
Insurance and Financial Sector Support for Adaptation

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1 Introduction

As the contributions by Burton, Huq and Reid and Agrawala in this *Bulletin* demonstrate, adapting to climate change will require financial resources. For the most vulnerable, only part of these resources are likely to be met by the UN Framework Convention on Climate Change's (UNFCCC) financial provisions and Official Development Assistance (ODA). This article tackles issues surrounding the availability of weather-related insurance in developed and developing countries. In doing so, it touches on some broader issues around the financial services sector in the climate debate, including the role of this sector in promoting mitigation responses which may prevent some climate impacts from occurring and thus limit the amount of adaptation funding needed in the future. The aim of this article is not to provide an academic assessment of the academic literature on the role of insurance and the financial sector in climate change which is the job of the Intergovernmental Panel on Climate Change (IPCC). Rather it aims to provide an entry into the very broad and complex issues raised by experts within the financial services sector (FSS) both inside and outside the UNFCCC context.

2 Commercial insurance and the cost of climate catastrophes

The commercial insurance sector, at present, plays a minimal role in those regions that are already experiencing grim economic consequences and a stark human toll, from extreme weather events such as floods, hurricanes or cyclones and drought.

In early March, Swiss Re, one of the world's biggest reinsurance companies, issued its annual disasters report for 2003. To give a sense of the scale of the issue – natural catastrophes accounted for over US\$55 billion in overall economic costs last year, with six catastrophes breaking the “US\$1 billion barrier” for insurance losses. All were

weather-related and all in North America or Europe. Indeed 17 out of the 20 most *expensive* catastrophes, measured in terms of insured losses, were weather-related, and all but two of these occurred in the Organisation for Economic Cooperation and Development (OECD). In contrast, the developing world took all 20 places in the ranking of worst catastrophes measured in terms of loss of life, with 11 catastrophes related to extreme weather events.

The results are not surprising: the OECD accounted for over 93 per cent of the global insurance market at the end of the 1990s. The steadily rising loss trend from weather-related catastrophes in the mid-1980s and 1990s prompted major global reinsurers such as Swiss Re and Munich Re to analyse their exposure, through their own research departments. Now well-documented through the IPCC (Second and Third Assessment Reports, 1996 and 2201), and in the companies' own annual 'disaster' reviews, they have observed a doubling in the number of natural catastrophes in the last decade compared to the 1960s, a 6.7-fold increase in economic losses and a 13.5-fold increase in insured losses, in that period. According to Swiss Re's climate expert Pamela Heck, this exponential growth in insured losses is due mainly to economic, demographic and geographical factors in industrialised countries, such as the rapid increase in property values, the concentration of assets in highly exposed areas and the high vulnerability of modern technology.

European floods in 2002, followed by heat waves and drought in 2003, produced US\$15.6 billion in losses alone. While Swiss Re states that the actual contribution of climate change to these losses is 'difficult to quantify', the company does conclude that this close succession of record-breaking floods and extreme drought conditions was 'either extremely unusual, or it was a first glimpse at climate change to come'. Overall, economic costs could rise to US\$150 billion per year within a decade if loss

trends continue, according to an analysis undertaken by the United Nations Environment Programme (UNEP) Finance Initiative. It is not just the increasing frequency of events that concerns insurers and reinsurers, but also the increasing intensity of weather events, which has an exponential impact on the damages and costs resulting from each event. Dr Andrew Dlugolecki, former insurance industry senior executive and lead IPCC author and reviewer on the financial services sector, points out that a 10 per cent increase in the intensity of a storm can produce a 150 per cent rise in economic costs. More specifically, Dr Ulric Trotz, Coordinator of the Adapting to Climate Change in the Caribbean Project, points out that a 5 per cent increase in wind speed in Hurricane Hugo in 1989 would have caused a 34 per cent increase in damages, a 10 per cent increase in wind speed would have resulted in a 78 per cent increase in losses; and a 15 per cent increase wind speed would have increased losses by 133 per cent (FIELD 2003).

This statistical backdrop provides some sense of the *scale* of the overall global economic consequences, from a risk perspective, of a world in which climate extremes increase in frequency and intensity. Single figures cannot convey, however, the cumulative impacts as the interaction between different economic sectors, and communities within society, are affected differently – the economic and social “ecosystem” – including the operation of the global insurance market itself (see Bloom, this *Bulletin*, on the health effects of cumulative impacts).

Countries with the least developed insurance markets of the world (those with per capita premium payments of US\$0–25 per year) incurred close to *one-third* of total global economic losses between 1980 and 2003 and 88 per cent of the fatalities, but only 2 per cent of insured losses, according to Munich Re’s 2004 analysis of the market. Governments, local communities and families and the aid community effectively become insurers of last resort, and foot the bill. The World Bank, itself, is the third largest “reinsurer” in the world, according to its own statistics, issued post-disaster *loans* (though not all weather-related disasters) in the region of US\$30 billion in the 1980 to 2001 period.

In the absence of access to risk transfer through insurance, many economies are left highly vulnerable to the impacts of extreme weather events and have few resources to “bounce back” from these

events – a dynamic that is particularly problematic as return times for disasters are steadily decreasing. Hurricane Mitch losses amounted to 34 per cent of Honduran GDP (other estimates put this as high as 80 per cent) and 158 per cent of government revenues. Only 6 per cent of these losses were insured. Some 10,000 lives were lost. Only this year (2004), Cyclone Heta devastated Niue in the Pacific – a tiny island economy where no insurance is available against weather extremes, leaving the island almost entirely reliant on overseas aid for reconstruction efforts. Plus defaulting on existing debt repayments, so that resources can be directed to recovery efforts, can itself impact the country’s credit rating and in turn make new loans more expensive.¹

3 Insurance issues under the climate change convention

Given this litany of statistics, the question of insurance in developing countries is politically gathering pace. The vulnerability of entire small island states to damage from sea-level rise led AOSIS (Alliance of Small Island States), in 1991, to propose that an international insurance pool be instituted under the UNFCCC (see Linnerooth-Bayer *et al.* 2003). Payments into the pool would be a form of compensation linked to responsibility or liability for the impacts of climate change. Nearly a decade later, the United Nations Development Programme (UNDP) brought government delegates, non-governmental organisations (NGOs) including IFRC (International Federation of Red Cross and Red Crescent), ISDR (UN’s International Strategy for Disaster Reduction) and insurers together at COP8 in Delhi, starting from a disaster management perspective and with an interest in the AOSIS proposal. In March 2003, Munich Re and NGO, Germanwatch, held a workshop on ‘Insuring the Uninsurable’ to increase understanding of the issues, and explore options for insurance in the developing world.

More formally, Articles 4.8 and 4.9 of the Convention – which look at the specific needs and circumstances of developing country parties – because of the AOSIS proposal put forward in 1991, these provisions explicitly reference insurance as an issue for consideration. This led to a decision by the UNFCCC Conference of the Parties (COP) under the Marrakech Accords agreed in 2001 to hold a series of official workshops with

representation from governments, invited experts and the insurance industry, on insurance and risk assessment, and insurance-related actions to address the adverse impacts of climate change. Because of political wrangling, these were finally held in May 2003 and negotiations on further actions in this area are still ongoing.

M.J. Mace, from the Foundation for International Environmental Law and Development, points out that mandatory insurance requirements and tiers of liability are already used in a variety of international compensation and liability schemes for transboundary pollution to make otherwise uninsurable exposures, insurable. However, Andrew Dlugolecki, differs on the merits of *liability*-based schemes as a model for climate change. He points to the fact that weather damage compensation schemes are all based on pooled contributions to an indemnity fund, not liability. He says a viable liability-based scheme would require answers to questions such as: how would causation be apportioned (i.e. what about natural variability?); how would “polluters” contributions be calculated? (particularly in the case of large emitting developing countries like India and China); who would adjudicate on the claims to ensure the scheme worked? He says private sector insurers are very wary of liability solutions – as they can lead to lengthy legal arguments and costly administrative bills.

4 Insurance and developing countries

Aside from a formalised negotiated global approach, which remains in deadlock, it is clear that commercial insurers and reinsurers are not leaping to develop new markets to fill the massive insurance gap in the developing world. Thomas Loster of Munich Re outlined key commercial considerations and limitations for the insurance sector’s engagement at the UNFCCC May 2003 workshops, not least of which is the need for markets that can deliver commercial returns. The most important basis for a profit-making venture is the “combined ratio”: the amount of money coming in from premium payments, versus the outward payment to cover claims and administration expenses (sometimes as high as 30 per cent of premium). In turn, the premium is a function of the number of “insured”: people taking out policies, and the spread of risk, which includes the probability of a particular event

occurring, and the extent and distribution of likely damages as evaluated through industry hazard models. At the time of writing, the availability of source data for risk assessment raises complex new issues, such as the need for information flows and greater collaboration between the professional risk insurers and scientific community.

The industry is unlikely to offer insurance for a particular disaster type if the number of people interested in the insurance is relatively small, geographically concentrated, or if the majority of potential insureds face high exposure. The “predictable” consequences of sea level rise, particularly flood-prone areas along a river, or coastal zones, which are frequently inundated, do not lend themselves to conventional insurance. Munich Re states that in these situations the ‘basic premise of insurance’ – that events are sudden and unforeseen – would no longer be valid. In other words, payouts by the industry to the majority of policy-holders would be a virtual certainty. As a result premiums would be very high; if insurance were available at all. Thus this is not a solution for developing countries seeking an affordable method of helping communities and economies recover from the impacts of these events.

Dr Andrew Dlugolecki raises more fundamental “structural constraints” within the insurance industry itself about the role it can play in climate change. A substantial constraint is the disjuncture between the time cycle of insurance markets, which normally operate through yearly contracts, and catastrophe management, which requires longer term commitment and geographic spread. Another constraint is the periodic lack of capital and insurance availability that may follow periods of high claims payouts. A string of high-cost disasters, or single major events, such as September 11th, or a broader economic recession that affects the return on the industry’s investments in the stock market, can lead to unstable prices and volatile “supply” of reinsurance.

Alternative Risk Transfer (ART) instruments are new types of commercial products being developed – so-called “cat bonds” or insurance-linked securities (ILS). Money is raised on the stock market by issuing bonds against a particular catastrophic event. Around US\$9.5 billion has been raised in this slowly growing market over a period of years (i.e. a tiny fraction of the conventional insurance market cover), but as yet, the majority of weather risk covered relates to

the US and other OECD markets. Swiss Re (see the March 2004 Report) has played an active role in sponsoring ILS, however other players are more cautious, pointing to the high costs of shaping bonds and finding investors, among other things.

While the private sector is pessimistic about rapid growth in the commercial “climate-related” insurance market in developing countries, they and others are far more optimistic about the opportunities for public–private partnerships (PPP) and the capacity to incorporate professional risk skills and business management into this area. The fundamental issue is how to make insurance useful where it is most needed: on the ground, with affordable premiums, and linked to measures which reduce risk in the first place.

Several examples of government/private sector insurance programmes already exist in the OECD, such as the US National Flood Insurance Program (NFIP). In this case, the federal government is the main flood insurer, taking the risk, but the private insurance sector writes the policies, in effect managing the business side. One notable feature of NFIP is that the communities must take prescribed loss reduction measures if residents are to be eligible for cover. Premium rates are increasingly risk-based and risk is pooled across the entire country (although initial cover was offered prior to flood maps being available).

Another useful recent example, transferable to weather-related disasters, is the Turkish Catastrophe Insurance Pool (TCIP) focused on earthquake risk. This blends different sources of risk premiums as a way of making insurance more affordable. The system incorporates a mandatory contribution from property owners into a national insurance pool, backed up by a layer of World Bank support to increase the total cover available while the national fund builds up, backstopped by a further layer of risk exposure transferred to the international reinsurance market, and a final layer of exposure (with an upper limit) covered again by the World Bank. The overall facility is linked to regulatory reform and prevention measures, although the Turkish government must find the additional resources for these.

The potential for a regional pooling arrangement for small island states was a key topic for discussion at the UNDP-FIELD (Foundation for International Law and Development) workshop (FIELD 2003). Unlike Turkey, small island states are tiny economies

facing high return rates for cyclones and hurricanes, the complete exposure of low-income groups and the impossibility of spreading risk sufficiently to support catastrophe insurance. However, the creation of regional catastrophe insurance schemes holds some promise for spreading risk, increasing contributors and lowering administration costs. This concept has been considered in the Caribbean by the World Bank and the OAS, and is under consideration in the Pacific through a pilot project conducted by the South Pacific Geoscience Commission (SOPAC), supported by Australia and the World Bank.

Micro-insurance creates another opportunity, particularly as individuals or small communities often only need a small amount of money to restart basic businesses or agriculture (see *IDS Bulletin* 2003, which addresses microfinance, poverty and social performance issues). In India, for example, crop insurance schemes for small-farmers based on a “rainfall index” have been developed by the World Bank, in conjunction with ICICI Bank Ltd., the second largest Bank in India working in a joint venture with Lombard Canada Ltd. Interestingly, the distribution network for the insurance option is BASIX, one of India’s largest micro-finance institutions. The linkage between micro-credit and micro-insurance is seen as an area of huge potential but its use in the context of climate related impacts remains to be examined in detail.

5 Next steps

So with that brief overview of the issue from an insurance perspective, how can the discussion in this area move forward? At the UNFCCC insurance workshops in May 2003, a call was made by several delegates for a series of case studies examining these evolving approaches to insurance in developing countries, applicable to both the rapid-onset events such as cyclones and flooding, and the slow-onset events such as drought.

Within the formal UNFCCC process, Youssef Nassef, responsible for insurance within the UNFCCC Secretariat, notes that Parties put forward a number of proposals, including the development of a work programme on insurance and the organisation of an insurance roundtable, at COP 9, held in Milan, 2003. However, negotiations were not concluded, proposals remain in brackets and the issue will come up again at the meeting of the UNFCCC subsidiary bodies in June 2004.

Another matter raised by delegates at the May 2003 workshops was the need for greater collaboration between scientists, insurers and other members of the professional risk community, governments and the disaster management community. Andrew Dlugolecki points out that the scientific community, through the IPCC, provides only a limited guidance on hazard, and often through analysis of sectors or ecology which are unconnected (see Burton and May, this *Bulletin*, who also raise this issue). The professional risk approach is based around six steps: scope (geographic area, timeframe); hazard analysis (computer models of weather and its severity), exposure to the hazard (through geographic information systems); vulnerability (robustness of materials, construction and processes); recovery (contingency plans) and financing (based on cultural responses as well as third party agreements). The insurance community has its own risk models.

Climate models at present are too coarse to depict extreme weather changes as they might affect a specific locality, population, or city (aggregates commonly used in the insurance industry). Indeed the implications of those impacts can change quite rapidly in terms of exposure – consider the asset types the insurance industry looks at – not just property but also the “function”, as insurers can also be liable to pay business interruption costs. Assets can also include infrastructure, crops, economic production, as well as people and ecological systems. IPCC information is not yet able to provide consistent trends for return periods, frequency and intensity of events, and translating those generalised data into a risk analysis in practical terms is a major task.

More interaction between scientists, risk assessors and governments would help strengthen and streamline both information, assessment and response flows. At the response end, government understanding of both the scale and the nature of the risks is essential. Only with awareness of the scale of exposure, and the interlinkages between affected sectors and communities can a commensurate response effort be designed, nationally, regionally or at an international level. Regulatory and other policies leading to long-term infrastructure changes are needed, in the short term, to ensure investment today is reinforcing greater resilience in the future and indeed, may be increasingly required for insurance, as the examples earlier suggest.

A point to be cognisant of within the wider business community, is the how “sustainable development” (SD) arguments may be used in the international political debate, to slow down these types changes. There are already signs of a consolidating business front embracing the vocabulary of “sustainable development” and equity in relation to new commitments. This appears to include the view that new climate commitments, which affect business activities contributing to economic growth in developed or developing countries, could adversely affect sustainable development. At its worst, the rhetoric of poverty alleviation and sustainable development may be used by some within the business community, to cleave divisions between north and south governments; a strategy that is now well documented (Royal Institute of International Affairs 2003).

A final point to raise in relation to the financial services sector is at the other end of the equation: how to better secure investment in the low and zero energy in developing countries (also industrialised countries as well)? Finance and investment are arguably at the heart of technology transfer and uptake, to secure long-term change in energy infrastructure towards supply and demand side efficiency and renewable energy. Yet even within public finance institutions, the vast majority of resources go towards large-scale conventional energy projects that will provide good rates of return, and very little into sustainable energy infrastructure or projects (see Newell, this *Bulletin*). It is no surprise that the assets of the insurers, even given their concern about climate change itself, and other institutional investors and commercial actors are not being actively directed either out of fossil fuels or into renewable energy. The former is lucrative, large scale, well understood and still widely subsidised; the other is not. Andrew Dlugolecki states that as carbon gets a value, the finance sector will swing into action. He says it is the job of policy makers to set rules that internalise and crystallise the costs of carbon, it is not the job of the finance sector to act as God on climate change, rewarding and punishing and ‘certainly not acting as a climate cartel’.

With the European Union Emissions Trading Scheme (ETS), and the emergence of a new breed of “carbon finance” funds developed around the Kyoto Protocol’s Clean Development Mechanism (see Humphrey, this *Bulletin*), there is now increased

interest from financial players in investing in emissions reductions at project level in developing countries. However, in the near term this does not translate through to systemic drivers for renewable energy market development. Carbon finance in that sector, with only a few exceptions, is icing on the cake, and a project by project approach does not solve the wider energy policy question coming up in several countries.

New initiatives are starting to look at the specific policy drivers needed to increase investment in this area, from a financing perspective. Workshops held by UNEP's Sustainable Energy Finance Initiative, in March 2004, and an additional two organised by the author in April in London, under the Renewable Energy and Energy Efficiency Partnership (REEEP),² brought financiers together to discuss key policy characteristics needed to make investing in these technologies and infrastructure more attractive. Priorities in both OECD and Emerging Markets converge around "loud, long and legal" policy approach: a legal, enforceable policy and regulatory structure; one that is sustained for a duration that reflects the financing horizons of the projects; and "loud", i.e. a strong enough incentive structure to make renewables attractive. There were mixed views on the efficacy of different incentive structures.

Within the sector itself, some analytic and fund development work is now just starting examining new fund structures, such as "patient capital" that requires lower returns over longer periods, or blends of public and private money, as well as tools to tackle investment risks in this area. There are some very experienced finance entrepreneurs active in the energy-poverty nexus, looking at new mechanisms to get finance into sustainable energy,

including important cross-overs into agriculture and water areas.

Closer to home, at the large-scale investor end, exposure to long-term carbon liabilities has stimulated new initiatives such as the Carbon Disclosure Project (CDP 2003). It is surveying FT Global 500 companies on their approach to climate change. It is backed by investors with US\$9 trillion under management, concerned that if they are investing in companies with heavy carbon businesses they could end up with some costly liabilities in the future if carbon management strategies are not in place. The CDP's second report is launched in May 2004. Swiss Re has also been surveying companies receiving its 'Directors and Officers Liability' coverage, in order to confirm how they are preparing their companies for climate change.

These developments, coming six years after Kyoto was agreed and nearly 15 years since the IPCC was set up, demonstrate that large-scale financial changes, which might significantly drive mitigation policies, are looming on the horizon but may still take some time to translate into emissions reductions. They also illustrate that the finance and financial services, whether macro- or micro-scale, will be at the heart of delivering solutions and risk mitigation in climate change, as well as having a potential role in adaptation. Their inclusion in the policy or expert debate increases the capacity of policy makers, and others to understand how the commercial finance sector works and what investors are likely to put money into. This process of learning, in which the development community must also play a part, can then delineate more effectively the role and content of public policy.

Notes

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1. There is now one insurance product, which will help sovereign debt repayment for up to 3 years following a disaster.

2. REEEP is a partnership that was launched by the UK Foreign Office at the World Summit on Sustainable Development, its focus is to move forward the agenda on renewable energy and energy efficiency specifically. It is international in scope.

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