$25 billion (1% of the world's annual energy budget) should be spent on research and development to remove any lingering doubts.

This may seem an expensive insurance premium, but no price can realistically be set on the importance of confronting what is likely to be the major challenge of the 21st century. The recent experience of California suggests what consequence to an energy-dependent world could result from our collective failure to meet this challenge.

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References and Notes

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Health Impacts of Climate Change

ON 3 APRIL, THE NATIONAL ACADEMY OF Sciences (NAS) released a report on the potential impacts of climate change on infectious diseases entitled "Under the Weather: Climate, Ecosystems, and Infectious Disease" (*1*). News articles on the report implied that the study findings contradict or at least are much less alarming than those recently reported from the Intergovernmental Panel on Climate Change (IPCC) (*2*) (released 18 March). This general conclusion is inappropriate, for a number of reasons.

First, the two studies had a different purpose. The NAS study is foremost an assessment of the capability of predictive models and early warning systems to forecast infectious diseases. The main purpose of the IPCC study was to review the peer-reviewed and published literature on the entire range of potential health impacts of global warming and to assess both the severity of that threat and the state of the science about human health impacts from climate change.

Second, the scope of the two reports is significantly different. The NAS study centers on infectious diseases only. IPCC experts, on the other hand, reviewed studies that examined the actual (that is, historically observed) and potential impacts of climate variability and change on many aspects of human health, including heat stress, air pollution, health threats from storms and floods, and infectious diseases.

Third, the IPCC emphasis on vulnerability and adaptation is stronger than that in the NAS report. Both the IPCC and the NAS reports, however, go beyond a mere discussion of the direct links among climate, the environment, and health. Each report places potential health impacts into the broader context of societal capacity to cope with health challenges of any source.

Having clarified the differences between the two reports, it is instructive to compare the key findings of both, revealing significant congruence. The health experts writing the NAS and IPCC reports agree that a changing climate affects the spread of infectious diseases and that the geographic range of infectious diseases such as malaria and dengue fever might expand. Both reports note that vulnerability and the ability to cope with the threat from infectious diseases ultimately determine the severity of the impact on human populations. They also acknowledge that, although we know that climate change affects the spread of infectious diseases, the world health community cannot yet predict when or where exactly this will happen or how large the threat of these diseases will be to particular populations.

However, there is a strong sense in both reports that the uncertainties related to the health impacts of climate change warn us that we should take the issue seriously. Neither suggests that the inability to predict exactly when and how infectious diseases will spread should be used as an excuse for inaction on human health or climate change. Mitigating climate change through emission reductions will reduce a significant source of health stressors, while limiting the extent to which disease vectors and agents are forced into unknown territory. Likewise, common sense preventive actions such as better sanitation, access to health care, and new vaccines and drugs will strengthen the capacity of populations to contain the spread of infectious diseases or to treat them more effectively when they occur.

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Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted by e-mail (science_letters@aaas.org), the Web (www.letter2science.org), or regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

icis.unimaas.nl; [2]Global Environment Program, Union of Concerned Scientists, Cambridge, MA 02238, USA. E-mail: smoser@ucsusa.org

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Describing the Release of Sequence Data

RICHARD W. HYMAN'S LETTER ENTITLED "Sequence data: posted vs. published" (2 Feb., p. 827) is not in accord with the data release policies adopted by the National Institutes of Health and the U.S. Department of Energy. That policy statement begins, "[The National Human Genome Research Institute's] policy for release and deposition of DNA sequence data was devised to make sequence data available to the research community as soon as possible for free, unfettered use" (*1*).

Nowhere in that document is there any implication that sequencing centers would retain veto power over the use of prepublication data in academic publications. Just the opposite. The purpose of prepublication release is to allow the academic community to make full use of genome sequence data in all aspects of research as soon as possible. That such work should result in academic publication is the goal of the data release policy. Sequencing centers uncomfortable with this data release policy were certainly free to seek funding through other sources, and at least one center did just that, with great success.

> **"[P]republication release...allow[s] the academic community to make full use of genome sequence data...as soon as possible."**

I disagree with Hyman's statement that it is easy to recognize prepublication data in GenBank. GenBank policy dictates that only the depositing authors can modify a sequence entry, and many authors fail to update entries to reflect progress in the peer review process. It is difficult for database providers to make these updates because the title, authors, and journal may change in the course of manuscript review and resubmission. Many entries in GenBank are annotated as "unpublished submission," when in fact papers describing the data by the authors who deposited the sequence have appeared in the peer-reviewed literature.

Sequence finishing is an ongoing process, and we will undoubtedly be publishing revisions and additional annotations on the human genome for many years. To delay publication of derivative work until a center signs off on a final version is not feasible, because there will not be a fully finished human genome sequence for many years to come, if ever. Particularly for sequence in the draft phase, the data are a moving target. It is therefore important that publications based on draft sequence cite the source and date of the entry.

Finally, submission of data to GenBank is a form of electronic publication (*2*). Data appear in GenBank only with the consent of a submitting author or through journal scanning. GenBank entries establish publication date for patent purposes, and GenBank accession numbers are routinely used as a mecha-