

# Commentary

BUFFIN PARTNERS INC.

ECONOMIC INVESTMENT AND ACTUARIAL RESEARCH

## Risk Assessment and Climate Change

The global insurance industry faces many risk scenarios, including demographic change, terrorism, economic and financial conditions, and now, importantly, global climate change. The accelerating instability of the world's climate system, leading to more frequent and devastating storms, droughts, floods and other climate-related events, is having a severe impact on the global insurance market. The Intergovernmental Panel on Climate Change, formed by the United Nations Environment Program to study scientific evidence about global climate change and its consequences, stated in a recent report that catastrophe losses have increased eight-fold over the past three decades in North America.

John Coomber, Director and former Chief Executive Officer of Swiss Re, is a leading spokesperson for the financial services industry on the subject of global climate change. In a recent interview, he described three initiatives undertaken by Swiss Re to address the challenge of global climate change. The first is based on research leading to the establishment of quantitative relationships that enable Swiss Re to incorporate climate change risk into its reinsurance product pricing structure. The second initiative relates to the adoption of a so-called "carbon-efficient" business model to address Swiss Re's own practices with respect to carbon emissions. The third initiative involves Swiss Re's active participation with national governments on climate change issues through platforms such as the World Economic Forum Climate Change Roundtable.

Also noteworthy from the interview with John Coomber are his comments on awareness and advocacy: "Swiss Re researches all emerging risks through a process called *Risk Foresight*; back in the 1990's climate change was prominent on our list of concerns; there were essentially four steps in our approach to this chal-

lenge; raising awareness; understanding the risks through research; changing our own corporate behavior; and adapting our products and services to reflect our findings. In particular we wanted to learn from academia and as the evidence of the effects of fossil fuel on climate change became compelling, we moved from awareness to advocacy seeking to promote solutions. These efforts have been made because we are convinced that climate change represents a major risk to our business, to our clients, and to society at large."

The earliest known reference to climate change and global warming appeared in 1827 when Frenchman Jean Baptiste Fourier used the analogy of a greenhouse to describe the existence of an atmospheric effect keeping the Earth warmer than it would otherwise be. Later in the nineteenth century, Swedish scientist Svante Arrhenius studied the problem of carbon dioxide building up in the atmosphere and determined that the burning of fossil fuels would lead to global warming. In the 1950's monitoring of carbon dioxide levels in the atmosphere revealed a continuous year-to-year upward trend. Later, in the 1970's the US Department of Energy raised increasing concerns about future global warming and the 1980's witnessed the warmest decade in recorded history, bringing on a general awareness of the reality of global warming and its implications. More recently, the great ice sheets of Greenland and Antarctica have begun to melt and move toward the sea, presaging a series of planetary chain reactions with grave potential consequences.

A first significant step toward concerted global action to address the challenge of global climate change came in 1992 with the Framework Convention on Climate Change; this was an agreement, signed by 154 nations in Rio de Janeiro, to prevent dangerous warming from greenhouse gases and setting targets for reducing emissions

from industrialized nations. By 1996, carbon dioxide emissions had continued their steep climb and it became apparent that most industrialized nations would not meet the target of stable levels of emissions in accordance with the Rio agreement. A second significant attempt to engage all industrialized nations in a program to reduce emissions was the 1997 Kyoto Protocol; however, only sixty-nine nations, including Japan, Canada and the European Union members, have ratified the Kyoto Protocol.

Climate change is the overarching challenge of this century. The scientific consensus is that greenhouse gas emissions need to be cut by 60% by mid-century to avoid catastrophic damage. Yet, global emissions are still rising and it is now estimated that global emissions will rise by at least 30% over the next ten years. Climate stabilization will require an extremely rapid transition toward a clean energy future based on biomass-generated power (also solar and wind power) and hydrogen fuel cell vehicles.

The challenges presented by global climate change require significant responses from governments, industry, and the scientific and academic communities. For its part, the global financial services industry, including insurance and reinsurance companies will need to anticipate trends in global warming and to engage in extensive research and development of prospective risk models that will result in appropriate pricing structures for catastrophic events that might be attributable to global warming and its effects on ecosystems.

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