

# Questions and Answers about Climate Change Futures Health, Ecological and Economic Dimensions

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## **Q: What is the Climate Change Futures (CCF) project?**

**A:** The study is entitled “Climate Change Futures: Health, Ecological and Economic Dimensions.” This is a three-year (2003-05) effort by the Center for Health and the Global Environment at Harvard Medical School, sponsored by Swiss Re and the United Nations Development Programme. The Climate Change Futures (CCF) study is a multi-stakeholder scenario-building exercise that examines the health, ecological and economic dimensions of a changing climate. This international, multidisciplinary project is designed to explore trends, examine specific diseases and extreme events, formulate scenarios and forecast future consequences based on climate projections and development trajectories.

## **Q: What is the premise of the CCF study?**

**A:** Concerns about climate change are often placed into the distant future. But the health, environmental and financial impacts of climate instability are already affecting many nations and economies. Climate change’s cascading impacts act through multiple pathways, including:

1. Directly, via heat waves and respiratory ills and encouraging the spread of many infectious diseases.
2. Indirectly, via diminished productivity of natural and managed ecosystems – forest, agricultural and marine – and the consequences for essential biological resources.
3. The emergence and distribution of infectious diseases in plants, animals and people.
4. The rising costs of extreme weather for travel, trade, tourism, infrastructure and insurance – in both developing and developed nations.

There are, however, enormous business opportunities in the clean energy transition for improving public health, protecting ecosystem integrity, stimulating the economy, while helping to stabilize the climate. Unfortunately, little has been done to integrate our current understanding of climate change and ecosystem degradation with projections for public health, the value of biological resources and the long-term security of investments. Climate Change Futures was conceived to address and fill this gap in understanding.

## **Q: Who conducted the research?**

**A:** This research was carried out by a team of international experts with input from economists, industry leaders and NGO representatives. The principal authors were Dr. Paul Epstein, M.D., M.P.H., Associate Director of the Center for Health and the Global Environment at Harvard Medical School, and Dr. Evan Mills, staff scientist at the US Department of Energy’s Lawrence Berkeley National Laboratory (LBNL), with support from the scientific group including physicians, veterinarians, biologists, botanists, ecologists and climatologists.

## **Q: How and why did Harvard, Swiss Re and UNDP come together to develop this project?**

**A:** The CCF project stemmed from a common concern of the Center for Health and the Global Environment at Harvard Medical School, Swiss Re and the United Nations Development Programme. This concern was centered on the emerging threats to health from climate change, including the implications of diseases of humans and the degradation of Earth’s life-support systems for economies and development.



The Center for Health  
and the Global Environment  
Harvard Medical School



**Q: What are the major findings of the study?**

**A:** Climate change is a catalyst for rising costs for human health, the global economy and the Earth's life-supporting ecosystems. Across the board, impacts of climate change may lead to changes that can bring about large-scale devastation. Some key points that demonstrate this assertion include:

1. Warming and extreme weather affect the breeding and range of disease vectors such as mosquitoes responsible for malaria, which currently kills 3,000 African children a day, and West Nile virus, which cost the United States \$500 million in 1999.
2. Lyme disease, the most widespread vector-borne disease in the United States, will expand its range in North America as winters warm and ticks proliferate. Models project that the area suitable for tick habitat will quadruple by the 2080s.
3. The report includes findings that ragweed pollen and some soil fungal growth are stimulated by increasing levels of carbon dioxide, and that this effect of CO<sub>2</sub> on plants may be contributing to the rising prevalence of asthma.
4. An analysis of heat waves projects that if an event similar in magnitude to that which struck Europe in summer 2003 happened in the United States, it would cause more than 3,000 deaths in New York City alone.
5. Abundant "small-scale" events are as important as the more rare catastrophic events. For example, forest fires, encouraged by drought and fueled by trees killed by pest infestations that respond favorably to a warmer climate, have doubled in terms of acres burned since the 1940s and cost \$6.5 billion from 1970-2004 in insured losses.
6. Twenty-seven percent of coral reefs are dead and 60 percent are in danger. Further ocean warming and disease could cause reefs to collapse worldwide in the coming decades.

**Q: What do the findings mean for business?**

**A:** From a business perspective, being able to understand and project future climate changes will enable insurance and reinsurance companies to be smarter in allocating risk capacity, in writing policies and in ensuring long-term viability of the industry. As the impacts addressed affect all sectors of the economy, the findings have implications for risk analysis, opportunities and policy directions for all businesses.

**Q: What was the methodology for the research?**

**A:** The study is primarily an integrated assessment, with review and novel synthesis, through scenarios, of current literature across multiple fields, and previously unpublished data. It also includes original research on modeling for heat wave impacts, as well as new research on agricultural pests. In addition, the study uses new data for the findings regarding malaria.

**Q: What was the timeline of development of the study?**

**A:** The project was launched in September 2003 at a two-day conference at the United Nations in New York. A follow-up conference and Executive Roundtable were held at Swiss Re's Centre for Global Dialogue at Rüschtikon near Zurich, Switzerland in mid 2004. This gathering expanded the reach of the project to include more representatives from the financial sector, allowing deeper exploration of the links among health, environmental and economic consequences of the changing climate. In August 2004, a workshop was facilitated to standardize the methodology for the case studies and scenarios. The resulting study was released November 1, 2005, at the American Museum of Natural History in New York City.

**Q: What makes this climate change report different from others that have been published?**

**A:** Climate Change Futures offers a comprehensive analysis of the complex linkages of climate change and human well-being, demonstrating through case studies and scenarios how human-induced climate change poses serious risks to every aspect of our lives: health, food production, water distribution, our weather patterns and sustainable economic productivity.