

“GLACIERGATE” HIGHLIGHTS IPCC FLAWS

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SUMMARY FOR POLICYMAKERS

The inclusion of erroneous and inconsistent material in the section dealing with Himalayan glaciers has highlighted some serious flaws in how the IPCC creates its highly influential assessment reports. Firstly, the IPCC has a procedure for using documents that are both non-published and non-peer-reviewed but none for material published without peer review. Secondly, no members of the author team for each chapter are responsible for checking the work of other authors.

In theory this checking is left to reviewers but they only comment "according to their own knowledge and experience" and the IPCC appears to take no steps to ensure that suitably qualified people check every word. To a large extent the reviewers' efforts are wasted because IPCC authors are under no obligation to modify the text in accordance with reviewers' comments.

The inclusion of erroneous and inconsistent material in the section dealing with Himalayan glaciers has highlighted some serious flaws in how the IPCC creates its highly influential assessment reports.

In effect, IPCC Lead Authors can say whatever they wish, misquote, miscite, and be as biased and selective as they like because checking is left to reviewers, who act in a voluntary capacity and might not be suitably qualified, and whose word the authors are free to ignore. According to IPCC procedures, the final draft is approved at a session of the relevant Working Group, and it seems highly unlikely that authors will be asked to revise their text at that point.

INTRODUCTION

Chapter 10, section 6.2, of the Working Group II contribution to the IPCC's 2007 report stated that Himalayan glaciers would likely disappear by 2035. This error was discovered in December 2009 and quickly was given the name "Glaciergate" in an echo of "Climategate", the title given to the release of controversial computer files from the University of East Anglia's Climatic Research Unit (CRU) in November 2009.

At first the IPCC refused to accept that it was an error, but after substantial pressure it conceded the point. It tried to pass it off as essentially a typing error, an accidental juxtaposition of digits that took nothing away from the rest of the report.

When "New Scientist" magazine looked at the reference in the text and found it was a WWF document of 2005 that cited a "New Scientist" article of June 1999, the magazine tried to claim some involvement in the sequence of events.

At first the IPCC refused to accept that it was an error, but after substantial pressure it conceded the point.

On 31 August 2010 the InterAcademy Council (IAC) published its review of the IPCC's procedures¹ and implied that the problem was due to authors for failing to take good notice of IPCC reviewers comments.

All three claims are substantially incorrect because the cited information was flawed, it did not come from the WWF document as given by the IPCC report and while reviewers played a small part in the problem the situation highlights basic failings in the creation process for IPCC reports.

INFORMATION SOURCE

The IPCC report incorrectly cited "WWF (2005)"² as its source on information about these glaciers. The correct source of the information is an article in the Indian environmental journal "Down to Earth",³ specifically the 30 April 1999 edition. This predates the "New Scientist" article about Himalayan glaciers by about two months and nullifies that magazine's claim of involvement.

Perhaps the incorrect citation was a genuine accident or perhaps it was to hide the author's extensive plagiarism. Substantial portions of text and a table of data were directly copied from this document into the first draft of the IPCC report, and several quotes in the article were modified to appear as statements of fact (see Appendix). Due to space constraints in the IPCC report the second and final drafts

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¹ "Climate Change Assessments: Review of the Processes and Procedures of the IPCC" online at <http://reviewipcc.interacademycouncil.net/report/Climate%20Change%20Assessments,%20Review%20of%20the%20Processes%20&%20Procedures%20of%20the%20IPCC.pdf>.

² Full details - WWF (World Wildlife Fund), 2005: "An overview of glaciers, glacier retreat, and subsequent impacts in Nepal, India and China." World Wildlife Fund, Nepal Programme, 79 pp.

³ http://119.82.71.32/cover.asp?foldername=19990430&filename=anal&sec_id=7&sid=1.

contained slightly less material than the first review draft and some parts were slightly paraphrased, but the original material is still very evident.

It might also be worth pondering whether the IPCC author was incompetent or simply felt compelled to provide some text regardless of its quality and accuracy. The IAC review pointed out that the IPCC's scoping process lays out the framework of each chapter and that no mechanism exists for modifying that structure during the 2-year period of writing. Maybe blame for the situation lies directly with inflexible IPCC procedures as much or even more than with the individual it chose to write this section of the report.

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ERRORS IN THE MAGAZINE ARTICLE

The article used by the IPCC contained two significant errors or inconsistencies and the IPCC report added a false statement of its own.

The flaws in the DTE article are as follows:

Flaw 1	The rate of retreat for one glacier was calculated across 21 years when it should have been calculated across 121 years. The former gives a rate of retreat of 135.2 m/year and the latter a rate of 23.5 m/year.
Flaw 2	The document says both " <i>Glaciers in the Himalaya are receding faster than in any other part of the world and, if the present rate continues, the likelihood of them disappearing by the year 2035 is very high</i> " and in the next paragraph " <i>The glacier will be decaying at rapid, catastrophic rates. Its total area will shrink from the present 500,000 to 100,000 square km by the year 2035.</i> " No explanation is given for the different predicted states of retreat that appear in these sentences.

The IPCC report faithfully repeated these errors and inconsistencies before adding one of its own.

Flaw 3	The DTE report and the IPCC's first draft stated " <i>The Gangetic basin alone is home to 500 million people, about 10% of the total human population</i> " but the published version of the IPCC report says " <i>The Gangetic basin alone is home to 500 million people, about 10% of the total human population <u>in the region</u></i> " [my emphasis]. Five hundred million is 10% of five billion but the combined population of India and Bangladesh is about 1.4 billion although not all of India is in the Gangetic basin.
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The most significant of the four problems is the one most frequently commented upon, the statement about the glaciers disappearing by 2035.

The comment appears in the DTE article as a quote from a chapter of a report⁴ compiled by ICSI president V.M. Kotlyakov, who also wrote the chapter in question, but the quote was incorrect. Kotlyakov actually said, on page 66 of the report, "*The extrapolar glaciation of the Earth will be decaying at rapid, catastrophic rates - its total area will shrink from 500,000 to 100,000 km² by the year 2350.*"

He is referring not to only the Himalayan glaciers, as the DTE article and IPCC would have us believe, but to "extrapolar" glaciers, i.e. glaciers that are outside the Polar regions. Kotlyakov in fact went on to predict that glaciers would survive in the

Himalayas and in six other regions and incidentally on page 63 of his report he mentions the Himalayan glaciers and says, "*The overall area of glaciers in this region is close to 40,000 km²...*"

In other words the mention of year 2035 came about because DTE failed to accurately quote Kotlyakov, and because the IPCC author copied the claim from the DTE article without verifying its accuracy, the information was carried into the IPCC report.

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FAILURES BY THE IPCC

Writing recently in the UK's "Daily Mail", Fred Pearce, journalist with New Scientist, claimed that the IPCC's mistakes about the Himalayan glaciers were due to chairman Rajendra Pachauri failing to police IPCC authors. This statement came just a few weeks after the InterAcademy Council's review of the IPCC declared that the problem was due to failures in the review process but produced no evidence to support this. Pearce's claim is risible and the IAC Review's only slightly better. In fact the IPCC's failings were due to systemic problems with the procedures for the writing and reviewing of its reports.

The source of the information about the glaciers, "Down to Earth", describes itself as a magazine and has no indication that its articles are subject to peer review. (I am well aware

⁴ V.M. Kotlyakov (1996), "Variation of Snow and Ice in the past and at present on a Global and Regional Scale", IHP-IV Project H-4.1. UNESCO, Paris, online at <http://www.indiaenvironmentportal.org.in/files/106523Eb.pdf>.

that peer-review is too often "pals' review" or review by someone with a vested interest, but let's ignore that for the moment.) The DTE article therefore belongs in the category of "non-peer-reviewed" (a.k.a. "grey literature") as far as the IPCC report is concerned.

Surely, one might think, the IPCC has strict procedures to be followed when using "grey" literature, that someone monitors that these procedures are followed and that the Coordinating Lead Authors of a chapter check the text written by each Lead Author. The reality is no, no and no.

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The IPCC document describing the procedure for handling "grey literature" is titled "Procedure for using non-published / non-peer-reviewed sources in IPCC reports"⁵. Here's an extract of some key passages:

Authors who wish to include information from a non-published/non-peer-reviewed source are requested to:

- a. Critically assess any source that they wish to include. This option may be used for instance to obtain case study materials from private sector sources for assessment of adaptation and mitigation options. Each chapter team should review the quality and validity of each source before incorporating results from the source into an IPCC Report.
- b. Send the following materials to the Working Group/Task Force Bureau Co-Chairs who are coordinating the Report:
 - One copy of each unpublished source to be used in the IPCC Report
 - The following information for each source:
 - Title
 - Author(s)
 - Name of journal or other publication in which it appears, if applicable
 - Information on the availability of underlying data to the public
 - English-language executive summary or abstract, if the source is written in a non English language
 - Names and contact information for 1-2 people who can be contacted for more information about the source.

⁵ Annex 2 to Appendix A to the Principles Governing IPCC Work (online at <http://ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a.pdf>).

And the procedure goes on to say

The Working Group/Task Force Bureau Co-Chairs coordinating the Report will (a) collect and index the sources received from authors, as well as the accompanying information received about each source and (b) send copies of unpublished sources to reviewers who request them during the review process.

Then finally

Non-peer-reviewed sources will be listed in the reference sections of IPCC Reports. These will be integrated with references for the peer-reviewed sources. These will be integrated with references to the peer reviewed sources stating how the material can be accessed, but will be followed by a statement that they are not published.

This procedure looks fine until one realises that it focuses on material that is both unpublished and not peer reviewed and says very little about material that is published without peer-review. In both the title and the first extract given above we see the words "non-published/non-peer-reviewed sources" but does the "/" mean "and" or does it mean "or"?

This procedure looks fine until one realises that it focuses on material that is both unpublished and not peer reviewed and says very little about material that is published without peer-review.

In other words, does it mean documents that are not published and documents that are not peer-reviewed, or documents that are both unpublished and not peer-reviewed? The IAC Review decided that it was the first option and referred to "*unpublished or non-peer-reviewed sources*"⁶ but the statement talks about recording the sources of information and making copies available to reviewers, which would be unnecessary for published documents, and it refers explicitly to "unpublished sources".

Okay, so author used a source that is not peer-reviewed and copied flawed information in to the draft of the section in question. One might imagine that IPCC Coordinating Lead Authors will oversee and check the work of Lead Authors both for what it says and whether the references are correct, but no such task is described in the IPCC document that defines roles and responsibilities⁷. In fact no other authors, or even co-chairs of working groups, are required to police the work of Lead Authors.

⁶ Pg 19 of IAC review report (see earlier).

⁷ "Tasks and Responsibilities for Lead Authors, Coordinating Lead Authors, Contributing Authors, Expert Reviewers and Review Editors of IPCC Reports and Government Focal Points", Annex 1 to Appendix A to the Principles Governing IPCC Work (online at <http://ipcc.ch/pdf/ipcc-principles/ipcc-principles-appendix-a.pdf>).

The checking is left to reviewers who, according to the IPCC document, have the task of commenting "on the accuracy and completeness of the ... content and the ... balance of the drafts". We are also told that these reviewers "will comment on the text according to their own knowledge and experience."

What does the IPCC do to ensure that experts can review every word of the draft chapters? Absolutely nothing, it would seem. Reviewers act voluntarily and if no expert with knowledge of a specific subject contained in the report steps forward then I guess the text either goes without review or is reviewed by someone with less knowledge. The IAC review

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said on this matter, "Even IPCC's extensive review process does not produce critical review comments on every subject covered in the reports" and went on to say "Targeted efforts are needed to reach additional qualified reviewers where necessary, especially on issues that support key conclusions or which are discussed in multiple chapters."⁸

But reviewing IPCC drafts, whether by experts or not, is somewhat futile because the IPCC authors are under no obligation to modify their text according to the reviewers' comments. These authors have total control of the text and apparently can use material published but without peer-review however they wish. There are no controls, no monitoring and no flagging of the use of material published with peer-review and no lodging of copies of that material.

The IAC review tried to claim that reviewers highlighted the problem with the statements about glacier retreat by 2035 but that's somewhat of an exaggeration.

Few enough reviewers commented on this section at all - 4 individuals on the first draft, and 5 individuals and 2 government reviewers on the second draft. Comments for the first draft tended to be supportive rather than highlighting flaws, and no reviewer mentioned the flaws that we saw earlier.

In the second round of review one person commented on the contradictory statements about the predicted state of the glaciers in year 2035 saying "100,000? You just said it will disappear." to which the IPCC author of that section responded cryptically, "Missed to clarify this one".

Another reviewer said that glaciers in the western Karakoram were not thinning and receding, and referred to her own paper of 2004 and another paper of 2005. To this the IPCC author said "Was unable to get hold of the suggested references will consider in the final version". But did the author contact the reviewer to ask for copies of the documents and was this information ever considered? Both seem unlikely.

⁸ Pg 22 of review report (see earlier).

A reviewer from the IPCC Technical Services Unit (TSU) pointed out that the draft contained only one reference for the entire section, to which was "More references added". The consequence seems to be the incorrect reference to the WWF was inserted, albeit to add a vestige of credibility by adding a reference.

Among the very few comments by government reviewers we find the pertinent statement "The text states that 'The receding and thinning of the Himalayan glaciers can be blamed primarily on the global warming due to increase in anthropogenic emission of greenhouse gases'. This statement lacks any reference. Also, the reader wonders, are 'global warming' and 'climate change' interchangeable? Are we still using 'global warming'? Clarification of this would be appreciated."

The bland and dismissive response was "Appropriate revisions and editing made."

These few reviewers' comments are the only comment with any substance and direct relevance. Three allude to dubious comments in the draft text but none specifically pointed to the errors in the passage of text.

The IAC review attempted to blame the IPCC author for failing to "carefully consider thoughtful review comment"⁹ and the review editor for failing to "ensure that reviewer comments were adequately addressed and that controversies are reflected adequately in the text of the report" but both statements are rather superfluous when reviewers' comments are so easily ignored. (The IAC review also comments just after the above text, "This example also points to insufficient evaluation of non-peer-reviewed literature by the Lead Authors" but that's merely one interpretation of what might have happened.)

We've now almost reached the end of the IPCC process and found no impediment to authors saying virtually whatever they like and drawing on very specific documents, peer-reviewed or not, to support their claims. You may have thought, like me, that the approval of the final draft might flag any errors and call for certain corrections, but that's a pious hope.

Final approval of each chapter is the task of a session of the relevant Working Group and even if it wanted to, which I doubt, undertaking detailed checks for errors, inconsistencies and the accuracy of all references would simply be impractical within the time available. It's only the Summary for Policymakers that is approved by a plenary of government representatives and even then the authors are under no obligation to modify their text.

Glacieregate highlights serious flaws in the IPCC process. An IPCC author plagiarised a seriously flawed magazine article and said that it came from a different source.

⁹ Pg 23 of review report (see earlier).

SUMMARY

Glaciergate highlights serious flaws in the IPCC process. An IPCC author plagiarised a seriously flawed magazine article and said that it came from a different source. The reasons for doing this are unclear but the author may have felt compelled to write something regardless of the quality of the source material because the chapter layout, defined by the IPCC "scoping" process, was inflexible. This possible reason aside, the flawed text was not identified within the IPCC authoring team because no-one in that team is responsible for monitoring what authors write, besides which no clear procedure exists for dealing with published but unreviewed material.

IPCC authors are allowed to cite whatever sources they wish and write whatever they wish within a wide scope, safe in the knowledge that their work will not be checked, save by reviewers whose comments they can ignore with impunity.

It is true, as the IPCC has said, that the review process also failed to draw attention to the errors but totally relying on the review is a very poor practice because there is no overall co-ordination

to ensure that suitable experts check every statement and reference. This is pointless anyway because, unlike normal scientific journals, chapter authors are not under any obligation to modify their text according to reviewers' comments but only to provide a written response. The final draft of each chapter seems to be merely rubber-stamped by the session of relevant Working Group.

And thus IPCC authors are allowed to cite whatever sources they wish and write whatever they wish within a wide scope, safe in the knowledge that their work will not be checked, save by reviewers whose comments they can ignore with impunity.



APPENDIX

THE SOURCE OF THE IPCC'S INFORMATION ABOUT HIMALAYAN GLACIERS



For the extracts shown below:

- **DTE** — Indicates the 30 April 1999 edition of "Down to Earth", the Indian environmental magazine (shown left);
- **FOD** — Indicates the IPCC's First Order draft (i.e. first review draft); and
- **IPCC Final** — Indicates the published IPCC Fourth Assessment Report.

DTE: Himalayan glaciers cover about three million hectares or 17 per cent of the mountain area as compared to 2.2 per cent in the Swiss Alps. They form the largest body of ice outside the Polar caps.

IPCC FOD: *Himalayan glaciers cover about three million hectares or 17% of the mountain area as compared to 2.2% in the Swiss Alps. They form the largest body of ice outside the Polar caps and are the source of water for the innumerable rivers that flow across the Indo-Gangetic plains.*

IPCC Final: Himalayan glaciers cover about three million hectares or 17% of the mountain area as compared to 2.2% in the Swiss Alps. They form the largest body of ice outside the polar caps and are the source of water for the innumerable rivers that flow across the Indo-Gangetic plains.

DTE: The 15,000-odd Himalayan glaciers form a unique reservoir which supports mighty perennial rivers such as the Indus, Ganga and Brahmaputra which, in turn, are the lifeline of millions of people. The Gangetic basin alone is home to 500 million people, about 10 per cent of the total human population.

IPCC FOD: *About 15,000 Himalayan glaciers form a unique reservoir which supports perennial rivers such as the Indus, Ganga and Brahmaputra which, in turn, are the lifeline of millions of people. The Gangetic basin alone is home to 500 million people, about 10% of the total human population.*

IPCC Final: About 15,000 Himalayan glaciers form a unique reservoir which supports perennial rivers such as the Indus, Ganga and Brahmaputra which, in turn, are the lifeline of millions of people in South Asian countries (Pakistan, Nepal, Bhutan, India and Bangladesh). The Gangetic basin alone is home to 500 million people, about 10% of the total human population in the region.

DTE: "Glaciers in the Himalaya are receding faster than in any other part of the world and, if the present rate continues, the likelihood of them disappearing by the year 2035 is very high," says the International Commission for Snow and Ice (icsi) in its recent study on Asian glaciers. "But if the Earth keeps getting warmer at the current rate, it might happen much sooner," says Syed Iqbal Hasnain of the School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

IPCC FOD: *Glaciers in the Himalaya are receding faster than in any other part of the world (see Table 10.12 below) and, if the present rate continues, the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps getting warmer at the current rate.*

IPCC Final: Glaciers in the Himalaya are receding faster than in any other part of the world (see Table 10.9) and, if the present rate continues, the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps warming at the current rate.

DTE: "The glacier will be decaying at rapid, catastrophic rates. Its total area will shrink from the present 500,000 to 100,000 square km by the year 2035," says former icsi president V M Kotlyakov in the report "Variations of snow and ice in the past and present on a global and regional scale" ...

IPCC FOD: *The glaciers will be decaying at rapid, catastrophic rates. Its total area will shrink from the present 500,000 to 100,000 km² by the year 2035.*

IPCC Final: Its total area will likely shrink from the present 500,000 to 100,000 km² by the year 2035 (WWF, 2005).

DTE: Scientists had expected the five-kilometre-long Dokriani Bamak glacier in Himachal Pradesh to grow after a severe winter in 1997. Instead, it retreated by 20 m in 1998, compared to an annual average of 16.5m over the past five years. "This is a phenomenal melt rate," says Joseph Gergan,

IPCC FOD: *The five-kilometre-long Dokriani Bamak glacier in Himachal Pradesh that feeds the Ganges retreated by 20 m in 1998 in spite of a severe winter in 1997, compared to an annual average of 16.5 m over the past five years. This is a phenomenal melt rate.*

IPCC Final: – no mention –

DTE: The Gangotri glacier, too, has been receding alarmingly in recent years, says Bahadur. “From observations dating back to 1842, the rate of recession of the snout — the point at which the glacier ice ends — has been found to have increased more than two-and-a-half fold per year,” he says. Between 1842 and 1935, the glacier was receding at an average of 7.3m every year, whereas between 1935 and 1990, the rate of recession had gone up to 18 m a year. “The increase can be ascribed in part to the phenomenon of global warming and also to the environmental impact of increasing human activities in the Himalaya,” he says.

[NB. The journal article is headlined: "The 25-km long Gangotri glacier...", not 30.2km as appears below.]

IPCC FOD: *The 30.2 km long Gangotri glacier, too, has been receding alarmingly in recent years. From observations dating back to 1842, the rate of recession of the snout — the point at which the glacier ice ends — has been found to increase more than two-and-a-half fold per year (Fig. 10.6). Between 1842 and 1935, the glacier was receding at an average of 7.3 m every year, whereas between 1935 and 1990, the rate of recession has gone up to 18 m a year.*

IPCC Final: The 30.2 km long Gangotri glacier has been receding alarmingly in recent years (Figure 10.6). Between 1842 and 1935, the glacier was receding at an average of 7.3 m every year; the average rate of recession between 1985 and 2001 is about 23 m per year (Hasnain, 2002).

DTE: **"But, in the long run, the melting of glaciers also means drying up of rivers," says Hasnain. "Most of the rivers in northern India originate from glaciers. About 70 to 80 per cent of the water in these rivers come from snow and glacial melts, and the rest from monsoonal rains." Does this mean that the Ganga, Indus, Brahmaputra and the innumerable rivers that criss-cross the entire northern Indian plain will become seasonal rivers in the near future?**

IPCC FOD: Most of the rivers in northern India originate from glaciers. About 70 to 80% of the water in these rivers comes from snow and glacial melts, and the rest from monsoonal rains. Does this mean that the Ganga, Indus, Brahmaputra and the innumerable rivers that criss-cross the entire northern Indian plain will become seasonal rivers in the near future as a consequence of climate change?

IPCC Final: The current trends of glacial melts suggest that the Ganga, Indus, Brahmaputra and other rivers that criss-cross the northern Indian plain could likely become seasonal rivers in the near future as a consequence of climate change and could likely affect the economies in the region.

Cover photo of Himalayas by Desmond Boylan (Reuters)
as posted on abc.net.au.



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