SUBMISSION BY THE MUNICH CLIMATE INSURANCE INITIATIVE (MCII)

Insurance Instruments for Adapting to Climate Risks

A proposal for the Bali Action Plan[1], Version 2.0

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PLEASE COMMENT: This submission has benefited from the feedback and ideas of many different experts and delegations. We welcome your comments.

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[1] This submission from the Munich Climate Insurance Initiative (MCII) is part of its mission to develop insurance-related solutions to help manage the impacts of climate change. We are particularly indebted to Joanne Linnerooth-Bayer (IIASA) and other MCII executive board members Christoph Bals (with input from Sven Harmeling), Ian Burton, Armin Haas, Peter Hoeppe, Eugene Gurenko, Thomas Loster, and Koko Warner for their design of this concept. The Munich Re Innovations team contributed their actuarial expertise. We also thank the numerous country delegates who have talked with us about their needs for and questions about adaptation and climate risk insurance. MCII was founded in response to the growing realization that insurance solutions can play a role in adaptation to climate change**,** as suggested in the Framework Convention and the Kyoto Protocol. With membership on the part of insurers, climate change and adaptation experts, NGOs and policy researchers, MCII provides a forum for insurance-related expertise applied to climate change issues.

Abstract

The Bali Action Plan calls for "consideration of risk sharing and transfer mechanisms, such as insurance" as a means to address loss and damage in developing countries particularly vulnerable to climate change. The Action Plan strengthens the mandate to consider insurance instruments as set out by Article 4.8 of the UN Framework Convention on Climate Change (UNFCCC) and Article 3.14 of the Kyoto Protocol. Yet if insurance instruments are to be included in the post-2012 adaptation regime negotiations in Copenhagen, the potential role of risk-pooling and risk-transfer systems must be firmly established. This document proposes an insurance module with two pillars (prevention and insurance) as part of a multi-pillar adaptation fund. The **Prevention Pillar** puts reduction of human and economic losses as its top priority. The **Insurance Pillar** has two tiers. The first tier is a *Climate Insurance Pool* that would absorb a pre-defined proportion of high-level risks of disaster losses in vulnerable non-Annex 1 countries. The second tier, a *Climate Insurance Assistance Facility,* would provide technical support and other forms of assistance to enable public-private insurance systems that provide cover for the middle layers of risk in these countries. This two-tiered insurance pillar would (1) meet the principles set out by the UNFCCC for financing and disbursing adaptation funds (2) provide assistance to the most vulnerable, and (3) include private market participation.

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Contents

PART ONE

Draft Article: Prevention Pillar and Insurance Pillar

§1. Definition

A climate risk management module to facilitate adaptation is one part of a larger post 2012 adaptation strategy. Two pillars of a climate risk management module are hereby defined:

(a) A **prevention pillar (PP)** and
(b) An **insurance pillar (IP)**. The insurance pillar has two parts:
   i. A *Climate Insurance Pool* (CIP) for high level risks and
   ii. A *Climate Insurance Assistance Facility (CIAF)* for medium level risk.

§2. Purpose

The purpose of the PP and IP is to assist the most vulnerable Parties as defined in [Copenhagen] in adapting to climate change by reducing climate-related risks (in the form of flood, droughts and other weather extremes) and transferring them where necessary through financial mechanisms.

The PP puts reduction of human and economic losses as its top priority. The first tier of the IP is a global *Climate Insurance Pool*, which absorbs a pre-defined proportion of high-level, climate-related risks. The second tier, a *Climate Insurance Assistance Facility*, provides technical support and other forms of assistance to enable regional private and public-private insurance systems for middle layers of climate-related risks.

§3. Benefits of participation

Under the PP and IP

(a) Parties support and facilitate cooperation in adaptation to the impacts of climate change, especially for the most vulnerable countries.[2]
(b) Most vulnerable Parties benefit from additional prevention and risk reduction activities (PP). They also benefit from agreed-upon coverage for high-level losses through an insurance mechanism with premiums paid fully from an adaptation fund (CIP), and from assistance for risk-pooling mechanisms that cover residual middle-layer risks (CIAF). The costs of the two pillars will be borne on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.[3]
(c) Parties may use the PP and IP to contribute to compliance with their common but differentiated responsibilities to assist the developing country

[2] UNFCCC, Art. 4.1.e
[3] UNFCC, Art. 3.1

Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.[4]

§4. Principles guiding the functioning of the PP and IP

Participation in the climate risk insurance pillar shall be based on the principles set out by UNFCCC and KP for financing and disbursing adaptation funds and including the following eligibility criteria:

(a) Voluntary participation approved by each Party involved, including a commitment by participating Parties to prevent and reduce risks related to climate change and to secure the proper management of IP funds.
(b) An agreed plan of action to reduce climate related risks, (as part of a National Adaptation Plan according to by COP-agreed guidelines)
(c) Foster private and public-private insurance solutions that provide reinsurance cover for high-layer climate-related risks and primary insurance cover for middle layers of climate-related risks.

§5. Governance

The IP shall be subject to the authority and guidance of UNFCCC / [Kyoto Protocol] and be supervised by an executive board of the PP and IP.

§6. Modalities governing activities

The COP/[COPMOP] will establish the modalities and procedures with the objective of ensuring transparency, efficiency and accountability through independent auditing and verification of

(a) Prevention and climate risk management activities and the support of these activities
(b) Risk transfer activities through a *Climate Insurance Pool* for high-level risks;
(c) Assistance for middle-layer risk through a *Climate Insurance Assistance Facility*.

Insurance coverage may be provided by operational entities to be designated by the Conference of the Parties.

§7. Resources for the mechanism

A funding mechanism based on the principle of common but differentiated responsibilities and respective capabilities shall finance the prevention and the global *Climate Insurance Pool* and defined activities of the *Climate Insurance Assistance Facility* within the Insurance Pillar. It must be secured that the financing is sufficient to pay for the agreed activities within the prevention pillar and the insurance pillar for participating Parties. The beneficiary countries will not pay for any of the described activities of the IP and PP. Specifically, for Tier 1 the full premium will be paid by an adaptation fund. The activities that vulnerable countries take for prevention and building public private partnerships for the

[4] UNFCCC, Art. 4.4

middle layer of risk will be supported by the PP and by tier 2 of the IP, respectively, and this support will be fully financed by an adaptation fund.

§8. Participation

Participation under PP and IP, including activities mentioned under par. 3, may involve public, public-private and/or private entities. The insurance activities are subject to whatever guidance by the executive board of the IP.

PART TWO

Executive Summary: MCII Proposal for Climate Risk Insurance

Losses from climate-related natural hazards are rising, averaging US$100 billion per annum in the last decade alone. A suite of financial instruments, including insurance, has emerged as an opportunity for developing countries in their concurrent efforts to reduce poverty and adapt to climate change. Insurance tools provide financial security against droughts, floods, tropical cyclones and other forms of weather variability and extremes. Yet, insurance alone will not address all adaptation challenges that arise with increasing climate risks, like desertification or sea level rise. It can, however, be a strong complementary mechanism in a wider adaptation framework.

The **Bali Action Plan** (BAP) calls for "consideration of risk sharing and transfer mechanisms, such as insurance" to address loss and damage in developing countries particularly vulnerable to climate change. For the **inclusion of insurance instruments in the post-2012 adaptation regime**, the potential role of risk-pooling and risk-transfer systems must be firmly established.

In helping to meet this challenge, the Munich Climate Insurance Initiative (MCII) proposes a climate risk management module that would include insurance instruments for adapting to climate change in a post-2012 agreement.

This module would

(1) follow the principles set out by the UNFCCC for **financing and disbursing adaptation funds**
(2) provide **assistance to the most vulnerable**, and
(3) **include private market** participation.

This module can play a part in a wider adaptation strategy to help Parties address the negative effects of climate change. The figure below illustrates the two proposed pillars of a climate risk management module: a prevention pillar and an insurance pillar.

Climate risk management module within post-2012 adaptation strategy

The first part of the module is a **Prevention Pillar** emphasizing risk reduction. The second part of the module is an **Insurance Pillar** with two tiers. Each tier addresses one portion—or layer—of climate-related risks. The first tier of the Insurance Pillar takes the form of a *Climate Insurance Pool (CIP)* that would absorb a pre-defined proportion of high-level risks of disaster losses, particularly in vulnerable countries, at no cost to the beneficiary countries. The second tier of the Insurance Pillar, a *Climate Insurance Assistance facility*, would address middle-level risk and facilitate public safety nets and public-private insurance solutions. Low-level losses would continue to be borne by exposed communities, and are therefore not addressed in this proposal.

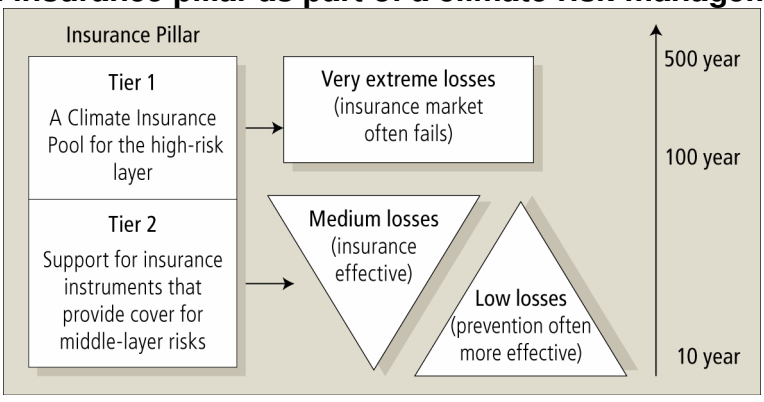
Prevention Pillar

Insurance activities must be viewed as part of a climate risk management strategy that includes, first and foremost, activities that prevent human and economic losses from climate variability and extremes. The proposed Prevention Pillar links carefully designed insurance instruments to risk reduction efforts. Participation in the Insurance Pillar can include demonstrating progress on a credible risk management strategy. The cost for the Prevention Pillar depends on the the number of countries involved and the scope of prevention and risk reduction activities.

Insurance Pillar

The figure below illustrates the two tiers of the proposed insurance pillar.

A two-tiered insurance pillar as part of a climate risk-management module



Tier 1 would require financial resources of approximately USD 3.2 billion and USD 5.1 billion, depending on negotiations and participating countries. The key features of Tier 1 include (featured in the Figure below):

- **CIP Premium Paying Entities**: The CIP receives a fixed annual allocation from a multilateral adaptation fund based on the expected climate change related losses. This fund will fully cover the premium payments (some recent proposals are based on criteria such as capability (“ability to pay”) and responsibility (“polluter pays”).

- **Beneficiaries of CIP Coverage**: Countries that participate in the insurance program that fall victim to rare but extreme climate-related disasters that go beyond their capacity to respond and recover;
- **Risk Carrier:** CIP operations will be managed by a dedicated professional insurance team that will be responsible for risk pricing, loss evaluation and indemnity payments, as well as placing reinsurance.

Negotiators considering the creation of a Climate Insurance Pool might ask: Why invest adaptation funds in a CIP when we could, instead, allocate these same funds to national adaptation programs that include an insurance module? One answer: Disbursing a portion of climate adaptation funds to the CIP pools the risks of extraordinary losses, costing far less money or requiring far less reinsurance than if each country created its own fund or made individual insurance arrangements.[5]

Insurance Pillar Tier 2 would address middle-layer risks by providing resources to a Climate Insurance Assistance Facility that would **enable public/private insurance systems for vulnerable communities**. Many examples of programs for these middle-layer risks exist: micro-insurance for agriculture (like in Malawi), re-insurance for aid agencies (as in Ethiopia), and pooled solutions for countries in certain regions (like the Caribbean). Each of these initiatives was made possible with outside technical and financial support. Tier 2 could directly **enable the poor to participate**, if deemed appropriate, through targeted support and minimally-distorting subsidies that would not crowd out private incentives for wider market segments.

[5] The CIP will utilize market based pricing of its cover and will transfer risk to private risk carriers. This helps avoid distorting private capital markets or catastrophe risk reinsurance markets.

PART THREE

MCII proposal for a climate risk management module

1. Introduction

The Bali Action Plan specifically calls for "consideration of risk sharing and transfer mechanisms, such as insurance" as a means to address loss and damage in developing countries particularly vulnerable to climate change (Decision -/CP.13, BAP). The BAP strengthens the mandate to consider insurance instruments as set out by Article 4.8 of the UN Framework Convention on Climate Change (UNFCCC) and Article 3.14 of the Kyoto Protocol.

If insurance instruments are to be included in the post-2012 negotiations in Copenhagen, the potential role of risk-pooling and risk-transfer systems in an adaptation regime must be firmly established. Numerous proposals have been put forward mentioning insurance, most recently by Barbados and the Cook Islands on behalf of the 40+ countries of the Alliance of Small Island States (AOSIS), Switzerland, Mexico, some countries of the European Union and further ideas from Bangladesh (for the LDCs), China, India, Argentina, the Philippines, Malaysia, Saudi Arabia and other countries. To complement these proposals, MCII contributes additional suggestions about the role for insurance instruments in an adaptation regime.

Rising risk and losses

In the past quarter century over 95% of deaths from natural disasters occurred in developing countries, and direct economic losses (averaging US$100 billion per annum in the last decade) in relation to national income were more than double in low-income versus high-income countries[6]. Due to limited tax bases, high indebtedness and low or no insurance cover, many highly exposed developing countries cannot fully recover from disaster shocks by simply relying on limited external donor aid. In turn, external investors are wary of the risk of catastrophic infrastructure losses, and small firms and farmers cannot receive the credit necessary for investing in higher yield/higher risk activities. In the long term the human and economic losses are much higher than the statistics on direct losses suggest.

Economic disaster losses in the developing world will increase due to factors including economic development, urbanization and land use. In addition, the Intergovernmental Panel on Climate Change (IPCC) has predicted that climate change will increase weather variability as well as the intensity and frequency of weather-related extremes. The IPCC notes a mounting "climate signal" in observations of long-term and widespread changes in temperature, wind patterns

[6] Munich Reinsurance Company (2007). Topics: Natural Disasters. Annual Review of Natural Disasters 2006. Munich, Munich Reinsurance Group.

and extreme weather events like droughts, heavy precipitation, heat waves and intense tropical cyclones (IPCC 2007).

Insurance provides opportunities

Insurance tools provide financial security against the economic impacts of droughts, floods, tropical cyclones and other forms of weather variability and extremes. A suite of financial instruments offers an opportunity for developing countries in their concurrent efforts to reduce poverty and adapt to climate change, due to a number of recent technical innovations: technological advances make it possible to **model and price risks** with low-probability but high loss potentials; **index-based insurance contracts** provide a low-cost alternative to traditional loss-based insurance; and novel mechanisms for **transferring catastrophe risks to the global financial markets** are opening new windows for **reinsurance** arrangements.

Insurance cannot address all climate risks

Emerging financial risk management opportunities for the developing world will not address all of the risks or adaptation challenges that arise with increasing climate risks.

Insurance instruments can serve as only one aspect, or one pillar, of adaptation activities.

Figure 1: Activities funded by a multi-lateral adaptation instrument

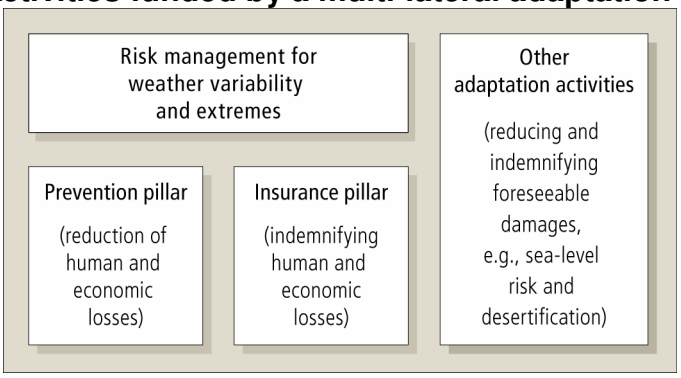


Figure 1 suggests that **insurance activities must be viewed as *part* of a risk management and adaptation strategy** that includes, first and foremost, activities that prevent human and economic losses from climate variability and extremes (see Prevention Pillar below). Very slow-onset climate impacts such as desertification and sea-level rise are foreseeable and generally not well-suited for coverage within an insurance framework. Additional pillars in an adaptation regime are needed to deal with these foreseeable impacts. These risks are not addressed in this submission.

Although insurance instruments are not appropriate to address gradual-onset losses, countries in such geographical areas may have additional risks, such as

typhoons, extreme storms, etc. that can be addressed in part by insurance,. **Insurance is a complementary measure** to help countries deal with a range of risks and facilitate adaptation to changing climatic conditions

Recognizing these limitations, insurance tools can play a critical role in reducing the effects of weather variability and extremes on national economies and in providing security for investments as an important precondition to escape poverty. Smartly designed insurance instruments can provide powerful incentives for reducing risks as part of adaptation and risk management strategies. This submission offers suggestions on the design of a risk management module that includes both prevention and insurance to complement and facilitate adaptation to climate change.

Assumptions in this proposal

This proposal for a risk management module assumes that adaptation funding will be available to pay for the necessary cover for participating (developing) countries. MCII recognizes that important questions must be worked out related to the source and amount of adaptation finance, institutional arrangements, etc. This proposal aims to foster discussions about a risk management module, fully recognizing that important issues will be discussed in depth in the climate negotiations process and elsewhere.

2. Insurance and climate adaptation funds

Estimates for the additional costs of adapting to climate change in developing countries, although speculative and uncertain, set the stage for the anticipated global deal on an adaptation regime. One source calculates that $28-67 billion per year will be needed by 2030.[7] The UNDP suggests a much higher sum of up to $86 billion per year by 2015. There are numerous proposals for raising these sums, guided by Art. 3.1 of the Framework Convention, which states that "Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities." In keeping with this principle, there is strong support for adaptation financing based on criteria of “ability to pay” and “polluter pays”. Without being comprehensive, recent proposals include: levies on the auctioning of emission rights (e.g., the US International Climate Change Adaptation and National Security Fund); the European Union’s ETS Auction Adaptation Levies; withholding and auctioning a portion of assigned amount units as recently proposed by the Norway; a levy on carbon emissions as recently put forth by the Swiss; extending the levy on revenues from the Clean Development Mechanism to other international Kyoto mechanisms; and levies on international aviation and maritime transport (the Tuvalu Adaptation Blueprint).

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[7] Smith, Joel B. (2007). “Preliminary estimates of additional investment and financial flows needed for adaptation in 2030.” Presentation 28 August 2007 in Vienna to the Dialogue on Long-Term Cooperative Action, Vienna. Stratus Consulting, Inc.

Proposals are also emerging that suggest mechanisms on how to disburse adaptation funds. One example is the Swiss (2008) submission, which proposes that revenues from a global carbon levy (that would raise an estimated $48.5 billion per annum in 2010) would be disbursed into two types of funds: National Climate Change Funds and a Multilateral Adaptation Fund. Mexico has also proposed a Multinational Climate Change Fund. In the Mexican proposal the disbursements would fund both adaptation and mitigation activities in developing and (qualifying) developed countries. The Swiss-proposed multi-lateral adaptation fund would be spent on two pillars: *prevention and insurance*. Emphasizing risk management, the Swiss proposal thus reinforces many earlier calls. For instance, at a UNFCCC workshop on Investment and Financial Flows (June 2008), the G77 and China called for establishing a risk insurance fund, and the Alliance of Small Island States called for establishing an International Insurance Mechanism [8].

Building on these recent proposals for financing and carrying out adaptation activities in developing countries, MCII suggests the design and operation of a two-pillar risk management module (prevention and insurance). This module could form an element of a multi-lateral adaptation fund.

3. MCII suggests a climate risk management module with two pillars

Guiding Principles

In developing a role for risk-management instruments in a post-2012 adaptation regime, four principles are especially important:

- Support for risk-management instruments should target the **specific needs and special circumstances of those developing countries** which "are particularly vulnerable to the adverse effects of climate change" (UNFCCC, Art. 3.2. and Art. 4.4);
- Insurance instruments must be closely linked with a climate risk management strategy that places **priority on preventing human and economic losses**. This means that prevention and insurance pillars need to be closely linked;
- In providing support for insurance, **care should be taken not to significantly distort insurance prices or market competition**. This means that attention should be given to issues of affordability and market failure;
- **Funds for adaptation activities need to be allocated on a strategic basis** and not involve international micro-management at the project level.

[8] Müller, p. 31

Institutional arrangements for a risk-management module within an adaptation framework

Two principles offered by Müller (2008) can usefully guide the institutional design of the insurance pillar:

- Strategic allocation should use **existing international bodies and initiatives** to allocate funding streams, and not try to duplicate them under a "climate change banner"; and,
- **Developing country ownership and public transparency** of decision making is not only desirable but a prerequisite for success. [9]

Prevention Pillar and Insurance Pillar

Building on these principles, MCII proposes a way for insurance to fit within and complement the emerging climate adaptation framework. Figure 2 illustrates that this "risk-management module" would fit within a post-2012 adaptation regime along with other facets of adaptation. This submission outlines two parts of this insurance module as shown in figure 2. The first is a prevention pillar, the second is an insurance pillar.

Figure 2: Climate risk management module within post-2012 adaptation strategy

4. The Prevention Pillar

Preventing or reducing risk is an important part of insurance systems. Carefully-designed insurance instruments provide **incentives for preventing or reducing risks.** When a priority is laid on preventing losses and reducing risks, insurance can be provided more effectively and cheaply. Hence the first pillar of this proposal calls for comprehensive risk assessments across vulnerable countries, and progress on cost-effective structural and non-structural measures for reducing risks. Risk assessments can uncover otherwise unforeseen possibilities for risk reduction, and help lay the groundwork for risk transfer systems. The Prevention Pillar would not require developing countries to internalize the price of increased climate-related risk; however, it would be closely linked with the

[9] These ideas are explored by many Parties and MCII welcomes comments and further dialogue to further develop this proposal.

Insurance Pillar. Qualification for participation in the Insurance Pillar might include progress on a credible climate risk management strategy.

The financing required to support this Pillar depends on the number of countries involved and the scope of prevention and risk reduction activities which participating countries (governments) request. It is envisaged that this financing would be made available on an annual basis from a multilateral adaptation fund and in coordination with established institutions and frameworks.[10]

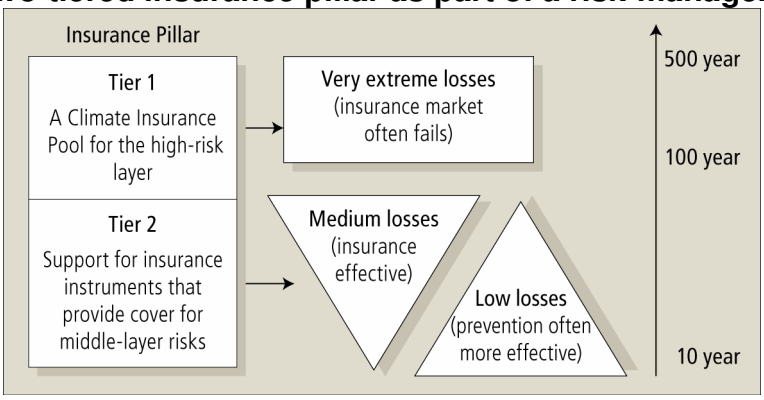
5. The Insurance Pillar

Overview: An insurance Pillar with Two Tiers

The proposed Insurance Pillar has two tiers, reflecting the different levels of risk that need to be addressed for effective climate adaptation. The ideas outlined below propose a structure that addresses two layers of risk: "high level" risk which would exceed the ability of any given country to pay in the case of an extreme event, and "middle level" risk which would be possible for a country to address if the proper facilitating framework were in place. It is assumed that "low level" risk could be absorbed within the capacity of a country. Thus, low level losses would continue to be borne by exposed communities, and is therefore not addressed in this proposal.

As pictured in figure 3, the first tier would provide insurance cover as part of a Climate Insurance Pool (CIP) to non-Annex 1 countries falling victim to infrequent and severe climate-change-related events, or cover for the high layer of risk. The second pillar would enable risk-pooling and -transfer mechanisms as part of a Climate Insurance Assistance Facility (CIAF) that provides assistance for setting up insurance programs that cover medium-loss events.

Figure 3: A two-tiered insurance pillar as part of a risk-management module



5.1 Tier 1: A Climate Insurance Pool for extreme weather events

The first tier of the Insurance Pillar would provide premium-free insurance cover in receiving countries for losses caused by extreme weather events with a

[10] Such as the Hyogo Framework.

(negotiated) predetermined severity and return period (the latter would be based on historical data from a baseline period to avoid a reduction in support as climate increases the frequency of severe events). This insurance entity, further referred to as the Climate Insurance Pool (CIP), will be financed by annual contributions from the (proposed) multi-lateral adaptation fund, which itself may be financed by Annex 1 countries.[11] As part of the Insurance Pillar, the CIP would supplement other adaptation activities (see figure 1) with insurance indemnity payments via an insurance scheme (risk carrier) that can best address the severe volatility of expected fiscal cash outlays, and outlays of households/SMEs, to be encountered by the countries exposed to natural disasters

While the exact formula of contributions and disbursements of an enhanced adaptation fund is yet to be determined, there is a growing consensus based on principles of the UN Framework Convention on Climate Change that adaptation funds will be (1) raised according to common but differentiated responsibilities and respective capabilities of countries (UNFCCC, Art. 3), which can be translated into criteria such as "ability to pay" and "polluter pays"; and (2) disbursed to those who suffer most from climate change. The CIP conforms to these principles.

The key features of the proposed Climate Insurance Pool:

- **CIP Premium Paying Entities**: Countries contributing to a multi-lateral adaptation mechanism would agree to a premium payment formula (many possibilities, such as based on "ability to pay," "polluter pays," or other concepts)[12]; The CIP would receive a fixed annual allocation from a multi-lateral adaptation fund equaling the expected average annual costs of the insurance scheme.
- **Beneficiaries of CIP Coverage**: Countries that agree to participate in the scheme will benefit from CIP coverage.in the event they fall victim to rare but extreme climate-related disasters that go beyond their capacity to respond and recover within a reasonable time. To become eligible for CIP indemnification payments, it is recommended that governments fulfill basic standards of fiscal and budgetary transparency and commit themselves to certain risk reduction measures. Thus, it is envisaged that beneficiary countries will make NO premium payments, but may be subject to meeting certain standards of risk management.

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[11] This proposal is based on two earlier proposals; Hoeppe, P. (2008). "Climate Risk Insurance Suggestions for Compensation-Based Climate Risk Insurance." Presented at SB28 MCII side event on Tuesday 10 June 2008. Bonn, Germany. and Bals, C., K. Warner and S. Butzengeiger (2007), "Insuring the Uninsurable: Design Options for a Climate Change Funding Mechanism", in *Climate Policy*, E. Gurenko, ed. Special Issue on Insurance and Climate Change.

[12] In principle such contributions could be proportional to the current or accumulated CO_2-emissions, while a threshold for paying entities of CO_2/capita emissions could be fixed, with countries below this threshold being fully exempted from the payments. One component could also be GDP based.

- **Risk Carrier:** The CIP operations could be managed by a dedicated professional insurance team responsible for risk pricing, loss evaluation and indemnity payments, as well as placing reinsurance.

Figure 4: Key features of the Climate Insurance Pool (CIP)

Negotiators considering the creation of a Climate Insurance Pool might ask: Why invest adaptation funds in a CIP when we could, instead, allocate these same funds to national adaptation programs that contain an insurance module? One answer: Disbursing a portion of climate adaptation funds to the CIP pools the risks of extraordinary losses, costing far less money or requiring far less reinsurance than if each country created its own fund or made individual insurance arrangements.

Technical considerations for the CIP

Will the CIP distort markets?

To avoid distorting the private catastrophe risk reinsurance and capital markets, the CIP will utilize market based pricing of its covers and will rely heavily on risk transfer to private risk carriers. The CIP would retain no more that approximately 25% of the risk. Market based pricing will be ensured by having the CIP reinsure its risk retention (across its whole risk program) on a quota share basis[13] to the reinsurance or capital markets at a market price, which will then be applied to price the CIP's own insurance contracts with country beneficiaries. This approach will establish the true cost of retained risk every year, stimulate the further development of the sovereign risk transfer market globally, and add some additional claims payment capacity to the CIP over time. To avoid insolvency in the case of very high losses, for instance, from multiple events, the facility should also reinsure on an excess loss (XL) basis (insuring losses above a certain limit). The capital surplus that the CIP will build over time will be retained in the fund and used for absorbing more risk (e.g. higher risk retention) during years of high reinsurance prices (hard reinsurance market).

It is envisaged that the final parameters and details of CIP operations will be negotiated and, in some cases, decided by the authority in charge. The following critical issues need to be addressed in these deliberations:

[13] A quota share reinsurance treaty is a reinsurance contract that provides protection on a proportional basis. For example, the CIP may wish to reinsure the first $100,000 of loss by allowing reinsurers to share in 80 percent of the risk on a quota share basis. If a $100,000 loss is paid, the CIP retains 20 percent and the reinsurers pay 80 percent.

What counts as an extraordinary climate-related event?

Any measure triggering payment from the CIP must be based on negotiated criteria of "vulnerability" as well as an independent and objective assessment to ascertain that the event is, in fact, extraordinary in the statistical sense that it lies in the extreme percentile of the historic distribution. As reported by the IPCC (2007), these extreme events are increasingly linked with climate change. Generally, very high loss events occur at low frequencies, often in the range of every 100 to 500 years, but will likely occur at lower frequencies due to climate change. Therefore, a measure of severity will require a combination of loss and frequency, and frequency should be based on historical data with a fixed baseline. Once the threshold above which the CIP pays a percentage of claims, or attachment point, is established, specific country risk will be established by an independent modeling firm.

Parameters for measuring the losses or economic seriousness of an event can be either loss-based (human and economic) or parametric. An example of a loss-based measure is the number of persons affected and their per-capita losses (losses as a percentage of national income bias against large countries). Alternatively, a parametric or index-based measure is not generally based on losses (some recent indexes are based on average losses), but rather on a parameter that is highly correlated with losses, for example, extreme rainfall or low temperatures. Parametric measures have lower associated transaction costs, they avoid "moral hazard" because, unlike loss-based insurance, they do not reduce incentives for taking loss-reducing measures, and they require very little time to settle claims which is a considerable advantage in many post-disaster situations.

What is the scope of the insurance entity?

While in most cases governments are likely to be the main recipients of CIP indemnity payments, it is also possible to allocate at least a part of such payments to households and SMEs affected by disasters through local NGOs and financial services organizations (such as local banks and insurance companies). If a traditional indemnification (loss based) approach to risk coverage is chosen, it would require the CIP to measure and pay claims, which would be far more difficult and costly particularly if private-sector losses are covered. The most expedient and least-cost scope of the CIP would thus encompass only public-sector liabilities (including the provision of relief to the most needy) and measured with a parametric method. As the CIP develops, it might be possible to include private sector losses.

What portion of the country losses will be absorbed?

Negotiations on this issue could consider estimates of potential future losses from major catastrophe scenarios in countries beneficiaries. The limit of CIP coverage for each country will then be determined based on the amount of

insurance premium (to be received from the adaptation fund) earmarked for each country beneficiary. This amount will have to be negotiated.[14]

How can the CIP be linked with prevention?

It is important to explicitly incorporate incentives (e.g., deductibles) and/or conditions (e.g. eligibility criteria) which encourage preventive measures. The CIP includes country criteria to foster prevention and risk reduction. Countries that wish to participate in the Insurance Module outlined in this proposal might include the establishment of risk-management plans, progress on fulfilling these plans and good governance. Additionally, since post-disaster payments can lead to moral hazard and mal-adaptation, parametric systems offer a mechanism to help reduce moral hazard significantly. The Insurance Pillar should be closely linked with the Prevention Pillar, and funds spent on reconstruction should be subject to meeting stringent building standards for disaster loss prevention.

To illustrate the workings of the CIP insurance scheme in the context of a multi-lateral adaptation fund we provide a hypothetical example:

> Consider a small country (Country A) highly exposed to hurricane risks. Country A has a reliable government, which in turn has a large portfolio of public infrastructure and a commitment to provide relief to the poor in the case of a major event. Modeling this exposure, the CIP authority (in close collaboration with Country A's experts) determines that the government cannot cover its liabilities in the case of a category 5 hurricane passing over one of its three major urban centers. This is defined as an extraordinary climate event for Country A, and is calculated (by an independent modeling firm) as having a return period of 100 years (1% probability of occurrence) with losses estimated at USD 1 billion (the baseline for calculating this frequency is set at year 2008, and this baseline will persist even if the climate alters the frequency). Loss of such a magnitude will be so devastating for the national economy that without access to external sources of immediate liquidity the country will be set back significantly in its development, and its poor population will continue in its disaster-related poverty trap. A similar estimate is made for extreme flood and drought risks facing Country A.
>
> Country A has met all conditions set by the Authority for membership in the CIP, including preparation and progress on a risk prevention program. Thus Country A enters into a contract with CIP, which agrees to indemnify a certain predetermined percentage (say 30% or USD 300 million) of Country A's losses in the case of the identified hurricane event (and similar agreements are made for extreme flood and drought events).

[14] It is envisaged that this mechanism will be attractive to beneficiary countries, particularly since the kind of coverage offered may not be available commercially for developing countries. As explained above, this proposal assumes that adaptation funding will be available to help pay for the proposed insurance module, i.e. that funding will be available to pay for the necessary cover for participating (developing) countries.

With regard to losses from more frequent but less severe events (say hurricanes of category 4), one can envisage a mechanism where a multilateral adaptation fund will be responsible for co-financing a part of these losses jointly with the participating non-Annex I country. Even more frequent and less severe events will be funded out of internal (national) country resources, or other arrangements can be made for middle-layer risks as part of Tier 2 described below.

The cost of risk capital to support this amount of loss in Country A will constitute the risk premium for this country to be received from a multi-lateral adaptation fund. In addition to the pure cost of risk, the CIP would require funding for transferring a large part of its risk to the reinsurance or capital markets, management and administrative costs, claims processing as well as for building surplus capital over time, which will add the amount of premium needed to cover predefined country loss scenarios.

Requisite funding for Tier 1:

The requisite funding for the CIP will depend on the negotiated parameters and conditions. For example, the CIP could indemnify the top 30% of losses arising from the most extreme climate events (defined as events with an expected return period of 1 in 100 years) that would occur in eligible developing countries.[15] The loss ratio to be indemnified has to be negotiated by the international community; ultimately it should be linked to an estimated attribution of global warming to the losses covered. Assuming the CIP indemnifies the top 30% of the total direct economic losses (both public and private) from extreme weather events, the expected annual insured losses would range between USD 2.7 billion -USD 3.6 billion, with the maximum insured losses to be capped between 10 and 50 billion depending upon the availability of premium income for the pool. [16] The gross costs of the suggested insurance scheme including capital and administration costs of reinsurance would range between USD 3.2 billion and USD 5.1 billion for the range of the above proposed insured limits. These costs could increase if loss of life and livelihood becomes part of the scheme.

The requisite funding for the CIP will depend on the negotiated parameters and conditions. For example, the CIP could indemnify the top 30% of losses arising from the most extreme climate events (defined as events with an expected return period of 1 in 100 years) that would occur in eligible developing countries.[17]

[15] As this idea is discussed and refined to fit the needs of participating countries, country-specific calculations for the probable maximum losses from a 1 in 100 year return period would need to be made. For now, a general approach is described. This does not mean that 30% of the weather related losses in every participating country would be indemnified. Rather, the top 30% of the losses of all participating countries could be covered by insurance.

[16] As delegations take up and discuss this idea, a loss exceedance curve for economic damages caused by weather related disasters in developing countries will need to be developed.

[17] As this idea is discussed and refined to fit the needs of participating countries, country-specific calculations for the probable maximum losses from a 1 in 100 year return period would need to be made. For now, a general approach is described. This does not mean that 30% of the weather related losses in every participating country would be indemnified. Rather, the upper most 30% of the losses of all eligible, participating countries could be covered by insurance.

While the loss ratio to be indemnified has to be negotiated by the international community, ultimately it should be linked to an estimated attribution of global warming to the losses. Assuming the CIP indemnifies the top 30% of the total direct economic losses (both public and private) from extreme weather events, the expected annual insured losses would range between USD 2.7 billion -USD 3.6 billion, with the maximum insured losses to be capped between 10 and 50 billion depending upon the availability of premium income for the pool. [18] The gross costs of the suggested insurance scheme including capital and administration costs of reinsurance would range between USD 3.2 billion and USD 5.1 billion for the range of the above proposed insured limits. These costs could increase if loss of life and livelihood becomes part of the scheme.

5.2 Tier 2: Climate Insurance Assistance Facility to help cover middle-layer risks

A second tier of the proposed insurance pillar would provide support for the middle layer of risk not covered by the CIP. A main purpose of support for the middle layer of risk is to help establish public/private safety nets for unpredictable climate-related shocks.[19] The second tier would assist in the development of insurance-related instruments that are

- **affordable for the poor** and
- coupled with actions and incentives for pro-active **risk reduction and adaptation measures**.

This second tier in the form of a *Climate Insurance Assistance Facility* would offer capacity building and financial support to nascent micro- meso- and macro-scale disaster insurance systems. This CIAF would *not* provide insurance to households, farmers or governments directly. A few examples can serve to illustrate:

- At the micro level, in ***Malawi*** smallholder farmers can purchase affordable index-based drought insurance, where indemnity is based on an index of rainfall measured at a local weather station. Traditional insurance, by contrast, requires clients to *prove* losses and can therefore be more costly, The microinsurance scheme helps farmers from defaulting on their loans (losses are insured). By making farmers more creditworthy, this pilot scheme enables farmers to purchase hybrid seeds, and thus greatly increases their productivity. The negative cycle of poverty can be broken through a combination of prudent financial tools at the micro level. This scheme was made possible by support from international financial institutions in the form of risk assessments and capacity building. Scaling

[18] As delegations take up and discuss this idea, a loss exceedence curve for economic damages caused by weather related disasters in developing countries will need to be developed.

[19] This proposal is based on an earlier proposal: Linnerooth-Bayer, J. and R. Mechler (2007b). "Insurance for Assisting Adaptation to Climate Change in Developing Countries: A Proposed Strategy." in *Climate Policy*, E. Gurenko, Ed. Special Issue on Insurance and Climate Change.

up will require additional support, for example, the purchase and installation of a network of weather stations.

- At the meso scale, the World Food Programme issued a parametric weather derivative that assured sufficient funds to the ***Ethiopian government***. The program helped the government protect the livelihoods of Ethiopia's vulnerable rural population, which is at risk from severe and catastrophic drought. This insurance instrument holds great promise for supporting institutions that have traditionally provided humanitarian assistance. Such programs can be made possible with support from an adaptation fund.

- At the macro level, the ***Caribbean island states*** have recently formed the first multi-country catastrophe insurance pool to provide governments with immediate liquidity in the aftermath of hurricanes or earthquakes. This pooling arrangement has made it possible to obtain reinsurance at a far lower rate than if each island state had negotiated separately. Again, support from international financial institutions greatly catalyzed formation of this pool, which suggests a further role for this tier of the insurance pillar.

These and other examples illustrate that catastrophe insurance plays an increasingly visible role in developing countries. Novel programs demonstrate their potential to pool economic losses and smooth incomes of the poor facing weather variability and climate extremes. These programs further transfer risk to the global capital markets. The potential of these types of insurance systems is enormous, and optimistically could provide comprehensive safety nets to the most vulnerable worldwide. However, reaching the very poor will require support beyond current pilot studies, which for the most part offer only limited cover that often does not reach the very poor. Scaling up and including the most vulnerable will require more resources and capacity than is currently available to institutions engaged in these activities.

The core of this proposed middle risk-layer entity is the provision of capacity building and technical support, which might include such activities as collecting and disseminating weather data, financing risk assessments, investing in weather station infrastructure, or supporting delivery systems. These are examples of expenditures in public goods that would not be provided sufficiently if markets were to act alone. In addition, the CIAF might provide more direct support by offering or brokering pooling and reinsurance arrangements. Tier 2 could directly enable the poor to participate, if deemed appropriate, through targeted support and minimally-distorting subsidies that would not crowd out private incentives for wider market segments.

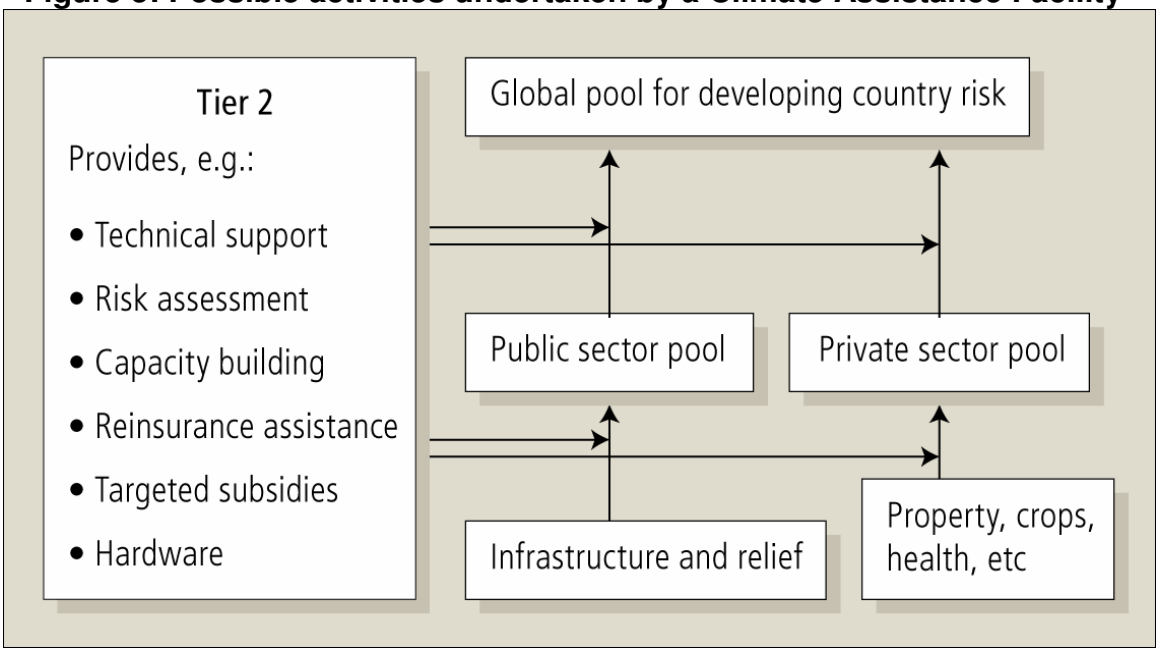
A guiding principle for adaptation financing is that funds be allocated on a strategic basis and not involve international micro-management at the project level. In keeping with this principle, it will be important for the CIAF to focus

especially on those activities that cannot be carried out by national adaptation funds. This would include, among other activities, providing assistance for pooling, capacity building and brokering reinsurance.

Figure 5**Error! Reference source not found.** illustrates possible activities in Tier 2. This proposed second tier would provide assistance to a wide range of insurance-related initiatives, including schemes providing cover for

(1) **property, crop, life and health** impacts and
(2) government liabilities for **public infrastructure** damages and **relief** spending.

Figure 5: Possible activities undertaken by a Climate Assistance Facility



Without the kind of assistance suggested in Tier 2, insurance programs will not be viable in many highly exposed developing countries. Yet, any outside assistance should be aware of the costs of insurance, its alternatives, and the danger of promoting mal-adaptation and crowding out market initiatives through direct subsidies. It will be important to target those who cannot afford the price of insurance, and otherwise to ensure necessary conditions for private insurance provision through competitive markets.

The GIRF and GFDRR

Two recent initiatives by the World Bank provide experience that can illustrate the broad program of support outlined for Tier 2 of the insurance pillar, and thus are promising as potential links. The Global Fund for Disaster Reduction and Recover (GFDRR) will provide technical assistance for mainstreaming disaster risk and serve as a stand-by facility to provide quick relief funding. A Global Index Reinsurance Facility (GIRF) sponsored by, among others, the European Commission, will provide technical support and backup capital for index-based insurance covering weather and disaster risks in developing countries to assure financial protection for small risk-transfer transactions. By constructing a diversified portfolio of developing country risks, the facility will leverage risk transfer and thus jump-start the development of risk transfer markets in countries with underdeveloped insurance markets (World Bank, 2005c). It is anticipated that other donor and financial institutions will join the GIRF initiative. The UNFCCC thus has a unique opportunity to join a larger community for the purpose of furthering insurance-related instruments to reduce developing country vulnerability to climate-change impacts.

Requisite funding for Tier 2:

The level of funding needed for Tier 2 depends on the number of countries involved and the scope of capacity building and technical support activities which participating countries request. If the activities are limited to capacity building, risk assessments, data dissemination, etc., the respective entity could operate at a low budget. Providing support by absorbing layers of the risk (like a solidarity entity) and enabling the poor to participate through more direct support would require considerably greater funding.

6. Summary

In fulfilment of the Bali Action Plan, the Munich Climate Insurance Initiative (MCII) proposes a two-pillar risk management module of a multi-pillar adaptation fund. The first part of the proposed "risk management module" is a Prevention Pillar emphasizing risk reduction. The second part is the Insurance Pillar that has two tiers. The first tier takes the form of a *Climate Insurance Pool* (CIP) that would absorb a pre-defined proportion of high-level risks of disaster losses, particularly in vulnerable countries. The second tier of the Insurance Pillar would take the form of a *Climate Insurance Assistance Facility*, and would provide technical support and other forms of assistance to enable public-private insurance systems for the middle layers of risk in these countries. Low-level losses would continue to be borne by exposed communities.

This two-part insurance module would

(1) follow the principles set out by the UNFCCC for **financing and disbursing adaptation funds**
(2) provide **assistance to the most vulnerable**, and
(3) include **private market participation**.

Negotiations will work out additional parameters and details for countries that choose to participate in the risk management module of a wider adaptation regime. These discussions should address the following critical issues:

- **Definition** of an extraordinary climate-related event; losses could be measured with loss-based or parametric methods;
- **Scope** of the insurance entity; it could include only government liabilities (public infrastructure and relief), private capital losses, and/or lives and livelihoods;
- **Coverage** and definition of the portion of extreme-event losses that will be absorbed by the CIP;
- **Links** of the CIP with loss prevention and economic development.

PART FOUR

Party questions on insurance & adaptation, Accra Climate Talks

Background. At the Accra, Ghana Climate Talks, MCII presented its submission to delegates and experts. The MCII submission at Accra presented the structure of an Insurance Module for a post-2012 UNFCCC adaptation regime. The submission received many critical positive remarks as well as raised questions. These questions will be addressed in the MCII submission for Poznan COP 14.

MCII analyzed and grouped the questions from Accra, dividing these questions into strategic and technical items. Those topics and questions with strategic, "architectural" value will be useful to address in the Poznan negotiations (in order to have insurance placed in the Copenhagen agreement). Questions of a more technical nature will likely be worked out in the period following Copenhagen and are not included in this document.

1. How are prevention and risk transfer linked in this proposal?

What are the links between prevention/risk reduction, and risk transfer in the proposed climate risk insurance module? How are moral hazard and avoiding mal-adaptation addressed?

Poorly designed insurance contracts, or those devoid of penalties (like deductibles) for taking unnecessary risks, can discourage investments in loss prevention and even encourage negligent behaviour, commonly referred to as "moral hazard" or "mal-adaptation". The worst outcomes occur when post-disaster assistance is not linked to pre-disaster prevention measures. As an alternative, well- designed insurance – by pricing risk - can provide effective incentives for risk-reducing physical interventions and behavioural and organizational changes.

Outside assistance is essential for making these programs affordable to the poor, but critics rightly argue that donor support, especially in the form of premium subsidies, can distort the price signal and weaken incentives for taking preventive measures. The insurance pillar proposed by MCII addresses this critique. The first tier of the Insurance Pillar provides premium-free insurance through the Climate Insurance Pool (CIP) for the high layer of risk. This does not distort market price and incentives for two reasons: First, markets often fail for this risk layer because people rarely purchase insurance or take other protective action against very infrequent events. Insurers take on these highly ambiguous risks only by loading premiums above the fair market price. Second, this layer is already often absorbed by governments or humanitarian organizations by their provision of post-disaster aid. Moreover, MCII proposes that eligibility for insurance coverage from the CIP is tied to governments engaging in a climate risk management program. The second tier of the MCII insurance pillar provides

assistance for insuring more common risks. While any assistance will be reflected in lower premiums, pre-disaster support for insured safety nets is arguably preferable to the distortions imposed by post-disaster aid. In contrast to post-disaster aid, it is possible to design donor-supported systems that strongly encourage clients to take preventive measures.

Insurance itself is a preventive measure in the strictest sense. By enabling recovery, insurance can enhance adaptive capacity by significantly reducing long-term indirect losses, even human losses, which do not show up in the disaster loss statistics.

2. What risks are covered under the climate insurance module?

What risks would be insured in both Tier 1 and Tier 2 of MCII´s proposed idea?

Coverage provided under the Tier 1 mechanism will based on parametric index-based triggers. Insurance contracts issued by the facility will pay claims based on the measurement of the intensity of a pre-defined natural event in a pre-defined area over a pre-defined period, up to a certain predetermined limit per year. This type of insurance mechanism provides for a much greater speed of disbursement and will be less costly to administer than traditional insurance since it does not require the insurer to evaluate losses on an indemnity basis. The determination of intensity of the predefined event will be made by an independent meteorological agency.

The Tier 2 *Climate Insurance Assistance Facility* foresees that each risk in participating countries requires a tailored strategy for both risk reduction and risk transfer. A suite of instruments and national approaches for these risks are needed. The Climate Insurance Assistance Facility will help ensure that affected participating countries have the support they need to manage middle-layer risks in ways that do not violate insurance principles or prevent the proper functioning of market solutions. Coverage under the Tier 2 *Climate Insurance Assistance Facility* (or regional facilities) would provide support to enable micro- and national insurance systems in non-Annex 1 countries by providing technical assistance, capacity building and possibly absorbing a portion of the insurance costs. Examples include support for index-based insurance to protect farmers (e.g., the recent systems in Malawi, India and elsewhere), to protect government infrastructure (e.g., the recent catastrophe bond in Mexico), or to help create regional systems (e.g., the Caribbean insurance pool).

3. How are hard-to-insure risks addressed by the climate insurance module?

How are hard-to-insure risks (slow onset or foreseeable risks, as well as small disasters) addressed in the proposed climate risk insurance module? What does the module have to offer to countries that are especially concerned about these kinds of risks?

Some foreseeable risks such as drought/water shortage, sea level risk, and desertification present challenges to insurance mechanisms. Yet many countries facing these types of risks—such as small island states, and many countries in Africa—are also those with lower capacity to deal with these climate change impacts. The MCII Climate Insurance Risk Module anticipates assistance for managing these kinds of risks under its Prevention Pillar, and specially designed risk transfer tools for the Tier 2 *Climate Insurance Assistance Facility*.

The Prevention Pillar can offer countries affected by foreseeable, longer-term risks to develop climate risk management and risk reduction strategies. These strategies will have multiple facets and could be implemented in cooperation with regional centers and stakeholders at the appropriate level. Under the Prevention Pillar, countries will receive assistance to work out a road map to manage each of the three identified foreseeable risks (drought/water shortage, sea level risk, and desertification). The roadmaps should also be worked out in cooperation with affected countries and the international community, and supported by sufficient resources and expertise.

4. What are the possible eligibility criteria for participating?

Question: What are the possible eligibility criteria for participating in the proposed scheme?

Countries' eligibility in the Insurance Pillar should be defined based on progress in prevention and risk reduction activities, and on the projected adverse impact of weather related disasters on households, SMEs and national economies. While the exact eligibility criteria subject to negotiations, as a starting point we would like to propose the eligibility criteria that provide a blend of risk reduction efforts undertaken by countries seeking cover (with support from the Prevention Pillar), and objective risk-related criteria and economic coping capacity.

For example, objective risk-related criteria for participating in the *Climate Insurance Pool* in Tier 1 could include: 1) countries with the Average Annual Economic Loss from weather related events exceeding 1% of GDP and 2) with the projected Probable Maximum Economic Loss from a 1-in-100 year event of at least 5% of GDP. In the future these parameters should be modeled to ensure the optimal composition and number of countries in a pooled international or regional solution. The approach outlined in MCII´s proposed climate insurance module, however, is a good point of departure for continuing strategic and technical discussions.

5. What are the benefits of a pooled insurance solution?

Question: Explain the trade-offs in pooling solutions. Is there a strong justification for why a pooling solution is needed, and why it is preferable to invest in an insurance mechanism rather than just putting adaptation funds in the hands of national governments worldwide?

Pooling solutions have many advantages and are viewed by the industry today as a good risk management solution. The main advantage of a pooled solution is that participants ensure the availability of financial resources in advance and under agreed-upon terms. For a pool to function, all partners must come to agreement, making the pool solution a stable and durable financial solution once consensus has been reached.

Pools can promote risk reduction. Eligibility criteria for participation in the pool can be progressive and linked to prevention and risk reduction. Greater risk reduction efforts can earn higher levels of coverage. Noted above, the peer element in pools can be powerful in promoting good risk reduction practice, such as enforcing sound building standards. Because pools encourage all participants to lower their risks, the can promote better risk management for an array of risks, not only climate risks. Pools also diversify risk & reduce adverse selection if linked to a wider issue. The wider the participation in the pool, the greater is the ability of the pool to diversify risk and reduce adverse selection. A pooled insurance solution for climate risk can lower the average premium because fixed costs are spread over many pool members. Pools can reduce adverse selection if membership is linked to a larger purpose (for example, participation in a wider adaptation framework) and even low-risk countries join the pool.

Pool solutions build consensus and align the interests of participants. Consensus helps create a strong basis of understanding because every element must be articulated: eligibility criteria, rules of procedure and rules governing how insurance payouts are handled. Every participant commits to the terms which are negotiated, peer reviewed, and agreed on by all participants.

Pools can reduce political risks. Because the pool is steered by a board representing all participants, the payouts do not favor any one member and are distributed fairly. Getting to an agreement on a pool requires deliberation among participating countries. Manipulation by narrow political interests is difficult with the governance structure of an international insurance pool because the managing board can authorize payouts within the parameters that all parties agree upon. The payouts are regulated, the downside is that if the overall losses exceed capacity of the pool not all damages are reimbursed. But this means the pool cannot go bankrupt. The pool has a clear payout structure and the downside is that if the losses exceed this not all losses.

Pools cover the risks considered most urgent. Pooled solutions find terms adequate to cope with the effects of global warming (minimal solutions). The most urgent risks are covered, even though the pool may be a compromise situation for individual participants. A challenge is that in the process of finding agreeable terms, the pool always has to be a compromise of all partners. One risk of a pool solution is that the pool does not have enough money to pay out all the damages, leading to only partial coverage. Yet additional insurance solutions, such as reinsurance, can be organized to address the risk of a pool being

overwhelmed. Nevertheless, the stabile pool structure keeps the pool functioning and each participant gains more than it stands to lose by sharing risks.

Experience with pools. Experience with pooled solutions such as the Turkish Catastrophe Insurance Program (TCIP, installed in 2002) and the Caribbean Catastrophe Reinsurance Facility (CCRIF, installed in 2007) have shown that a pool can be a tool accepted by governments and the financial services sector, particularly insurance. The CCRIF[20], formed in early 2007 has made payouts for two consecutive hurricane seasons in the region, remained solvent, and was recognized by the commercial insurance sector as an innovative tool. The pool is gaining a reputation as a valuable and innovative form of catastrophe cover on the global stage. Other earlier pool models, particularly national pools, have met with mixed results largely because of the ability of different political groups to influence spending for particular interests. Political independence, clear governance structures, and agreements in advance of a contract reduce the need for political agreement during crisis situations and allows better advance planning for risk management and for budgets.

6. What are the costs for the entire package?

What are the costs for the entire package proposed by MCII--not only Tier 1, but also Tier 2 and the prevention pillar?

The costs for the entire package proposed by MCII for a Climate Risk Insurance Module in a post-2012 adaptation regime will depend on negotiations. The cost of the prevention pillar depends on what level of support Parties request for climate risk management and risk reduction measures, including working out road maps for slow-onset foreseeable risks. For the insurance pillar, MCII estimated, together with insurance industry experts, that the gross cost of the Climate Insurance Pool including capital and administration costs of reinsurance would range between USD 3.2 bn and USD 5.1 bn for the range of the proposed insured limits. These costs could increase if loss of life and livelihood become part of the scheme.

The level of funding needed for the Tier 2 *Climate Insurance Assistance Facility* depends on the number of countries involved and the scope of capacity building and technical support activities which participating countries request. If the activities are limited to capacity building, risk assessments, data dissemination, etc., the respective entity could operate at a low budget. Providing support by absorbing layers of the risk (like a solidarity entity) and enabling the poor to

[20] The CCRIF recently won the Re/Insurance Initiative of the Year award. The CCRIF is the first multi-country risk pool in the world, and is also the first insurance instrument to successfully develop a parametric policy backed by both traditional and capital markets. It is a regional insurance fund for Caribbean governments designed to limit the financial impact of catastrophic hurricanes and earthquakes to Caribbean governments by quickly providing financial liquidity when a policy is triggered. Last year, the CCRIF paid out approximately US$1 million to Dominica and St. Lucia in the aftermath of the November 2007 earthquake that shook the Eastern Caribbean.

participate through more direct support would require considerably greater funding.

7. What elements must be worked out in Poznan and Copenhagen?

What elements must be worked out in Poznan and Copenhagen for a climate risk insurance mechanism, and what elements can be worked out following Copenhagen?

Insurance has been mentioned in the Convention, Kyoto Protocol, and the Bali Action Plan. Now the opportunity arises to explore in greater depth the role of insurance in facilitating adaptation. The most important work for Poznan and Copenhagen would be for the negotiators to establish the cornerstones of an insurance element which can then be built upon following Copenhagen.

For example, it would be helpful to establish

- basic consensus that insurance can help facilitate risk reduction and adaptation to climate change, and
- how adaptation is fostered through financial risk transfer mechanisms.

It would be helpful for negotiators to discuss proposals such as MCII´s that propose frameworks for questions like those discussed in this section:

- What is insured?,
- Who pays for coverage?,
- Who is eligible for coverage and other assistance?, and
- How could an insurance module be structured?.

If insurance mechanisms have a place in the post-2012 adaptation regime, then more detailed and technical modalities can be worked out with the appropriate governance structure.