



## **The attribution problem and risk transfer: Emerging approaches to facilitate climate risk insurance solutions**

K. Warner (1), P. Hoeppe (2)

(1) United Nations University Institute of Environment and Human Security (UNU-EHS), Germany, (2) GeoRisks Department, Munich Reinsurance Company, Germany  
(warner@ehs.unu.edu / Fax: +49 228 815 0299)

Available databases recording damage from weather-related hazards show increases in direct and indirect losses. The IPCC and other sources of scientific research point to increasing temperatures and a link to the changes in the frequency and intensity of natural catastrophes. According to the World Meteorological Organization (WMO), the years 2001 to 2004 were among the five warmest recorded worldwide since 1861. A study from MIT showed that, since the 1970s, major tropical storms both in the Atlantic and the Pacific region have increased in duration and intensity by about 50 percent. Emmanuel projects that this global warming-induced trend will continue in the future and the 2005 hurricane season holds the record for numbers of hurricanes in the North Atlantic. If the scientific global climate models are accurate, the present problems will be magnified in the near future. These models suggest that we should expect:

- increase in the frequency and severity of heat waves, droughts, bush fires, tropical and extra tropical cyclones, tornados, hailstorms, floods and storm surges in many parts of the world
- new exposures (like hurricanes in the South Atlantic)
- more extensive damage, economic, social, and environmental impacts from weather-related disasters

Changes in many atmospheric processes will profoundly impact the lives, health, and property of millions of people. Of special concern, the impact of climate change will be most acutely felt among the world's poorest people, and in areas that have made the least contribution to global greenhouse gas emissions. These vulnerable groups have to date also had the least access to affordable insurance. Insurance-related mechanisms can dampen the negative effects of global warming and minimize the financial risks of an increasing number of natural catastrophes. As the frequency and scope of losses due to major natural catastrophes, especially tropical storms, continues to increase, there is a growing need to explore other options for managing and transferring risks associated with climate change. In order to work out insurance solutions, methods are needed to solve the attribution problem—to what degree is damage caused from events that are part of natural variations in weather systems, and to what degree can damage be attributed to changes in climatic systems? This paper points to emerging approaches to address the attribution problem and highlights how these findings can be used to define market insurance and risk transfer solutions - climate insurance - in enabling disaster-prone countries to successfully manage the new climate risks on the horizon.