

Dealing with Climate Change: Mainly Adaptation, with Little Mitigation, But That Is Not Enough

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The development of the Actuaries Climate Change (ACC) Index is an excellent method to measure the impact of climate change. The ACC Index will help the insurance industry to formulate necessary adaptation techniques. Unfortunately, neither the ACC Index, nor the present insurance markets will allow the industry to fully employ its considerable mitigation expertise.

The ACC Index, hopefully providing data back to the 1970s-1980s, will provide baseline measurements, and illustrate trends of its climate change indicators. Much of the data should be readily available through sources like the Intergovernmental Panel on Climate Change (IPCC) periodic assessments. Having an index, whose authenticity is provided by a group of prestigious actuarial organizations, is extremely useful in communicating climate change trends to both industry and the public.

As noted in the “Call for Essays,” “The index will highlight important indicators of climate change such as hurricane intensity, Arctic ice cover, melting of land-based glaciers, wild fires, floods, droughts, and temperature extremes.” These indicators point to property insurance as bearing the most immediate impacts of climate change. While climate change liability litigation has been introduced, it mostly has been unsuccessful to date. Yet, given the similarities of potential climate change liabilities to existing asbestos and Superfund liabilities, it should be closely monitored. Life and health insurance claims will increase because of heat stress and diseases, like malaria, spreading north and south of the Equator. The industry should be able to manage these claims. Any concern about the uncertainty of life and health claims is reminiscent of the concerns for AIDS claims when they developed. AIDS claims have made up only a few percent of total life and health claims.

In looking at property insurance claims, it is expected that the industry will continue to adapt through increased underwriting, pricing, and deductibles, decreased exposure (e.g., non-renewals), appropriate reinsurance levels, and close attention to its aggregates. The typical property policy period will allow for annual adjustments. Hopefully regulators will allow insurers the market freedom to make these adjustments. The adaptation technique of last resort will be to quit writing coverage in certain high risk areas. While insurers can shift policies from high risk to lower risk areas, policyholders face much more difficulty and expense in relocating their properties and

businesses.

Of the seven indicators of climate change listed in the “Call for Essays,” only two, hurricane intensity and wild fires, significantly impact property insurance. The remaining five impact mainly flood and crop insurance, both of which are provided by the federal government and excluded by private insurers. The remaining five indicators could, however, also impact Difference in Conditions (DIC) insurance for commercial risks. DIC exposures should be closely monitored and managed by the industry.

Industry mitigation expertise can be successfully employed for hurricane wind risks and wild fire risks through structural strengthening and relocation. But the exclusion of private flood and crop risks limits the scope of the private insurance mitigation mechanisms. In the flood and crop insurance areas, private insurers/agents collect commissions and administrative/claims service fees, but no insurance risk coverage is provided. This lack of financial incentives reduces their mitigation efforts.

The ultimate mitigation strategy for reducing destructive climate change impacts, caused mainly by warming temperatures, is to reduce Greenhouse Gas (GHG) emissions, which are produced mainly by the burning of fossil fuels. Indeed, while dealing with climate change impacts is critical, these impacts are symptoms, not the cause of climate change. Mitigation strategies for reducing GHG emissions that are causing climate change face two major impediments.

The first involves the timing of mitigation costs and benefits. The insurance industry has excelled in mitigating dangerous life threatening risks. Its efforts have produced safe boilers, safer working conditions, and fire resistant buildings to name a few improvements. A characteristic of these efforts is that the benefits are measurable within a short time period of when the mitigation costs were incurred. Fewer buildings were damaged by explosions and fires, and worker injuries decreased. The benefits clearly exceeded the costs, so these actions were justified by cost-benefit analysis.

Mitigating climate change is much more complicated. As with all mitigation methods, reducing GHG emissions has upfront costs. Some benefits, like a reduction in energy consumption, are short term and compare favorably with the costs of say increasing insulation or using more energy efficient appliances and equipment. But with the more important benefits, such as reducing hurricane intensity, sea level rises, flooding and temperature extremes, and their damaging impacts, it will be decades, possibly centuries, before these benefits can be measured and their mitigation costs justified.

Scientific research has shown that regardless of what efforts are taken today to reduce GHG emissions, rising temperatures with their damaging impacts, will continue into the foreseeable future. Because of long lag effects, warming today is being caused by GHG emissions from decades ago.

Indeed, our best feasible strategy is to slow the rate of increase, to reduce the slope of the warming curve.

From a cost-benefit standpoint, short term mitigation costs exceed short term benefits. Only decades-long benefits are expected to exceed upfront costs of serious GHG emissions reduction, like the 80-90% reduction being called for by the scientific community. The “Stern Review on the Economics of Climate Change,” a report by economist Nicholas Stern for the British government issued in 2006, estimates mitigation costs to be 1% of world GDP annually, and long-term benefits of mitigation by reducing losses) to be 5-20% of world GDP annually. These estimates clearly justify the costs of mitigation. But, the magnitude of the costs and the uncertainty of the projected benefits raise concerns and impede our ability to take action.

The actuarial profession could provide input, expertise and clarity into this cost-benefit conundrum. How do you deal with cost-benefit analysis where long term benefits of GHG emissions reductions exceed long-term mitigation costs, but short term costs exceed short term benefits? The construction and use of the ACC Index will provide critical input. Hopefully, the Index can be both retrospective and prospective. Actuaries estimate future benefits and costs all the time. Applying these skills to bring more certainty to the decades-long benefits of reducing GHG emissions would be a considerable contribution to the world.

The second major impediment to mitigating GHG emissions is the lack of government involvement. Climate change is a global risk, and any effective action requires central governments’ involvement and consensus. Meaningful mitigation needs governments, businesses, individuals and Non-Governmental Organizations (NGOs) to participate. At present, many businesses have taken action to reduce GHG emissions. This includes insurers, particularly those in Europe lead by Swiss Re. Much of the actions are of the “low hanging fruit” variety, such as greater energy efficiency. Many individuals have also voluntarily taken action to reduce their carbon footprints. But the harder actions needed to be taken by businesses and individuals will require governmental regulations. NGOs have been very effective and persuasive, but only in getting businesses and individuals to change voluntarily.

Without increased government involvement, the ACC Index indicators will explode over the coming decades. Based on the scientific community, the impacts in all likelihood will be catastrophic. The scientific community also foresees tipping points, which if we go over them, will be irreversible. We need to start taking meaningful action now. The European Union (EU) has tried the hardest at reducing GHG emissions. The EU does have an operational cap and trade system in place, although the generous granting of allowances has made it less effective than expected. Setting a price on carbon through gas taxes in Europe has led to smaller automobiles, great public

transportation systems and lower gasoline consumption. The lack of meaningful GHG regulations in the world's top two carbon emitters, the United States and China, has largely offset the EU's and other countries' efforts. GHG are emitted into a global atmosphere. Without a critical mass of the world's leading emitters, mitigation efforts will fall short of what is needed and the planet will keep warming, with all the resulting adverse impacts.

Absent necessary mitigation, all there is left is adaptation. Adaptation will serve the insurance industry well. Property insurance is the main exposure, at least for now. Predominantly one year policies, with proper underwriting, pricing, adequate reinsurance, monitoring of aggregate exposures, and the ability to move policies from high risk to lower risk locations are all adaptation methods that will protect the industry's financial solidity.

Conceding flood and crop risks to the federal government insulates the industry from critical climate change risks. Unfortunately, businesses and individuals lose the insurance industry expertise in risk financing and mitigation in these areas. I have argued in my writings and teaching for 40 years that the flood risk would be better handled by the private insurance industry than governments. The fact that the National Flood Insurance Program is technically insolvent by over \$20 billion is evidence that the private industry would have done better.

After I received my PhD in 1970, my second published article was titled, "What Role Will the Insurance Industry Play in the Fight Against Pollution?"¹ When the industry began to confront pollution risks, one of its first actions was to include, in liability policies, a partial pollution exclusion in the early 1970s. One of my concerns expressed in the article was that the exclusion would remove the insurance industry financial incentives and expertise in mitigation in dealing with the pollution risk. I have the same feelings now, that the lack of involvement of the industry in important climate change risk areas will reduce their mitigation expertise in dealing with these risks.

The insurance industry should be able to absorb the deleterious impacts of climate change. The industry is well situated to use adaptation effectively. The ACC Index will be a major contributor to increasing the industry's adaptation strategies. From the big picture standpoint though, the insurance industry is part of the global society and the world's economy. I am concerned that its ability to adapt and insurers' removal from critical climate change insurance risks, along with their mitigation expertise, will limit their incentives to be a better partner in dealing with this critical global problem. The world needs the mitigation and risk financing skills of the insurance industry. The industry's ability to analyze the long term impacts of climate change, and the long term benefits of taking action today, could be an enormous help in moving the world's governments forward.

¹*CPCU Annals*, Volume 25, No. 1, March 1972.