



**ASSOCIATION ACTUARIELLE INTERNATIONALE
INTERNATIONAL ACTUARIAL ASSOCIATION**

17 March 2016

Executive Committee
Warsaw International Mechanism for Loss and Damage

By e-mail: loss-damage@unfccc.int

Dear Sirs,

Re: Call for submissions on best practices, challenges and lessons learned from existing financial instruments at all levels that address the risk of loss and damage associated with the adverse effects of climate change

We appreciate the opportunity to submit information on the best practices, challenges and lessons learned from existing financial instruments at all levels that address the risk of loss and damage associated with the adverse effects of climate change, in response to the Executive Committee's call for submissions. Thank you for accommodating our request to extend the deadline to submit our response. On behalf of the International Actuarial Association (IAA), I am pleased to transmit our response.

This response has been prepared by Resource and Environment Working Group of the IAA. If, upon reading these comments, you identify any points that you wish to discuss or obtain further insight regarding them, please do not hesitate to contact Kenneth Donaldson, Chairperson of the Resource and Environment Working Group, care of the [IAA Secretariat](#). The IAA will be pleased to develop these ideas further with you.

Yours sincerely,

Malcolm Campbell
President

Attachment: [IAA Submission](#)

Comments by the International Actuarial Association on the request for submission of information on Best practices, challenges and lessons learned from existing financial instruments at all levels that address the risk of loss and damage associated with the adverse effects of climate change

International Actuarial Association and its Due Process

The International Actuarial Association (the “IAA”) represents and is a global voice for the international actuarial profession. Our sixty-seven Full Member actuarial associations, listed in [Appendix A](#) to this statement, represent more than 95% of all actuaries practicing around the world. The IAA promotes high standards of actuarial professionalism across the globe and serves as the voice of the actuarial profession when dealing with other international bodies on matters falling within or likely to have an impact on the areas of expertise of actuaries.

We are pleased to be given the opportunity to provide input to the Warsaw International Mechanism. These comments have been prepared by the Resource and Environment Working Group of the IAA, as authorized by the IAA’s Scientific Committee. It has also been subject to the due process required for it to constitute a formal view of the IAA and will be posted to the IAA’s official web site. The members of the Resource and Environment Working Group are listed in [Appendix B](#) to this statement.

IAA submission:

In the following, we discuss several approaches to fund and manage adaptation and mitigation tools to combat the expected adverse effects of climate change. Because of our special experience, we focus on the use of private and public sector insurance programs, although we also address other tools.

1. Private sector and government insurance programs

Insurance programs can provide financial and other incentives to individuals, companies and governments to protect against loss due to property, health and life damage, providing pooling and risk transfer opportunities. Reinsurance and in some cases governmental guarantees can provide necessary back-up support to help ensure that the promises made for this protection will be fulfilled. However, in many areas, particularly relating to the most vulnerable, there has not yet been sufficient coverage or resources to provide such protection.

Although climate change is often thought of in terms of its very long-term nature (which would extend beyond the term of many/most current insurance contracts), its effects can be seen in recent increases in variability of climatic conditions. Thus, incentives for enhanced adaptation and resilience, at least with respect to weather volatility and resulting extreme events over the relatively short-term, can be immediately encouraged through the insurance mechanism. In contrast, incentives to control the adverse effects of long-term climate change risks such as the rise in the sea level, except in certain low-lying areas, may not be effective to promote adaptation and mitigation for a considerable period of time. Pure

private sector investment in resilience measures such as flood prevention is still rare, as it is difficult to monetize the benefits.

Following sound insurance and actuarial principles, including underwriting (selection of risks), price signals and contract features of property insurance, can incorporate incentives to effectively manage risks (e.g., through loss prevention requirements and premium discounts and surcharges) and to promote better adaptation and resilience, if not mitigation, to avoid or reduce exposure to certain types of damage.

Although primarily in regard to existing or near-term hazards (because most such insurance covers properties for twelve month periods), if the building changes made are permanent or structural, these actions can promote adaptation against the effects of future climate change. Many climate change risk remediation efforts have the largest payoff in the future (when the effects are larger); but the annual re-pricing and re-underwriting is often accompanied by annual shopping and competition. An insurer that lowers its price in anticipation of longer term expected claim savings has no guarantee that the insured will renew. Thus, lowering the price for longer-term remediation benefits makes limited economic sense if the contract term is not long.

This mismatch of time-horizon is significant. Individuals and businesses may reasonably assume that physical risks from climate change are in effect covered by their current insurance contracts, at least implicitly, for many years to come. However, insurers assume they can and will monitor experience as it unfolds and may decline to extend cover (or provide it on an affordable basis) if, in any year, the (cumulative) effects of climate change and the future risk profile so dictate. This future contingency can provide further incentive for individuals, businesses and governments to plan ahead regarding such factors as land use, property placement, and building materials used.

When many locations were first settled, the original buildings were built in the most secure areas, with “most secure” meaning, among other things, being the most secure from natural disasters such as floods. It was common sense when building in a new area to build on the high ground. As the area became more developed, people expanded to empty, available land. That land tended to be available because it was less secure or less viable for long-term occupancy. Hence a growing economy meant that exposures became increasingly concentrated on the more vulnerable areas. That is one reason why some suggest that recent increases in catastrophe losses are more due to people and things moving into harm’s way than due to the effect of climate change. For example, the historic areas of New Orleans were less impacted by Hurricane Katrina than the more recently developed areas. This is a continual problem with growing economies vis-à-vis climate change – people build new buildings where there is room to build, and the locations more exposed to climate change may be the most recent and poorly constructed.

It is important that society should allow the insurance market to reflect recent costs, especially those impacted by natural disasters. Not allowing them to be reflected in insurance prices can create an incentive to increase societal exposures in risky areas. Those areas currently at-risk are those most likely to be even more at-risk due to longer-term

climate change. It is easier to prevent the build-up of exposures in at-risk areas than to reduce/remove such exposures after they already exist.

One potential area of exception to this time-horizon issue is liability insurance, an area of increasing concern. By this we mean liability for claims for contributing to the damage caused by greenhouse gas pollution against, for example, directors, auditors or governments. This area was highlighted by the Governor of the Bank of England in a recent speech¹. However, it may be many years before such claims emerge.

2. Government guarantees and policies

We referred above to use of government guarantees and other governmental assistance in the context of financial and other protection. Subsidizing insurance cover through government disaster pools, for example for people living in areas prone to flooding, can, if not properly developed, exacerbate the problem. It can encourage decision-makers to persist in making unwise decisions, although seemingly appropriate short-term decisions, the face of unsupportable risk, and worse, may even encourage further risky development. There is a role for government, but care must be taken not to create adverse incentives. U.S. FEMA coastal flood coverage is an example of this.

Government policies, such as building regulations, flood plain zoning and in some cases mandatory insurance coverages, can encourage adaptation, resilience and mitigation.

The time horizon problem for most private and public physical (re)insurance mechanisms does not apply to long-range government budgeting. We encourage governments to apply the forecasting tools currently used to estimate future social insurance costs to physical and infrastructure multi-decadal climate change adaptation. In this way they can better inform proper long-term governmental budgeting. The absence of such forward planning represents a fundamental gap in government decision-making on issues relating to climate change and the speed necessary to appropriately address de-carbonization.

3. Bonds

Catastrophe bonds have also been a more recent tool that may provide support, but again, these in the past have not provided protection for the most vulnerable.

Given increases in natural disasters, a sustainable insurance mechanism eases the strain on society in the event of a natural disaster. That is because the insurance mechanism acts on a pooling basis, whereby the losses of a few are spread among the many. In this case, “few” and “many” refers to geographic regions. Where one region has a large dollar exposure relative to the others it may be spread to, this pooling is less effective. The development of catastrophe bonds has helped to some extent by expanding the size of the “many” that the losses of the few are spread to, i.e., by expanding it from just those with similar property exposures to those with capital investment exposures.

¹ <http://www.bankofengland.co.uk/publications/Pages/speeches/2015/844.aspx>

Climate-themed or green bonds, e.g., for resilience projects, may provide needed funding to support environmentally sound projects; certainly green bonds have experienced recent growth. Although we recognize that future climate change bonds will continue to be forthcoming, hopefully at an increased level, we do not yet have significant experience in these. We do note that they must be structured to include *pari passu* features; otherwise they may not receive sufficient investor interest. This may represent a significant source of funding, especially if investors are provided returns at least consistent with other bonds and can be highlighted in integrated reporting or triple bottom line reporting as environmentally friendly investing.

A variation on this theme, highlighted recently by Mark Carney, the Governor of the Bank of England, is the danger of owning long-term securities representing significant stranded assets. Examples are bonds of energy companies with extensive operations of e.g., coal mining. Long-term investors, such as insurance companies and pension funds could sell these assets, thus drying up funding in this area, providing further financial incentives to stay away from carbon-based activities.

4. Public-private cooperation

The exposures to climate-change risks are so enormous that a private–public coordinated effort (e.g., investments in resilience and post-disaster efforts) may be best suited in most situations, especially for vulnerable populations. We note that not all risks are insurable. Insurance and similar loss and damage mechanisms are not a substitute for prevention, effective adaptation or mitigation of those risks that have already occurred. A comprehensive risk management approach, including both pre- and post-disaster protection, is the best means of addressing most climate risks. These should be addressed at both a local and national level, supported by information available on a regional and international level, where applicable.

5. Public education and relevant information

Education regarding both adaptation and mitigation approaches, is important to promote the use of such protection. Although climate change itself can only be effectively mitigated at a global level or with global cooperation, local and national actions aggregate towards global mitigation efforts -- such efforts need to be seen within a coherent global context. Coordinated mitigation must remain the primary focus, with an adaptation agenda being set within that framework. Comprehensive planning and preparedness will be needed, especially to anticipate the inevitable crises that will emerge sometime in the future.

One difficulty in quantifying the cost of natural disasters and the effects of climate change is the accounting framework and information gathering of many governments. An effective measure of costs versus benefits at the societal level requires the ability to aggregate the costs among multiple departments. Public sector costs can arise from many public sources, including direct governmental disaster relief, armed forces providing support in times of disaster, public works projects, local government grants in support of mitigation efforts,

education efforts, research efforts and support for building codes. Historically there has been no direct incentive to aggregate these costs among the various areas within the government, let alone private sector costs that include insurance, private citizens and businesses. Understanding the total cost to a society may help publicize the issues and incentivize efforts to reduce future exposures.

Early warning systems and climate-related metrics regarding the risks involved are needed. Efforts in this area will prove useful for both extreme events and slow-onset conditions. A useful development is metrics such as the Actuaries Climate Index and the Actuaries Risk Index, now being developed by the actuarial profession in North America and Europe.

6. Gaps

Even in those economies with a developed insurance market, there are and will likely continue to be gaps, particularly around public–private coordination of catastrophe risk planning and response. In less developed countries and markets, the challenge will be to accelerate the building of the capacity that already exists within the insurance system. Here, ordinary market forces are likely to be insufficient, so careful use of international subsidies may be necessary to accelerate the closing of coverage and preparedness gaps.

Vulnerable groups of population that are already at or close to a tipping point (for example, where livelihoods are threatened by increased levels of drought or sea-level rise), may have limited self-help capacity or indeed an exit strategy. Here the required changes are not only incremental; a strategic approach is needed in the short term.

The use of some form of micro-insurance may be useful to provide some assistance for lesser-developed areas to promote increased knowledge of climate/weather related exposures to risk, and encouragement to promote behaviors that can lead to appropriate adaptation and risk-prevention activities, as well as providing financial (although likely limited) support for post-disaster financial needs.

However, to the extent that micro-insurance relies on pooling within local communities it will fail to provide protection when an extreme event affects negatively all or most members of the pool. Unfortunately, many areas that have benefited or could benefit from these programs are more concerned with short-term survival and progress; it will be a struggle to provide sufficient resources to effectively invest and plan for the longer term. Micro-finance can help with post-disaster recovery, but is subject to many of the same limitations.

Appendix A

Full Member Associations of the IAA (67 members)

(17 March 2016)

Caribbean Actuarial Association
Consejo Profesional de Ciencias Económicas de la Ciudad Autónoma de Buenos Aires (Argentina)
Actuaries Institute Australia (Australia)
Aktuarvereinigung Österreichs (AVÖ) (Austria)
Institut des Actuairens en Belgique (Belgique)
Aktuarsko Drustvo U Bosni I Hercegovini (Bosnia and Herzegovina)
Instituto Brasileiro de Atuária (IBA) (Brazil)
Bulgarian Actuarial Society (Bulgaria)
Canadian Institute of Actuaries/Institut Canadien des Actuairens (Canada)
China Association of Actuaries (China)
Actuarial Institute of Chinese Taipei (Chinese Taipei)
Asociación Colombiana de Actuarios (Colombia)
Institut des Actuairens de Côte d'Ivoire (Côte D`Ivoire)
Hrvatsko Aktuarsko Drustvo (Croatia)
Cyprus Association of Actuaries (Cyprus)
Česká Spolecnost Aktuárù (Czech Republic)
Den Danske Aktuarforening (Denmark)
Egyptian Society of Actuaries (Egypt)
Eesti Aktuaaride Liit (Estonia)
Suomen Aktuaariyhdistys (Finland)
Institut des Actuairens (France)
Deutsche Aktuarvereinigung e. V. (DAV) (Germany)
Hellenic Actuarial Society (Greece)
Actuarial Society of Hong Kong (Hong Kong)
Magyar Aktuárius Társaság (Hungary)
Félag Islenskra Tryggingastærðfræðinga (Iceland)
Institute of Actuaries of India (India)
Persatuan Aktuaris Indonesia (Indonesia)
Society of Actuaries in Ireland (Ireland)
Israel Association of Actuaries (Israel)
Istituto Italiano degli Attuari (Italy)
Institute of Actuaries of Japan (Japan)
Japanese Society of Certified Pension Actuaries (Japan)
The Actuarial Society of Kenya (Kenya)
Latvijas Aktuaru Asociacija (Latvia)
Lebanese Association of Actuaries (Lebanon)
Lietuvos Aktuaru Draugija (Lithuania)
Persatuan Aktuari Malaysia (Malaysia)

Colegio Nacional de Actuarios A. C. (Mexico)
Association Marocaine des Actuaires (Morocco)
Het Koninklijk Actuarieel Genootschap (Netherlands)
New Zealand Society of Actuaries (New Zealand)
Den Norske Aktuarforening (Norway)
Pakistan Society of Actuaries (Pakistan)
Actuarial Society of the Philippines (Philippines)
Polskie Stowarzyszenie Aktuaruszy (Poland)
Instituto dos Actuários Portugueses (Portugal)
Asociatia Romana de Actuariat (Romania)
Russian Guild of Actuaries (Russia)
Udruzenje Aktuara Srbije (Serbia)
Singapore Actuarial Society (Singapore)
Slovenska Spolocnost Aktuarov (Slovakia)
Slovensko Aktuarsko Društvo (Slovenia)
Actuarial Society of South Africa (South Africa)
Institute of Actuaries of Korea (South Korea)
Col.legi d'Actuaris de Catalunya (Spain)
Instituto de Actuarios Españoles (Spain)
Svenska Aktuarieföreningen (Sweden)
Association Suisse des Actuaires (Switzerland)
Society of Actuaries of Thailand (Thailand)
Association of Consulting Actuaries (United Kingdom)
Institute and Faculty of Actuaries (United Kingdom)
American Academy of Actuaries (United States)
American Society of Pension Professionals & Actuaries (United States)
Casualty Actuarial Society (United States)
Conference of Consulting Actuaries (United States)
Society of Actuaries (United States)

Appendix B

Members of the Resource and Environment Working Group of the IAA (17 March 2016)

Chairperson: Kenneth Donaldson (UK)

Vice-Chairpersons: Sam Gutterman (US), Robert Thomson (South Africa)

Members:

Craig E Hanford	A.K.M. Hussain
Betty-Jo Hill	Vijay Manghnani
Liyaquat Khan	George Salazar Ongkeko
Paul Richard King	Walter Stahel
Esko Kivisaari	Zain Ibrahim
Stuart Hamilton Leckie	Nicholas Aspinall
Caterina Lindman	Donncha Hayes
Karen L Lockridge	Craig Ajimuda
Ruth Louise Loseby	Baber Chowdhrey
Stephen P Lowe	Hasan Zain Abidi
W James MacGinnitie	Sushanta Pramanik
Paul Godfrey Meins	Ajit Chandra Aich
Gordon Matthew Morrison	Md. Abu Musa Siddiqui
Godfrey Perrott	Mahfuz Ibn Mannan
Denis Plouffe	M. Ahsanul Haq
Paul Noel Thornton	Mohammad Salahuddin Soud
Brent William Walker	Therese Kieve
Christian Walter	Kuralay Yeldesbay
Enrique De Alba	Karlygash Baizhanova
Elayne Grace	Sameer Sheth
Jeffrey Alan Courchene	Claire Charlotte Jones
Frank M. Grossman	Jabran Noor
Norman Miami	Luis Jesús Álvarez Marcén
Kieran Richard Godden	Mindy Graham
Naomi Jane Edwards	John Richardson
Roger Austin	David Cadoux
James G Bridgeman	See Seen Lee
Anthony Maxwell Coleman	Micheline Dionne
Colin Jan William Czapiewski	Yves Guérard
Isagani de Castro	Tracey Zalk
Kevin Nigel Denman	