

GDP accounting is an indicator of the size of an economy, not necessarily of human welfare (9), and has been overlooked as an indicator of biodiversity loss.

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#### Response

**AS BRAUER NOTES, IT IS WIDELY ACKNOWLEDGED** that GDP is a flawed and distorted index. However, our Policy Forum was not a panegyric for GDP, but a “call to arms” to develop appropriate indices of biological diversity that are both scientifically and statistically sound and receive as much attention in the media and the minds of the public as GDP or the Dow Jones Index. This in turn leads us to dismiss the use of GDP as an index of biodiversity loss, as proposed by Czech *et al.* Although it is discouraging that GDP has a strong correlation with rates of biodiversity loss, we do not think that this qualifies it as an index for monitoring the state of environmental degradation. On the contrary, the same flaws that undermine its utility as an index of a nation’s economic well-being will only be compounded when it is used as an index of environmental stress.

Inverse GDP used as an index of environmental damage instantly creates the impression that environmental protection and economic progress act in direct opposition to each other. We believe that this is not necessarily the case; the Millennium Development Goals and the Convention on Biological Diversity 2010 (CBD2010) goals directly imply that we need to find ways to develop

the global economy while also protecting the environment and the welfare of those whose health and economic well-being are most dependent on the ecosystem services supplied by the natural environment. Although slowing economic growth may be desirable in wealthy countries (as Czech *et al.* argue), we believe that in poorer parts of the world this would be not only impractical but morally unacceptable.

Plainly, the principal criticism of GDP stems from the fact that it amalgamates a variety of processes into a single figure. This will also be a problem with any single index we propose to monitor biodiversity; a possible way to reduce this criticism would be to develop a set of indicators attuned to different aspects of ecosystem health. Comparing the



**An Amazonian fisherman displaying a catfish for sale. Inverse GDP should not be used as an index of biodiversity because in poorer parts of the world economic development consistent with preservation of biodiversity must occur.**

relationship between such indices with GDP and other indices of economic progress, at a range of geographic scales, will lead to the development and testing of environmental indices that provide important insight into the health of the planet. The regular reporting of their changing value can play a crucial role in influencing public policy.

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## Memo to NASA: Finish What You Start

**NASA’S UPCOMING DECISIONS ON THE FATE** of the Hubble Space Telescope and other valuable scientific satellites and probes (“Confusion at the space agency,” D. Kennedy, Editorial, 11 Mar., p. 1533; “NASA plans to turn off several satellites,” A. Lawler, News of the Week, 11 Mar., p. 1541) illustrate a fatal flaw in NASA’s reasoning and planning. The loss of data and knowledge from those spacecraft has been and will be caused by over 30 years of NASA’s dedication to starting projects and not finishing them. NASA is basically a propulsion agency: great on launching spacecraft, poor on following up on their advantages. Usually, there is not enough money to analyze all the data that are collected, the spacecraft may not be allowed to complete their missions, and using working spacecraft is given lower priority than launching new ones. As one who was in on the beginning and the continuation of the Landsat program, I feel I can give voice to my concerns.

If I could give one piece of advice to the new Administrator of NASA, it would be: “If you’re going to start a job, finish it!”

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## The End of a Chilean Institute

**THE CHILEAN GOVERNMENT AND THE WORLD** Bank launched the Millennium Initiative in 1999, to promote the development of “world-class” scientific centers in Chile. As a result, three Millennium Institutes have been created since 2000 for 10-year terms, subject to periodic evaluations.

The Chilean government has recently decided against the renewal of the Millennium Institute of Cellular Biology and Biotechnology (CBB). This decision is particularly surprising, because the CBB has been widely recognized internationally as one of the most successful and productive centers of excellence in Chile and as a successful example of scientific initiatives in developing countries. The Institute has published over 200 scientific papers in journals indexed by ISI, generated 25 Ph.D. graduates, and carried out an outstanding program on science education targeting the high school system in Chile.

Some of us, as members of the Institute’s Advisory Panel, have given courses, performed collaborations, or attended scientific meetings at the Institute. We have been impressed by the excellent level of science at the CBB.

It seems a paradox that the Chilean government has terminated support to the CBB, even though the Chilean Congress has already approved the funds for the Institute to continue. The interruption of CBB activities would be a distressing sign to the international scientific community and would cast doubt on the stability of long-term scientific cooperation with Chile, with negative consequences and impact for a country that has made a significant effort to promote science and international scientific cooperation.

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#### TECHNICAL COMMENT ABSTRACTS

### Comment on "Energetics of Hydrogen Bond Network Rearrangements in Liquid Water"

A. Nilsson, Ph. Wernet, D. Nordlund, U. Bergmann, M. Cavalleri, M. Odelius, H. Ogasawara, L.-Å. Näslund, T. K. Hirsch, L. Ojamäe, P. Glatzel, L. G. M. Pettersson

Smith *et al.* (Reports, 29 October 2004, p. 851) reported a temperature-dependent x-ray absorption study on liquid water. We argue that both the measurement and the data analysis have serious shortcomings. The spectra are affected by experimental saturation effects, and the analysis suffers from incorrect assumptions for x-ray absorption spectroscopy. Full text at [www.sciencemag.org/cgi/content/full/308/5723/793a](http://www.sciencemag.org/cgi/content/full/308/5723/793a)

### Response to Comment on "Energetics of Hydrogen Bond Network Rearrangements in Liquid Water"

J. D. Smith, C. D. Cappa, B. M. Messer, R. C. Cohen, R. J. Saykally

We demonstrate that the spectra reported in our study are free from artifacts induced by saturation effects. Furthermore, our analysis of the energetics of hydrogen-bond rearrangement is in perfect agreement with temperature-dependent populations previously reported by Wernet *et al.*

Full text at [www.sciencemag.org/cgi/content/full/308/5723/793b](http://www.sciencemag.org/cgi/content/full/308/5723/793b)

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