</sup>Visiting Professor, Westminster Business School, and formerly Head of the Economics and Statistics Department of the Organisation for Economic Cooperation and Development (OECD).

of established attitudes, beliefs and procedures in this area has to come, largely if not entirely, from outside sources. I believe that more could be done to promote such a critique; and in the concluding section of my talk I make some suggestions for further and more concerted action by unofficial persons and organisations.

### **PART 1: THE ROLE AND STATUS OF THE IPCC**

The IPCC came into being in 1988 as the joint subsidiary of two international agencies, the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP). Its clients, and its governing body, are the member governments of these two agencies – that is, effectively, the members of the United Nations (UN). What I call its *directing circle* comprises senior government officials, chiefly from environment departments, the heads and senior staff of its twin parent agencies, and some past and all present members of its *Bureau*. The IPCC Bureau comprises 30 experts drawn from different countries and disciplines, appointed by governments to act as a management body.

The IPCC has produced three full-scale Assessment Reports, issued respectively in 1990, 1996 and 2001. Work is now well advanced on the Fourth Assessment Report (AR4) which is due to be completed and published next year. More on AR4 below.

The Panel operates through three Working Groups. WGI is concerned with scientific aspects of climate change, WGII with the prospective impacts of such change and ways of adapting to it, and WGIII with options for reducing emissions with a view to mitigating climate change. Each of the Groups produced its own report as part of the Third Assessment Report. Alongside them was the *Special Report on Emissions Scenarios* (SRES), prepared for WGIII, which provided a range of projections of greenhouse gas emissions, covering the period from 1990 to 2100. Between them these four volumes make up some 3,300 pages of text. Their preparation involved a small army of participants – authors, contributors, reviewers, and commentators – with delegates from member governments closely involved in the final stages of revision.

Much the same procedures are being followed in preparing AR4, except that this time there will be no separate report on emissions scenarios: the scenarios published in 2000 have been taken as the point of departure for this coming report, as for its predecessor.

### **The IPCC's Achievement**

Since its establishment, the IPCC has come a long way. It has successfully completed and published the three massive and agreed Assessment Reports, covering the whole range of issues relating to climate change. In producing these reports, it has brought together teams comprising over 2,000 specialists across the world and put in place ordered procedures for directing their work: it has thus created both an effectively-functioning *process* and an extensive professional *milieu*. It has secured for its reports and their conclusions the acceptance of its many and diverse member governments; and in consequence, it has informed the thinking of those governments and prompted decisions by them. Many of its participants and outside supporters, including most of its member governments, believe that it has created a world-wide scientific consensus, based on an informed and objective professional assessment, which provides a sound basis for policy.

Last, the IPCC process has established itself, in the eyes of its member governments, as *their sole authoritative and continuing source* of information, evidence, analysis, interpretation and advice on the whole range of issues relating to climate change. It has acquired what is effectively a monopoly position.

### **The IPCC and Economics**

In saying that the IPCC has become a virtual monopoly purveyor 'on the whole range of issues', I include economic issues. There is an explicitly recognised economic dimension to the work and responsibilities of the Panel. Economic aspects are present, one might even say dominant, at the beginning and the end of the IPCC assessment process.

At the beginning, projections of global warming are largely based on projected atmospheric concentrations of CO<sub>2</sub>, which in turn are based on the projections of CO<sub>2</sub> emissions which emerge from the SRES; and the emissions figures themselves are linked to SRES projections of world output, world energy use, and the carbon-intensity of different energy sources. In these latter projections economic factors are central.

The later stages of inquiry are concerned, first, with the possible impact of projected climate changes, and second, with defining and evaluating policies that might be adopted to deal with such impacts or to limit emissions. Under both these headings, economic considerations, evidence and criteria enter in. In a word, one might say that after the projections of climate change have been arrived at some form of cost-benefit analysis takes over.

In relation to these economic aspects, there is a feature of the process that I find surprising. This is the absence of effective participation by the central economic departments of state – in particular, by treasuries and ministries of finance and economics. Three years ago, I and my Australian co-author Ian Castles wrote of these economic departments and agencies:

'That they have so far held aloof, and left the handling of economic issues in the IPCC process to others, is surprising as well as unfortunate. An article in *The Economist* (15 February 2003) that commented on our critique noted that, in relation to issues of climate change policy, "vast sums are at stake". Yet *the questionable treatment of economic issues in ... the IPCC's Third Assessment Report, which as independent outsiders we have drawn attention to in this and our previous article, seems not to have been noticed by a single official in a single finance or economics ministry in a single country.*<sup>2</sup>

Three years on, I have, alas, no reason to amend or qualify those words.

### **The House of Lords Select Committee's Concerns**

All over the world, the IPCC process and the Assessment Reports are widely viewed, by governments and public opinion alike, as balanced, thorough, representative,

<sup>2</sup>Ian Castles and David Henderson, 'Economics, Emissions Scenarios and the Work of the IPCC', *Energy and Environment*, Vol 14 No 4, 2003, p. 431.

objective and authoritative. However, a high-level exception has now appeared on the scene. Concerns relating to the Panel have been expressed, in a report published last year on 'The Economics of Climate Change', by the House of Lords Select Committee on Economic Affairs. Given the credibility which the IPCC process has acquired, it is a striking fact that a group of eminent, experienced and responsible persons, drawn from a national legislative body and spanning the political spectrum, with the help of an internationally recognised expert adviser and after taking and weighing evidence, should have published a considered and unanimous report in which the work and role of the Panel are put in question. The main grounds for the Committee's doubts and concerns are noted below in Annex I.<sup>3</sup>

## PART 2: FLAWS IN THE IPCC PROCESS

I think that their lordships were justified in voicing concerns about the IPCC. I believe that there are good reasons to query the claims to authority and representative status that are made by and on behalf of the Panel, and hence to question the virtual monopoly that it now holds.

To begin with, the principle of creating a single would-be authoritative fount of wisdom is itself open to doubt. Even if the IPCC process were indisputably and consistently rigorous, objective and professionally watertight, it is imprudent for governments to place exclusive reliance, in matters of extraordinary complexity where huge uncertainties prevail, on a single source of analysis and advice and a single process of inquiry. Viewed in this light, the very notion of setting consensus as an aim appears as questionable if not ill-judged.

In any case, the ideal conditions have not been realised. The IPCC process is far from being a model of rigour, inclusiveness and impartiality. In this connection, there are several related aspects that I would emphasise.

*First*, the Panel's treatment of economic issues is flawed. Writings that feature in the Third Assessment Report contain what many economists and economic statisticians would regard as basic errors, showing a lack of awareness of relevant published sources; and the same is true of more recent IPCC-related writings, as also of material published by the UNEP. In this area, the IPCC milieu is neither fully competent nor adequately representative.<sup>4</sup>

*Second*, the built-in process of peer review, which the IPCC and member governments view as a guarantee of quality and reliability, does not adequately serve this purpose, for two reasons.

<sup>3</sup>The report, and the evidence submitted to the Committee, have been issued in two volumes by The Stationery Office and are on the House of Lords website. Some five months later the British government issued an official response to the report, which has been printed as a third volume The Special Adviser to the Select Committee was Professor David Pearce, who sadly died soon after the report came out.

<sup>4</sup>Ian Castles and I have jointly put forward a critique of some leading aspects of the IPCC's economic work, while authors involved in that work have contested our criticisms. The debate is reviewed and carried further in a recent article of mine entitled 'SRES, IPCC, and the Treatment of Economic Issues: What Has Emerged?' (*Energy and Environment*, Volume 16 No. 3 & 4, 2005). Castles is a former Head of the Australian Bureau of Statistics,

- Reason No. 1 is that providing for peer review is no safeguard against dubious assumptions, arguments and conclusions if the peers are largely drawn from the same restricted professional milieu.
- Reason No. 2 is that the peer review process *as such*, here as elsewhere, may be insufficiently rigorous. Its main purpose is to elicit expert advice on whether a paper is worth publishing in a particular journal. Because it does not normally go beyond this, peer review does not typically guarantee that data and methods are open to scrutiny or that results are reproducible.

*Third*, in response to criticisms that have been made of published and peer-reviewed work that the IPCC has drawn on, the authors concerned have failed to make full and voluntary disclosure of data and sources. A leading instance is that of the celebrated 'hockey-stick' diagram, which was prominently displayed and drawn on in the Third Assessment Report and afterwards. Probably no single piece of alleged evidence relating to climate change has been so widely cited and influential. The authors concerned failed to make due disclosure of data and sources, and neither the publishing journals nor the IPCC required them to do so. As a result, fundamental errors and evidence of deficient statistical properties were concealed until very recently.<sup>5</sup>

*Fourth*, the response of the Panel's directing circle and milieu to informed criticism has typically been inadequate or dismissive. A recent instance of such behaviour is the official response by the British government to the report from the House of Lords Select Committee, which does little credit to the department concerned.<sup>6</sup> Within the scientific community, as Richard Lindzen has noted, these dismissive attitudes have sometimes gone together with a disturbing intolerance of dissenting views and ideas.

*Fifth*, I believe that both the Panel's directing circle and the IPCC milieu more generally are characterised by an endemic bias towards alarmist assessments and conclusions. Again, this situation has been described by Lindzen.<sup>7</sup> Let me add here a pertinent observation made by two German academics, one of them, Hans von Storch, a well known climate scientist. They have made the point that, in the context of climate change, 'Scientific research faces a crisis because its public figures are overselling the issues to gain attention in a hotly contested market for newsworthy information'.<sup>8</sup>

<sup>5</sup>Comprehensive exposure of the flaws of the hockey-stick study has come from two Canadian authors, Stephen McIntyre and Ross McKittrick. A good survey is contained in a paper by McKittrick, 'What is the Hockey Stick Debate About?', presentation to the Asia Pacific Economic Cooperation Study Centre Meeting on "Managing Climate Change - Practicalities and Realities in a post-Kyoto Future", Parliament House, Canberra, Australia, April 4, 2005. The issues thus raised by McIntyre and McKittrick prompted parallel initiatives by two committees of the US House of Representatives. Both committees set up high-level inquiries into the issues, and both inquiries have recently (July 2006) reported. The outcome, as summarised in Annex II below, fully bears out the McIntyre-McKittrick case.

<sup>6</sup>I have commented on this official response in an article entitled 'Report, Response and Review', published in *Energy and Environment*, Vol 17, No 1, 2006. Other instances of dismissive response are the hockey-stick affair, the treatment of issues of disclosure, and reactions to the Castles-Henderson critique. In the latter case, the IPCC itself, through its Chairman, has formally classed both of us among purveyors of 'disinformation' and described us, mysteriously, as 'so-called "two independent commentators"'.<sup>7</sup>

<sup>7</sup>Most recently, in a paper entitled 'Understanding Common Climate Claims', published in the Proceedings of the 34th International Seminar on Nuclear war and Planetary Emergencies of the Majorana Centre for Scientific Culture, edited by R. Raigami, Singapore, World Scientific Publishing Co., 2006.

<sup>8</sup>'How Global Warming Research is Creating a Climate of Fear', by Hans von Storch and Nico Stehr, *Der Spiegel*, 24 January 2005. Professor Stehr is a sociologist.

Largely because of the alarmist propensities of the IPCC milieu and its various allies, the treatment of climate change issues by environmental and scientific journalists and commentators across the world is overwhelmingly one-sided and sensationalist. Perhaps this is to be expected, since horror stories make good copy. All the same, it is unfortunate that in such stories non-alarmist studies and results are typically played down or disregarded, while the lack of knowledge and the huge uncertainties which still loom large in climate science are passed over. This chronic bias on the part of so many commentators is in itself a matter for concern; but even more worrying, to my mind, is the fact that leading figures and agencies connected with the IPCC process do little or nothing to ensure that a more balanced picture is presented. Some of them have become accomplices of alarmism.

Alarmist attitudes and presumptions in relation to world issues, together with a fondness for radical so-called 'solutions', have a long history: they go back well before climate change issues came into prominence, and hence predate the creation of the IPCC. They have been characteristic of the Panel's sponsoring departments and agencies, and in particular of the UNEP and the ministries which are responsible for it. From the outset, the IPCC's links with what I have termed *global salvationism* have affected its capacity and readiness to treat the issues objectively.<sup>9</sup>

To sum up: the IPCC process, which is widely taken to be objective, representative and authoritative, is in fact deeply flawed: despite its scale, pretensions and reputation, it is not professionally up to the mark

### **The Moral to be Drawn.**

From this conclusion I draw two related morals, one general and the other specific.

The general moral, and my main single message today, is this. In relation to climate change, the overriding present need is to build up a sounder basis than now exists for reviewing and assessing the issues. A process should be established, for informing and advising governments and public opinion alike, which is more objective, more representative and more balanced than that which the IPCC has built up and shown itself unwilling to change.

Specifically and immediately, the need is to present a more effective challenge to the current IPCC process and its outcomes, with special reference to AR4.

I now turn to suggest ways in which these twin objectives could be realised.

### **PART 3: A PROGRAMME FOR CHANGE**

I deal first with actions that could be taken by governments, both individually and collectively.

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<sup>9</sup>Global salvationism forms the main theme of Chapter 4 of my study, *The Role of Business in the Modern World: Progress, Pressures, and Prospects for the Market Economy*, published in 2004 by the Institute of Economic Affairs (London), the New Zealand Business Roundtable (Wellington) and the Competitive Enterprise Institute (Washington, DC).

**Official Action**

Official actions of two kinds are needed. First and foremost, governments should make the IPCC process more professionally representative and watertight, especially though not only on the economic side, and ensure that work undertaken within it is made subject to more effective scrutiny than is now the case. Second, they should no longer take consensus as the aim, and should draw on sources of information and advice other than those which the IPCC provides. They should both improve the IPCC process and go beyond it.

**The Economic Domain: Bringing in New Participants**

Under the first heading, improving the IPCC process, the treatment of economic issues stands out: the process has shown itself here as both flawed and unresponsive to outside criticism. It should be made more professionally representative, by bringing in new participants. In particular, the central economic departments of state should no longer hold themselves apart from IPCC proceedings; and in relation to some of the issues that have been raised, the expertise of national statistical offices should also be drawn on. *The responsibility for dealing with economic issues relating to climate change should no longer be left with environmental departments and agencies alone.*

Besides wider official participation, a broader spectrum of academics should be brought in on the economic side: in particular, attempts should be made to involve historically minded economists and economic historians. Given the IPCC's non-responsiveness, only firm action by governments can ensure that such a broadening is achieved.

**Collective Action on the Economic Front: Bringing in the OECD**

Whether and in what ways the central economic departments of state now become involved depends on individual governments. Many of these may be slow to move, or may not move at all. Fortunately, however, there is a procedure at hand by which a group of these central economic departments of state, from the 30 member countries of the OECD, could become involved collectively, to good effect and without delay.

The mechanism for this is the OECD itself. A distinctive feature of the Organisation is that *it is the only international agency in which ministers and officials from these central economic departments and agencies are able, if they so wish, to review systematically issues across the whole spectrum of microeconomic and 'structural' policies.* They can do so, with Secretariat back-up from the OECD's Economics Department, in and through the Organisation's Economic Policy Committee (EPC) which is *their* committee.

In that connection, I first put forward two and a half years ago, to no effect so far, a concrete proposal which could still be taken up, the sooner the better. It is that the EPC delegates should place these IPCC-related economic issues on the Committee's agenda.

**Wider Issues: The Audit Function**

It is not only in relation to economic aspects that a need arises to make the IPCC process more professionally watertight. As I have noted, the Panel's much-vaunted peer review process does not provide the assurances that are claimed for it. What is required here is



a more rigorous evaluation process. In this connection, Ross McKittrick has proposed the establishment of a formal audit procedure. There would be an Audit Panel, appointed by member governments, and comprising experts not connected with climate science, which would ensure that, in relation to studies that the IPCC draws on, full disclosure conditions are met.

### **Wider Issues: The Case for a ‘Team B’**

While wider involvement and due provision for disclosure and audit would make the IPCC process more professionally watertight, they would leave the Panel’s status, and the IPCC process, unchanged in two fundamental respects. First, the aim of the process would still be to produce a single consensus view, with reservations and dissent blocked out or played down. Second, the IPCC would retain its monopoly status.

I believe that the time has come to jettison both these working assumptions. To repeat: where there are pervasive uncertainties and wide differences of opinion, a striving after consensus is not appropriate, while it is imprudent for governments to place exclusive reliance on a single authorised source. That would be true even if the record of the IPCC were above question, which it is not. As happens in other spheres of life where complex evidence has to be sifted and weighed, provision should be made by governments for establishing ‘balance, disclosure and due diligence’ in the conduct of the debate on climate change.<sup>10</sup>

In order to achieve this result, governments should consider providing for the preparation and publication of an alternative and rival overall assessment to that of the IPCC. In any case, they should make formal provision for tapping a wider range of opinions, sources and expertise. So far from playing down differences of view in the interests of arriving at consensus, contrasting informed assessments should be commissioned, funded and published.

### **Unofficial Action: A Proposed New Initiative**

Even if official actions of the kind just outlined begin to move on to the agenda of governments, there can be no guarantee that results will soon emerge. The IPCC process and milieu are well established and entrenched. Governments will not readily modify what have become unquestioned presumptions and commitments, nor can they be expected to resolve right away to change the elaborate procedures which they have approved and still view, though in my opinion wrongly, as professionally above reproach. It could be a long time before reforms come into effect. For the time being, therefore, the main critique of the IPCC must come from outsiders. In my view, prompt action should now be taken to ensure that informed unofficial criticisms of the IPCC process and what emerges from it are made more concerted, more sustained, and more telling. A mechanism, a process, should be created for this purpose.

The need for timely action arises from the official IPCC timetable. AR4 is due to be published next year. The main single task and objective of the process that I have

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<sup>10</sup>These terms are taken from the title of a perceptive paper by Ross McKittrick: ‘Bringing Balance, Disclosure and Due Diligence into Science-Based Policymaking’. In Porter, Jene (ed.) *Public Science in Liberal Democracy: The Challenge to Science and Democracy*, University of Toronto Press, forthcoming.

in mind would be to prepare a concise, informed and comprehensive critique of AR4, to be published soon after the appearance of the Report. The critique would cover the whole range of issues and topics that are involved, economic and procedural as well as scientific, and policy-related as well as analytical. Its preparation would be entrusted to an international team of authors.

For such a publication to be practicable and to carry weight, a lot of preparatory work is required: ideally, the critique of AR4 would form the culminating stage of a concerted programme extending over the next 18 months or so. The earlier constituents of the programme, preparing the ground for the critique, would fall under two main headings:

- To encourage, collate, and publicise articles and studies on the various issues, with a view to informing and influencing public opinion, including official opinion, and to creating a pool of material to be drawn on for the critique.
- To follow closely the official process of producing AR4, including the evolution of the text of the Report through successive drafts.

The sooner such a concerted unofficial programme is put in hand the better. Without such action, on present indications, AR4 will carry all before it.

The design and execution of the programme could be the responsibility of *an international consortium of think-tanks* created for the purpose. It is not difficult to list a number of think-tanks across the world whose role, expertise and contacts make them well qualified for membership of such a consortium.

## SUMMING UP

In relation to climate change, governments are mishandling the issues. The IPCC process, to which they have assigned a virtual monopoly, is deeply and increasingly flawed, both in its treatment of economic aspects and more generally. Governments should think again. Rather than pursuing as a matter of urgency ambitious and costly targets for curbing CO<sub>2</sub> emissions, they should take prompt steps to ensure that they are more fully and more objectively informed and advised. This requires official action on two fronts: first, to improve the IPCC process by making it more professionally watertight; and second, to bring to an end the Panel's monopoly status by providing for other sources of information and ideas. Meanwhile, stronger and more concerted unofficial action to challenge the IPCC process, and to comment on the Panel's coming Fourth Assessment Report, is much needed. It would make for a better informed and more balanced debate, and could help to persuade governments to think again.

## ANNEX I

The House of Lords Select Committee Report and the IPCC

The following excerpts from the report of the House of Lords Select Committee on Economic Affairs raise questions about the role and conduct of the IPCC:

- 'We are concerned that the links between projected economic change in the world economy and climate change have not been as rigorously explored as they should have been by the IPCC' (p. 7).

- ‘... it is a concern that the IPCC has not always sought to ensure that dissenting voices are given a full hearing’ (p. 16).
- ‘... we noted evidence from Professor Paul Reiter of the Institut Pasteur in Paris, which strongly disputed the IPCC’s arguments on the likely spread of malaria ... Professor Reiter’s cautions underline the fact that even the IPCC conclusions, based on a scientific process with many hundreds of experts, still need to be treated with care’ (p. 23).
- ‘We conclude that there are weaknesses in the way the scientific community, and the IPCC in particular, treats the impacts of climate change. We call for a more balanced approach...’ (p. 29).
- ‘The work of McKittrick and his colleague ... seems to us to point, once again, to the failure of the IPCC scenarios to be rooted in historical precedent’ (p. 40).
- ‘... it is clear to us that IPCC does need to reconsider its SRES [Special Report on Emissions Scenarios] exercise’ (p. 56).
- ‘... the IPCC’s procedures are not as open as they should be. It seems to us that there remains a risk that IPCC has become a “knowledge monopoly” in some respects, unwilling to listen to those who do not pursue the consensus line’ (p. 58).

It is to be noted that the concerns thus voiced by the Committee go beyond the IPCC’s handling of economic issues.

**ANNEX II: POST-SCRIPT****The 'Hockey-Stick' and Related Issues: Two Recent Reports**

In mid-2005 the Energy and Commerce Committee of the US House of Representatives became interested in the issues that had been raised by Stephen McIntyre and Ross McKittrick in the papers they had written casting doubt on the methods and results of the 'hockey-stick' study and some of its later stable-mates, and pointing to failures in disclosure on the part of the authors concerned. After some preliminary inquiries, the Committee appointed an Ad Hoc Committee, comprising three experts, to review the work in question and hence to assess the merits of the McIntyre-McKittrick critique.

Later in the year, a parallel initiative was taken by the Science Committee of the House. This Committee asked the US National Academy of Sciences (NAS) to evaluate the criticisms that had been made of the various articles in question, and to comment on the larger issues of historical climate data reconstructions. As a result, a Panel of 12 leading experts, all involved in climate science but not directly involved in the temperature reconstructions under review, was set up under the auspices of the National Research Council (NRC). However, the terms of reference adopted by the Panel were more restricted than those of the Ad Hoc Committee, in that they precluded consideration of whether data, methods and results had been withheld by the authors concerned.

*The NRC Panel report*

By a narrow margin, the NRC Panel was the first to issue its report. Most of its press release, as also the Chairman's opening statement introducing the report, focused on the subject of climate change and large-scale temperature reconstructions: relatively speaking, the issues of disclosure were played down. The most widely quoted conclusion of the report was that (to quote the Chairman) 'It can be said with a high level of confidence that global mean surface temperature was higher during the last few decades of the 20th century than during any comparable period during the preceding four centuries.' Although some press comments dwelt exclusively on this already widely accepted finding, the full story goes further. The hockey-stick study had advanced the more radical conclusion, which was endorsed by the IPCC in its Third Assessment Report, that the 1990s were the warmest decade of the previous millennium and 1998 the warmest single year. The NRC Panel explicitly declined to support this more far-reaching interpretation of the past. While they described the reconstructions that entered into the hockey-stick study as 'plausible', they also emphasised the limits of earlier evidence, noting that 'uncertainties ... increase substantially backward in time'. Their treatment thus marked a tacit retreat from the position taken by the IPCC in 2001 and heavily publicised since then.

On the general issue of disclosure, the Chairman's summary of the Panel's conclusions was as follows:

'Our view is that all research benefits from full and open access to published datasets and that a clear explanation of analytical methods is mandatory. Peers should have access to the information needed to reproduce published results, so that increased confidence in the outcome of the study can be generated inside and outside the scientific community. Paleoclimate research would benefit if individual researchers, professional societies, journal editors, and funding agencies continued their efforts to ensure that existing open access practices are followed.'

This statesmanlike form of words bypassed the question of whether and how far the studies which had aroused the attention of the two House committees had in fact provided 'full and open access' - a question which, as will be seen, was directly considered by the Ad Hoc Committee. But if the Panel's statement of principles is taken seriously, the implications for the world of paleoclimatic research would be far-reaching. Given (1) that full disclosure had not been made, and had indeed been positively refused, by authors under review, and (2) that the initial inquiries into this situation from the House Committee on Energy and Commerce had been the subject of formal protests from the American Geophysical Society and the American Meteorological Society, the final and apparently unexceptionable sentence quoted above can be seen as a call for a new and improved code of practice in this area of research.

In appearing as witnesses before the NSC Panel, McIntyre and McKittrick outlined in full their critique of the various hockey-stick-related studies. In a subsequent article reporting on their appearance, in the Toronto *Financial Post* (21 July 2006), they stated, referring in particular to the author to whom their critique had been chiefly directed, Professor Michael Mann, that:

'... we said that Mann's "principal components" were biased toward producing hockeystick-shaped series; the [Panel] agreed. We said that bristlecones were not a reliable temperature proxy; the [Panel] agreed and said they should be "avoided". We said that Mann's reconstruction failed important verification tests; the [Panel] agreed. We said that more than one test statistic should be reported when assessing statistical validity; the [Panel] agreed. We said that current methods underestimated the inherent uncertainty; the [Panel] agreed ... On no occasion was any claim of ours refuted'.

#### *The Wegman report*

The Ad Hoc Committee appointed by the Committee on Energy and Commerce had no climate scientists: its membership comprised three leading academic statisticians, under the chairmanship of Professor Edward J. Wegman. Among its *findings* were the following:

- Generally speaking, the main studies under review were 'somewhat obscure and incomplete' while the criticisms made by McIntyre and McKittrick were 'valid and compelling'.

- 'We note that there is no evidence that Dr. Mann or any of the other authors in paleoclimatology studies have had significant interactions with mainstream statisticians.'
- '... authors in the area of paleoclimate studies are closely connected and thus "independent studies" may not be as independent as they might appear on the surface.'
- '... we judge that the sharing of research materials, data and results was haphazardly and grudgingly done... there was too much reliance on peer review, which was not necessarily independent. Moreover, the work has been sufficiently politicized that this community can hardly reassess their public positions without losing credibility. Overall, our committee believes that Mann's assessments that the decade of the 1990s was the hottest decade of the millennium and that 1998 was the hottest year of the millennium cannot be supported by his analysis.'

The *recommendations* of the Ad Hoc Committee came under four heads:

- 'Especially when massive amounts of public monies and human lives are at stake, academic work should have a more intense level of scrutiny and review.'
- '... federally funded research agencies should develop a more comprehensive and concise policy on disclosure ... Federally funded work including code should be made available to other researchers upon reasonable request ... data collected under federal support should be made publicly available.'
- '...when there are major policy decisions to be made based on statistical assessments ... evaluation by statisticians should be standard practice. This evaluation phase should be a mandatory part of all grant applications and funded accordingly.'
- 'Emphasis should be placed on the Federal funding of research related to fundamental understanding of the mechanisms of climate change. Funding should focus on interdisciplinary teams and avoid narrowly focused discipline research.'

In a public statement, Professor Mann has described the Wegman Report as 'un-peer reviewed', 'a poor attempt to personalize and politicize what should be a matter of scientific debate not politics', and 'written by statisticians with no apparent background at all in relevant areas'. In his view, the Report 'simply uncritically parrots claims by two Canadians (an economist and an oil industry consultant) that have already been refuted in the peer-reviewed literature...'; and he writes that 'These claims were specifically dismissed by the National Academy in their report just weeks ago'. It is worth noting in this context, first, that the Wegman report was peer

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<sup>11</sup> In saying that the NRC Panel report 'specifically dismissed' claims made by McIntyre and McKittrick, Professor Mann goes against the statement made by these two authors, and quoted above, that the Panel substantially confirmed their critique and that 'On no occasion was any claim of ours refuted'. On this conflict of views, readers may wish to consult the relevant sections of the Panel report. For the topics listed above, in the quoted excerpt from McIntyre's and McKittrick's article, the page references are: 86-7 and 106 (principal components analysis); 50 (temperature proxies); 91 (verification tests); 79 and 90 (reporting more than one test statistic); and 107 (underestimating uncertainty).

reviewed, by persons with whom Professor Wegman had no previous co-worker relationship, and second, that Stephen McIntyre is not an oil industry consultant.

*The moral to be drawn*

Both these high-level reports, and especially that of the Ad Hoc Committee whose terms of reference were less constrained, point to basic weaknesses in established IPCC procedures. In particular, the Panel has not insisted on full and due disclosure on the part of authors whose work it has drawn on and given publicity to, nor has it sought to ensure that proper statistical procedures have been followed. The reports thus lend substance to points that I have made in the main text above. To repeat:

- The built-in procedures of peer review, which the IPCC and member governments view as a guarantee of quality and reliability, do not adequately serve this purpose.
- The IPCC process, which is widely taken to be objective, representative and authoritative, is in fact deeply flawed: despite its scale, pretensions and reputation, it is not professionally up to the mark.