

WASHINGTON ROUNDTABLE  
ON SCIENCE & PUBLIC POLICY

**Are the IPCC's Global  
Warming Forecasts Based  
on Faulty Economics?**

By David Henderson

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*Are the IPCC's Global Warming Forecasts  
based on Faulty Economics?*

*with*

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# ***Are the UN's Global Warming Forecasts based on Faulty Economics?\****

Professor David Henderson  
Friday, November 19, 2004

**Jeff Kueter:** Good afternoon everyone and thank you all for coming today. I am Jeff Kueter, the Executive Director of the George Marshall Institute. It is my great pleasure to be one of your hosts today for this very important talk about the IPCC emissions scenarios and the economics on which they rest. I will not introduce Dr. Henderson, but I just want to thank him for taking time out of his schedule to come and participate in this event. I want to thank our co-hosts, Myron Ebell and the Cooler Heads Coalition, for helping us put this event together. It is my pleasure now to introduce Myron.

**Myron Ebell:** Thank you. First of all, I want to thank Jeff Kueter and the Marshall Institute for putting this on with us. As you know, the Cooler Heads Coalition is a coalition of about two dozen public policy groups that have doubts about the science behind global warming alarmism and are generally opposed to the Kyoto Protocol and similar policies. We have held many of these briefings on Capitol Hill since early 1998 and we have covered many topics of the science underlying the claims of the global warming alarmists. We have had a number of economic briefings as well, but this is the first one that looks at the economic underpinnings of the projections of future climate, which is where the interest in this issue really comes from. You have read headlines in which the United Nations Intergovernmental Panel on Climate Change (IPCC) predicts that the global mean temperature will rise 1.4 to 5.8 degrees, but what does that mean and how do they get it? Well, it is not just science, it is also economics.

So we are very pleased to have here David Henderson, who is visiting this week from London. David has distinguished himself as one of the leading free-market economists in the world. He really has had three careers: one as an academic economist, he was a fellow at Westchester College, Oxford and later at University College, Oxford where he was professor of economics. Then he had a long career in both the British civil service and internationally, in the British government, at the World Bank and

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for eight years ending in 1992, he was chief economist and head of the whole department at the Organization for Economic Cooperation and Development (OECD) in Paris. Since then, he has again distinguished himself by writing a series of books on controversial issues related to economics. The latest of these CEI is very proud to be publishing as of Wednesday of this week, so it is hot off the presses. It is called *The Role of Business in the Modern World*. David became well known in the climate community when he and his colleague Ian Castles from Australia questioned the economic assumptions and methodology behind the scenarios that produce future warming forecasts. It is that that he is going to talk to us about today. I ask you to join me in welcoming David Henderson.

**David Henderson:** Thank you Myron and thank you Jeff. It is an honor and a pleasure to be here today. Thank you for inviting me, and for giving me a chance to put before you a few thoughts on the whole IPCC process. These are the thoughts of a partnership which has become notorious in climate change circles, the partnership of Ian Castles and me, in which I am the junior partner alphabetically and the senior partner in terms of age, while as co-authors we are equals.

Over the past two years Castles and I have put forward, elaborated and defended a joint critique. The main single target of this critique has been the Special Report on Emissions Scenarios (SRES), which forms the starting point of the Third Assessment Report of the Intergovernmental Panel on Climate Change. In relation to the SRES, our main single criticism and our initial single criticism was over their use of market exchange rates rather than purchasing power parity rates in converting one country's currency into another, in measuring differences in GDP and in GDP per head. However, our critique goes beyond the emissions scenarios. It extends to the economic and statistical work of the IPCC as a whole, including the emissions scenarios, and it also goes beyond this particular, rather technical, but quite important issue of the choice of exchange rates and translating GDP in one country into that of another.

Our concern was and is the way in which leading economic and statistical issues have been treated and are still being treated within what I call the IPCC milieu. What do I mean by milieu? I mean the roughly 2,000 authors, contributors and reviewers who have been engaged in preparing the Third Assessment Report published in 2001 and are now engaged in the task of preparing the Fourth Assessment Report, which is due out in 2007. In addition to these active authors, contributors and reviewers, there are also the uncounted bureaucrats from national agencies - chiefly environ-

mental departments and agencies - and also from the IPCC's parent bodies, the United Nations Environment Program (UNEP) and the World Meteorological Organization. These are the people who, on behalf of member governments, supervise and direct the process and join in the extremely important final task of preparing the Summary for Policymakers and agreeing on the final drafts which will go out to publication. So the total milieu is about 3,000 persons in round numbers.

The starting point for what we are saying is that among those 3,000, there are very few people who are used to handling economic and statistical issues and that within that group, the members are not professionally representative and they are saying some things that are rather peculiar.

I will come on to the issues in a moment; just let me give you a word to tell you about the history. Castles and I first voiced our concerns about this over two years ago. We did it in the form of letters, which were received in a perfectly friendly way, to the Chairman of the IPCC, Dr. Pachauri. Castles wrote two letters, and I wrote a further letter backing him up and elaborating the points; and as a result of this, we were invited to a technical meeting of an IPCC group at which we took the chance to meet some of scenario builders and exchange some ideas. And we both had the chance to make five-minute presentations, which, of course, we took. It was nice that they asked us.

Then battle was joined. We put our letters to Pachauri and our presentations on our website, and *The Economist* took up the issue. *The Economist* wrote a piece in their Economic Focus page in February 2003 in which they essentially backed up our criticisms, and they put it rather bluntly. This caused considerable perturbation and anger among IPCC circles. In fact, at one stage, we discovered that the point had been made, of course correctly, that *The Economist* is not a peer-reviewed journal! Peer review, quite reasonably of course, is given great importance in IPCC circles and indeed, our own work had not been peer-reviewed. But the editor of a journal, *Energy and Environment*, to whom I had sent our various papers, wrote to us and said – unsolicited – that she would like to publish these. We said, “Fine, on condition: that you will write to Dr. Pachauri inviting him to arrange on behalf of the IPCC for a response to be made to our criticisms, which you will guarantee to publish” She accepted this condition.

As a result, a series of articles appeared. Those of you who are gluttons for punishment in these matters can read four articles in *Energy & Environ-*

ment for 2003, two by Castles and me, and two in response to us by authors connected with the SRES. Since then, three further articles, all short and readable, have appeared in *Energy & Environment* during 2004. Two of these lend support to our arguments, while the third is by Ian Castles himself, in a paper entitled "The role of the IPCC is to assess climate change, not advocate Kyoto." Castles argues that the IPCC has got very much involved with the question of what should be done right now.

At the end of these exchanges, Castles and I both felt that the gap between us and our opponents was wider than we had realized before we had seen their counter-objections.

Meanwhile, however, the IPCC itself has spoken up in a rather curious way – curious, because the IPCC had formally resolved, reasonably enough, that it would make no official reply to criticisms of the kind we had made, informal criticisms. Notwithstanding this proclaimed self-denial, the Chairman of the IPCC gave a personal press to the Ninth Conference of the Parties meeting of the UN Framework Convention for Climate Change in December 2003, in which, among other things, we were described as "purveyors of disinformation" and as "so-called 'two independent commentators'." And it was said that the point we had made about the need for using purchasing power parity converters rather than market exchange rates was irrelevant and made no more difference than deciding to measure temperature in terms of Celsius or in Fahrenheit units.

Anyway, this remarkable press release was issued by Dr. Pachauri, and you can read it, in a somewhat less impolite form than the original, on the IPCC website where it is one of only two such press releases for the whole of the calendar year 2003

What came of our criticisms and suggestion? Answer: nothing. We argued that the scenarios are sufficiently vulnerable, sufficiently open to criticism, for them not to be taken as the basis for the Fourth Assessment Report (AR4). They *have* been taken as the basis for AR4. There is no intention of doing another scenario exercise on the same scale - understandably, as it is a huge undertaking. But there is no intention either of looking at the SRES with a critical eye in the light of what we and some others, not only us, have said about the weaknesses of the scenarios as they are now. The IPCC has closed ranks, circled the wagons, and said, "Absolutely not. We think the SRES provides an adequate basis."

Our second criticism was, and is, that the whole IPCC milieu should be made more representative of professional thinking in relation to economics and statistics. (And remember the analysis of socio-economic issues and aspects is part of the IPCC terms of reference).

Putting it in a nutshell, what we are saying is that the networks and procedures which have been created within the IPCC, including the scenario-building which the IPCC is resolved to leave substantially unchanged in the Fourth Assessment Review, are more limited, more restricted in their knowledge and competence, and less free from bias and presuppositions than this generally held to be the case. I think we provided evidence for this view. The whole process needs another look. I will explain in a moment just what this could involve.

As to our critique, I would be happy to answer questions about the MER versus PPP issue and why it matters. I will only make one point in relation to that. In the SRES, the starting point was 1990 and GDP per head in that year in four regions of the world. Two of these regions comprised developing countries, one was made up of what are now called the transitional countries, that is, the former Soviet Union/communist countries, and the last and of course the richest region was the OECD countries.

The starting point was the comparative GDP per head in 1990 and this comparison or translation was made, quite wrongly, at market exchange rates. This is contrary to the recommendations of the internationally agreed System of National Accounts of 1993. The SNA clearly states that: "When the objective is to compare the volumes of goods and services produced or consumed per head, data and national currencies must be converted into a common currency by means of purchasing power parities and not exchange rates. Exchange rate converted data must not be interpreted as measures of the relative volumes of the goods and services consumed."

In the SRES, you will find many pages of references, but these do not include the SNA. Since the SRES came out, one of the sources they quote as using market exchange rates has recanted, that is the UNDP Human Development Report. This hasn't stopped one of the three vice-chairmen of the IPCC from quoting exactly the same misleading figures, which greatly exaggerate the gap between rich and poor countries, as though the SNA had never appeared and as though the UNDP and other international agencies hadn't moved to use PPP comparisons.

These authors are actually in a world of their own, in which other ways of looking at the data are not so much deliberately disregarded, I think, as not known. We do not think that this is professionally representative and we think that the whole process ought to be made more informed, more representative and less biased. The bias reflects an attitude, a set of beliefs, which I call “global Salvationism.” This has pervaded UN agencies and other places for a long time now; and it has been greatly reinforced by concerns over the dangers of climate change and what are seen as threats to the planet.

To repeat, the IPCC has closed ranks. It is clear that the scenarios, despite what we think are their faults, will be taken as the basis of the Fourth Assessment Review. It is clear that no new blood, except for a few younger writers within the same milieu, will be brought into the process of preparing, reviewing, and commenting on the papers for the Fourth Assessment Review. We think that it is time for a change to be made and we are not alone

How has this situation arisen? I think the answer is simple. The IPCC process, including economic and statistical aspects, has been left to environmental agencies (and to the UNEP); other departments of state have not been involved. I think this is a serious omission on the part of governments. Ministries of economics and finance around the world have not so far chosen to take a serious interest, or even any interest, in the economic and statistical aspects of the IPCC process.

In November 2003, *The Economist* published a second Focus article on this subject, backing us up. In this article, they echoed a point that Castles and I had made, that the unsatisfactory features of the handling of economic and civil issues by the SRES and the IPCC have not been picked up by a single official in a single finance ministry in a single OECD country (or any other country for that matter), so that it has taken two outsiders to make the point. *The Economist* article began by saying, “You might think that when trillions of dollars worth of global output may be at stake, the issues would have aroused at least a casual interest from ministries of economics and finance around the world. You would be wrong.”

*The Economist* also carried, in early 2004, a nice editorial, entitled “Garbage in, Garbage out: Standing Up for PPPs and MERs.” This gave rise to an interesting controversy, between Richard Cooper of Harvard and Angus Maddison (who would be my nomination for the next Nobel Prize winner in economics).

Our main single recommendation for the future is that there should be wider official interest on the part of member governments. The way that the IPCC has dealt with us shows that independent non-official outside critics carry little weight. People like us can be disregarded. The IPCC is an intergovernmental body. It is supervised by member governments. It responds to the instructions of member governments. The only way it can be induced to change its ways and look at these issues in a less biased, more representative and more informed way is if member governments make it impossible for it to do business as usual any longer.

How is that going to happen? I have a very clear plan for this. The essential point is that both national statistics offices and ministries of economics and finance should now involve themselves. Incidentally when my mate Ian Castles met Dr. Pachuri for the first time, they got on well. In I guess it was July 2002, he said, "Why don't you invite national statistics officers to take part?" And Dr. Pachuri said, "That sounds like quite a good idea." Two and a half years later, after the controversy that has been aroused, it is clear that the IPCC are not going to invite in any new participants. But they could and they should.

Since they are not going to do this of their own volition, nor are their parent agencies, nor are their supervising agencies in the departments of state concerned, the initiative has to come from outside. A very specific way of doing this, which I would be happy to enlarge on if anyone is curious, is through the OECD. Speaking as an old OECD hand, I know exactly how. This kind of widening of the discussion, with broader professional involvement, could be ensured in a timely and effective way, and incidentally in an extremely low-cost way, if only member governments were willing to do it.

Now the member governments are responsive to outside opinion, so let me make a suggestion for you. Whatever roles you are filling, do what you can, directly or indirectly, to persuade the Treasury here, the Council of Economic Advisors, and also the Bureau of Labor Statistics people, who oversee the statistical function as a whole in the US government, to take an active interest in these matters and to bring their own ideas and their own influence to bear in the process. You can act directly if you know any of these officials. You can do it indirectly (and I gather many of you here are staffers) by persuading people in the legislature that these agencies and departments should be involved, so that they will bring pressure on those economic and statistical agencies and departments.

The stakes here are high. The analysis of economic issues in what purports to be a fully representative and informed and meticulously peer-reviewed process does not come up to scratch. The process should be reformed, and this will not happen unless there is wider official participation. So I urge you to take action which independent outsiders like me cannot take. You have a better chance of success in this city than people like me have with the British bureaucracy. Those of you who have seen the brilliant series “Yes, Minister” will realize why I make that statement with confidence, that you have a better chance here in Washington than we do in London.

### **Questions and answers.**

**Question:** There are forty scenarios before the SRES committee about future temperature, all based on economic and population assumptions. Does your criticism apply to all forty, that is, the high-end and low-end projections or does it just apply to some?

**Henderson:** Our criticism of the use of market exchange rates applies to all of them. In their response to us, the team of scenario-builders who wrote their first response said, “You fellows are misrepresenting us because we do use PPP figures as well as market exchange rate-based figures.” We made the point in response that these are not in fact PPP-based scenarios. The reasons for that are really not worth going into here, but for any of you who are at all interested in the technical aspects of this, it is explained in the second of our articles.

All the scenarios take as their starting point, in 1990, these huge overstated gaps between rich and poor. The scenario-builders said, you cannot use purchasing power converters for serious world models, and I think a case can be made out for that view. I am not a modeler myself, but the conclusion I draw is that the kinds of models they are speaking of must be suspect and subject to challenge if they are forced to start from comparisons that are worthless.

We didn’t focus on all the scenarios; we put our argument in a very limited form. If you remember, the final global average temperature projections that appear in the Summary for Policymakers go from 1.4°C to 5.8°C in 2100. These are based on or take as a starting point the cumulative emissions over the whole period, which in turn are derived from the annual estimated projections of emissions. The annual projections of emissions are based on these models which have, we think, this fundamental flaw. We therefore made only one serious point in our initial criticism, which is that

the scenario which gives the lowest cumulative emissions is not genuinely the lowest practical total, because of this tendency to inflate the growth of poor countries, and therefore, as we maintained, to inflate the growth of emissions. If the scenarios as they are now, and which are to be used in AR4, do not represent a reasonable range of possibilities, which is what they claim to, the lower limit should be lower

**Question:** Do you have an estimate of how much lower any of these curves might be?

**Henderson:** Yes and no. We said, if they had started with what we regard as the correct comparison between GDP per head in developing regions and the OECD group, we made our own back-of-the-envelope estimate of what the difference would have been in the growth of developing countries. We then asked what difference that would make for the growth of GDP of the world, and concluded that it would make a substantial difference. They said in response, which I must say surprised me, that it does not follow that if growth were higher, emissions would be higher.

**Question:** I thought that was the underlying assumption that they made in the first place.

**Henderson:** So did I, and I can quote you statements from their report in which they say that emissions are driven by output. But they said in their response to us that if you re-do the whole exercise and come out with a lower rate of growth, that will mean there will be a lower rate of growth in productivity and that will be associated with all sorts of failures to do things that should save energy and save emissions, so you might end up with lower emissions and not higher. I accept the premise, but I don't accept, personally, the conclusion. Professor Warwick McKibbin and two colleagues, in a published article, came up with two conclusions on the subject: one, that it almost certainly does make a difference (Castles and Henderson appear to win that argument), and two, you can't really tell because the SRES scenarios aren't clear enough.

**Question:** For PPP data, is there an agreed-upon approach to measuring purchasing power parity and do you have a good series of data that are agreed upon and are high quality that could be used in this sort of modeling exercise?

**Henderson:** A good question. The answer is yes. PPP estimates are made by statistical agencies. There is a rather modest program – very

modest in cost, compared with the scenario exercise, I would think – called the International Comparison Program which brings together experts plus people from the main international agencies concerned and it has a modest secretariat housed in the World Bank. It has been nearly thirty years since the Program was initiated by a brilliant American statistician and economist called Irving Kravis. Gradually over that time, increasingly comprehensive and increasingly accurate measures of price differences across countries have been put together and systematized. That is still going ahead. Does all this result in figures which could actually be used? Yes: let me refer you to Angus Maddison's book, *The World Economy in Millennial Perspective*. Maddison has PPP-based series for GDP, and GDP per head, for every country in the world for the last fifty years, and, for a good many, further back. (He actually goes way back to the year 1000, which is what makes the book a lot of fun. It is a brilliant piece of work).

Now could you use these data in a model? That is a technical question which I am not fully competent to answer. But a modeling friend of mine, one of my former staff at OECD, said the problem with that is if you wish to construct a social accounting matrix in which international transactions and domestic transactions are merged together to form one system, you can only do that through market exchange rates.

**Question:** I am not an economist, but I am given to understand that the PPP model can be used to compare present day well-being across countries.

**Henderson:** Let me start further back, just to be clear. If you were comparing US GDP between, let's say, General Eisenhower's day and George W. Bush's, you would not take money values. You would want to correct for price *changes* so you would want an inflation-adjusted measure. That is for changes over time. Similarly over space, if you were comparing US GDP today with that of Japan, you would want to correct for price *differences*, between the two countries. That is the purpose of PPP-based comparisons. They yield estimates of comparative output (or real GDP).

**Question:** But for long-term economic modeling related to energy use and emissions are an internationally created commodity, why would you not want to use market rates for energy instead of PPP?

**Henderson:** If you are looking at international trade, you look at the prices at which it actually takes place. If you look at domestic transactions, you look at the prices which actually prevailed domestically, and these can-

not be translated one into another by market exchange rates. If you buy a Big Mac in Peking, it does not make sense to ask what it would have cost if you changed the local currency to US dollars. You make direct comparisons. It is not welfare you are looking at, it is output and expenditure. You can make inferences about welfare from that if you choose, but the starting point is volume.

**Question:** Have you done the analyses to see over the long run how much difference it would actually make in the emissions trajectory modeling if you substituted new energy technology, since energy technology changes yield changes on an order of magnitude?

**Henderson:** If you are measuring energy intensity or emissions intensity in an economy, you do it in domestic terms. If you are comparing it across countries, you must make a PPP adjustment, because only that adjustment makes it possible to compare actual output. You start from output.

**Question:** Exchange rates are published daily in the newspapers. Where does one find information about purchasing power parity? How is it calculated? Is it done by survey of purchasing patterns in typical households?

**Henderson:** You can find information about PPP in OECD publications. To calculate it, you go through an immense and increasingly large list of products, you take a lot of trouble to find out if the products are genuinely comparable, which is no light task, and you try to see what the exchange rate is for each product. Then you weight this for all products, or as many as you can make sensible estimates for. However partial and approximate this is, it yields a better estimate of relative output than market exchange rates, which have no part to play in the measurement of real changes.

**Question:** Do you have such a number at your fingertips? Could you give, for example, the rate of the comparison between the United States and Britain?

**Henderson:** In one of McKibbin's paper that I mentioned, he takes, using Maddison's data, which I mentioned, he takes the ratio of GDP per head in Asia to GDP per head in the European countries. As I remember, the ratio was approximately 40 to 1 in 1990, if you take market exchange rates, for the OECD group as a whole and the Asian countries, the developing countries as a whole, that is, Asia less Japan. If you take purchasing power parity, as in Madison's figures, the ratio is 9 to 1. That is not a trivial difference.

Just to pursue it a little bit further, if you look at the ranking of countries, I can give you an instance. Not long ago I wrote an exasperated letter about a point made in a speech by the leader of the British Conservative Party, Michael Howard. Howard had said that the GDP of China was catching up with that of Britain and we should be concerned. I said that he should know, or at least his speechwriter should know, that this is a misleading statement. The GDP of China today is approximately four times that of Britain. If you want to compare output, you cannot use market exchange rates, which incidentally vary from year to year in a way that real GDP does not. If you want to compare economic growth in the US and the Euro Area over the past few years, how do you handle the rise and then the fall of the dollar? Answer: you disregard it.

**Question:** Thank you for pointing out an error. Most competent economists think you are right. I am curious about your interpretation of the significance of your findings. The issue of climate change is a serious issue requiring a serious policy response. What is your own assessment of how much more analysis will change our perception of the climate issue as a whole and its seriousness?

**Henderson:** Keeping the same carbon concentration and global climate models as before, we think it would make a difference because emissions would be lower, or at least a lower cumulative emissions total would be within the scenario envelope and that would be associated with lower temperatures. As I said, I think the scenario people deny this; they say it actually wouldn't result necessarily in lower emissions, so I will have to refer you to the controversy between us. As I noted, McKibbin and his co-authors have lent us some support.

Let me however repeat that our critique is not just of results. Even if we had no problems with the emissions projections (and we do), even if we felt that they had got to a reasonable place for the wrong reasons or on strange assumptions, we would still be concerned about the analysis. We think that this whole process has not been well handled, or professionally handled, in the way that the IPCC claims. Here peer review is no safeguard: if all the peers are drawn from the same milieu, you can have as many peers as you like. One of the parent bodies of the IPCC, the UNEP, has itself used these grossly misleading comparisons between poor and rich companies in a depressing "global salvationist" document called *Global Environment Outlook 2003*. The agency notes that a thousand people took part in preparing the document. With all these contributors, reviewers and peers, not one

of those thousand seems to have known that what they were doing in making these comparisons had been officially ruled out of court over ten years ago in the SNA. That is not professionally representative.

**Question:** Models, of course, are always subject to tests. So the IPCC starts with, I think, a reference to 1990 when it comes to making policy, for example. Now from 1990 to now, 2004, you could have seen what the relationship is between the emission and the production of carbon.

**Henderson:** Yes, that you could. And indeed it is a worry to me that when the Fourth Assessment Report comes out, it will be 2007. That will be without any revision to the scenarios. By the time the Fifth Assessment Report comes out, it will be 2012 or 2013. Only by then will you have results which could be informed by a revised set of scenarios; and by that time, over twenty years of the period from 1990 to 2100 will have gone by. That is rather a long time not to have any checks.

However, the question of what you can check and what you cannot is a tricky one. I would only say that I would agree with you in this respect: that in considering whether the scenarios should continue to be taken as the basis for AR4, one of the things to be looked at is what has actually happened since 1990.

One other point I should make. If you look at what the IPCC says, and especially its Chairman Dr. Pachauri, (who is very much committed to changes in policy, much more than the terms of reference of the IPCC would seem to allow, though admittedly his member governments don't seem to complain), he makes as a very strong point that the adverse effects of global warming will hit poor countries most. They will hit poor countries most partly for climatic or physical reasons, but also, and especially, because their capacity to adapt is so limited. They are seen as highly vulnerable. Why is their capacity to adapt limited? Because of their poverty. But if you believe the SRES scenarios, they will cease to be poor. Huge increases in income per head will take place in these countries. Yet the effect of projected global warming on them countries is treated by the IPCC as though they were still poor, even though their incomes would be higher than those of the rich countries today. There is an inconsistency here.

**Jeff Kueter:** Thank you, Professor Henderson.

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