

BRIEF ANALYSIS

No. 378

For immediate release:

Monday, November 12, 2001

Science vs. Spin: Global Warming Redux

By Kenneth Green

Every five years the United Nations Intergovernmental Panel on Climate Change (IPCC) publishes a massive three-volume report on global climate change. The first volume of the newest publication, the *Third Assessment Report*, reviews the immense body of climate change literature and attempts to present a consensus view of the current understanding of the scientific basis of climate change.

Each new IPCC assessment begins with both technical summaries and a "Summary for Policy-Makers" that attempt to condense the full assessment into language suitable for moderately educated readers. Condensing a 700-page report into a 20-page summary requires selectivity. Authors of the "Summary for Policy-Makers" argue that substantial involvement of the assessment's lead authors guarantees the summary is faithful to the underlying reports.

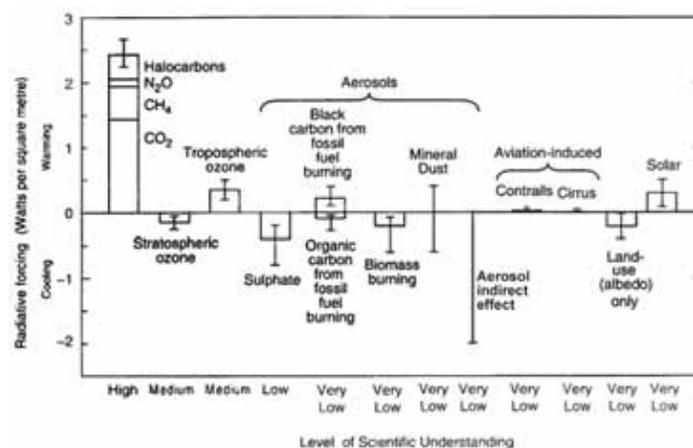
However, critics have observed that summaries for policy-makers have tended to downplay uncertainty, emphasize human culpability and generally provide only information supporting policy options favored by the United Nations — the immediate adoption of international agreements to reduce the emissions of "greenhouse gases." Important information that is given short shrift in the summary is highly relevant, particularly if one is open to other approaches that might be superior to global treaties forged under the auspices of the U.N.

Misleading Policy-Makers and the Media. Compared with previous reports of the IPCC, the new "Summary for Policy-Makers" suggests a higher range of potential warming by 2100 and a higher sea-level rise as well. Global average temperature in the new report is estimated to increase from a low of 1.4°

centigrade to a high of 5.8° (2.5° to 10.4° Fahrenheit) by 2100. Predicted sea-level increases under the new scenarios range from 9 to 88 centimeters (4 inches to 3 feet) by 2100.

The summary says, "Confidence in the ability of models to project future climate has increased." But, as the figure shows, scientific understanding of eight of 12 forces related to climate change since 1750 is classed as "very low." The assertions in the new summary are not based on newer, higher-quality extrapolations of recent climate trends. Rather, they are based on made-up "scenarios" published in a separate "Special Report on Emission Scenarios" filtered through grossly simplified climate models after the full report had already been through expert review.

Level of Scientific Understanding of Forces Causing Climate Change Since 1750



Source: IPCC Summary for Policy-Makers.

The new "worst case" scenario — 10.4° and 88 cm sea-level rise — includes questionable assumptions not reviewed by the main IPCC expert review panel. These include:

- There will be no mid-course programs to decrease greenhouse gas emissions implemented between now and 2100;
- Global deforestation will not abate;
- Developing countries will attain levels of development and energy use comparable to those of developed countries;
- World gross domestic product will increase tenfold by 2100;
- Most energy production will be from coal

and oil, ignoring the increasing reliance on cleaner-burning natural gas and improving technologies such as fuel cells and offshore wind power;

- Carbon dioxide emissions will nearly quadruple by 2100; and
- Methane emissions will more than double by 2100.

Presenting Information Out of Context. Increases in temperature are presented without pointing out that:

- The majority of observed warming since 1860 happened from 1910 to 1945 and was not attributable to human activities — and only an undefined portion of the warming since 1945 is attributable to

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human energy use resulting in increased greenhouse gas emissions.

- Twice as much of the observed warming since 1860 appears as warming of nighttime low temperatures in the coldest parts of the Earth, rather than increases of daytime highs in the warmer parts of the Earth, a key point in understanding the threats posed by future warming since more people die from wintertime cold than summertime heat.
- The clear difference between ground-level temperature readings (which are increasing) and high-altitude readings from balloons and satellites (which are unchanging) reveals a critical weakness of the climate models used to predict future impacts of global warming. These differences are not adequately addressed in the "Summary for Policy-Makers." If climate models cannot accurately portray the way heat moves between atmospheric layers, their fundamental validity is questionable.
- Evidence that more severe temperature shifts occurred before humans existed suggests that recent changes could be of entirely nonhuman origin.
- CO₂ accounts for only about 4 percent of the greenhouse gases in the atmosphere and, at most, humans contribute less than 5 percent of the CO₂ cycling through the climate.

Misrepresenting Ice and Sea-Level Data. Decreases in the extent of global ice (glaciers, icebergs, etc) and snowfall trends are presented as indicating that human activity is heating up the Earth without explaining that:

- Measurements of historical snow depth and extent are extremely limited;
- Glaciers in some regions are growing, not shrinking;
- Reductions in snow and ice are not happening during seasons in which increased warmth has actually been observed;
- Estimates of 1 to 4 cm of shrinkage per year in Arctic sea ice thickness are highly uncertain because the sampling of evidence is too small to be conclusive; and
- Antarctic sea ice has been stable or expanding since the 1970s.

Furthermore, evidence of a sea-level rise of 10 cm to 20 cm during the 20th century is presented as indicating that human activity is heating the Earth despite the fact that:

- Sea level has been rising for nearly 20,000 years, a rise totaling about 120 meters since the last Ice Age;

- The rate of sea-level rise fluctuates and does not always track observed warming;
- The pace of sea-level rise did not increase during the 20th century, despite rising global average temperatures; and
- While sea level rose between 100 and 200 millimeters during the 20th century, the body of the report attributes only 24 to 64 millimeters of sea-level rise to human activity from 1910 to 1990.

Questionable Assumptions about Human Involvement. While both the summary and the body of the IPCC report state that human activities "continue to alter the atmosphere in ways that affect the climate system," the summary omits the caveats and uncertainties laid out in the body of the report. In addition, it downplays the fact that this conclusion, unlike those regarding actual climate changes, is based on developing theories and highly uncertain computer models, not on a measurable cause-and-effect relationship between a particular activity and global climate. The summary also fails to account for the fact that, like global average temperatures, greenhouse gases including both carbon dioxide and methane rose and fell before human beings appeared. Furthermore, at least two of the human activities expected to *contribute* to future warming are pollution-reduction initiatives: reducing sulfur aerosols and eliminating the use of ozone-destroying chlorofluorocarbons.

Individual computer models produce very different estimates of the extent of the human role, largely because of so many other uncertainties about such factors as the role of water vapor, cloud formation and aerosols in climate change.

Conclusion. The *Third Assessment Report* of the Intergovernmental Panel on Climate Change will serve as the touchstone of climate change debate for the next five years. Policy-makers are unlikely to read such voluminous technical reports and thus are likely to depend heavily on the summary to inform their policy-making process. Unfortunately, the IPCC summary fails to do justice to the technical reports, downplaying uncertainty, minimizing discussion of trends that disfavor global greenhouse gas reduction treaties, playing up human culpability and playing down possible non-human causes of observed climate change.

Dr. Kenneth Green is Chief Scientist at Reason Public Policy Institute, and was an expert reviewer for the Working Group I and Working Group II volumes of the IPCC Third Assessment Report.

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