Policy Update 12

WEIGHING THE WORDS: GETTING THE BIAS OUT OF ENVIRONMENTAL COMMUNICATIONS

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Environmental science is a highly complex field that draws on the core sciences of biology, physics, and chemistry to yield holistic understanding of natural systems. Environmental policy adds another layer of complexity, drawing on engineering, decision theory, law, and the study of public policy in general.

For environmental policy to achieve the practical goal of a more healthful environment, policies must be based on accurate information that faithfully reflects the complexity of environmental, health, and safety problems.

Claims of bias have long been a problem in landmark environmental reports put forward by groups such as the Intergovernmental Panel on Climate Change (IPCC), the United States Environmental Protection Agency (EPA), and other governmental entities.[1] Similar charges have also been lodged against environmental science textbooks.[2]

Recently, the subject of bias came to a head in the state of Texas, when Texas Public Policy Foundation and Texas Citizens for a Sound Economy challenged proposed science textbooks for grades six through eight.[3]

Some might claim that bias is in the eye of the beholder, or that there is no good way to evaluate long documents or textbooks for bias in any rigorous, objective way. But this is not true. Thinkers from Aristotle onward have developed well-defined systems for identification of bias and fallacy.

Ostensibly unbiased environmental publications, whether landmark government reports or environmental textbooks intended to educate the next generation of possible public policymakers, should be thoroughly and quantitatively evaluated for the degree of bias and fallacy in their content. Such an analysis should include the identification and quantification of the classical fallacies and biases that undermine "critical thinking," such as:[4]

- ***Certainty Bias***: Over- or under-representation of the true state of certainty regarding a given claim, as determined from the weight of available evidence;

- ***Selectivity Bias***: Selective use of data or timeframe, or inclusion of available policy options or ramifications, to support a point that would not be supportable using the full spectrum of available data;

- ***Order Bias***: Using the order in which claims are presented to emphasize their positivity or negativity;

- ***Qualifier Bias***: Selective use of qualifiers ("may be," "might be," "definitely," etc.) to push the reader in one direction or another;

- ***Imagery Bias***: Selective use of imagery to influence the readers' emotional associations with the data;

- ***Perspective Bias***: Selecting perspectives (timeframes, arbitrary geographic areas, etc.) for interpreting or presenting information that make something seem different than it would be in larger or longer perspectives;

- ***Unjustified Conclusions***: Conclusions drawn improperly from available data, or drawn from non-existent data;

- ***Static Perspective***: Presenting certain situations as static when they are dynamic, or vice versa;

- ***False Cause***: Attributing an effect to a certain cause without substantiation;

- ***Personal Attack***: Assigning labels to people in order to discredit their point of view, i.e., "climate skeptics," "pro-industry groups," "radical environmentalists," etc.;

- ***Appeal to the Masses***: The invocation of large numbers of people to lend authority to a concept the validity of which is not determined by consensus (i.e., "the majority of scientists think that…"); and

- ***Appeal to Authority***: The citing of a high-profile expert (whether in the same field, or another field) as the validation of a concept, rather than the citation of the underlying evidence for that concept.

Such biases and fallacies can be identified clearly by the practiced eye, and can be handled quantitatively, validated objectively, and used to establish "cut-points" for acceptability.

There are many ways that such biases could be quantified, and the best method will depend on the nature of the documents involved. In the simplest case, bias levels could be expressed as a percentage of declarative statements that are biased, paired with the direction of that bias, and indicating whether the work favors or opposes certain conclusions. Using this approach, one might summarize one's findings this way: "Of all ***declarative*** statements made in this work, X percent were found to suffer from one or another type of bias or fallacy, creating an overall bias in the direction of the Y point of view."

But not all statements are of equal import. Statements that are based on implicit or explicit assumptions, that draw conclusions, or make recommendations, are arguably more important for use in identifying bias than are simple statements of fact or scientific principles. Thus, an alternate approach to quantifying bias might focus in on those particular types of sentences, producing a conclusion in this form: "Of all ***conclusive*** statements made in this work, X percent were found to embody one or another type of bias or fallacy, creating an overall bias in the direction of the Y point of view."

For long documents or environmental textbooks, summaries alone might be evaluated, or random sampling could be done through the document to establish rougher, but still valid

estimations of bias or fallacy. In these cases, the nature of the sampling should be clearly explained along with the findings.

While this or a related approach can produce an objective, verifiable measure of bias, what constitutes an acceptable level of bias is not an objective decision. That decision must ultimately be determined and defended by those who intend to use the document, or those who produced it.

The bias evaluation approach described here might prove particularly useful for those pursuing the elimination of bias from environmental reports and textbooks, particularly those documents expected to be unbiased presentations of the scientific state of knowledge.

Eliminating bias in environmental textbooks and official summary reports by government agencies has garnered increased attention in recent years, at both federal and state levels. This is a positive trend, since minimizing bias and fallacy in documents that will ultimately guide environmental policy can only improve understanding of the issues that will ultimately guide environmental policy development.

ABOUT THE AUTHOR

Kenneth Green is Chief Scientist at Reason Public Policy Institute, and has served as an expert reviewer on several prominent reports of the Intergovernmental Panel on Climate Change. He has reviewed environmental textbooks for an independent publisher of science textbooks for middle-school students, and is under contract to write a textbook on global warming for the same audience.

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[1] Richard A. Kerr, "Rising Global Temperature, Rising Uncertainty," News Focus, *Science,* vol. 292, April 13, 2001; Richard S. Lindzen, "Testimony of Richard S. Lindzen before the Senate Environment and Public Works Committee," Washington, D.C., May 2, 2001; Brent Bozell, "Flat Earth Environmental Reporting," *Creators Syndicate,* July 10, 1997.

[2] Michael Sanera, "Environmental Education, Promise and Performance," *Canadian Journal of Environmental Education,* vol. 3, Spring 1998 pp. 9–26.

[3] R.A. Dyer, "State Told Proposed Textbooks Biased, Flawed," *Star-Telegram*, September 7, 2001; Duggan Flanakin," Texas Environmental Science Middle School Textbook Review," (San Antonio: Texas Public Policy Foundation, 2001).

[4] Where "bias" refers to an objectively verifiable frequency of one-sided presentation, and fallacy refers to objectively verifiable violation of one or another tenet of logic or critical thinking. This list does not represent every known form of bias or fallacious reasoning and is not intended to be a definitive treatment of these issues. The biases and fallacies listed here are, however, those that the author has seen to predominate in environmental publications. For more on logical fallacies, see Don Lindsay, "A List of Fallacious Arguments, www.don-lindsay-archive.org/skeptic/arguments.html, October 19, 2001.

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