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# Open Questions about How to Address “Loss and Damage” from Climate Change in the Most Vulnerable Countries<sup>1</sup>: a response to the Cancún Adaptation Framework

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## ABSTRACT

Extreme weather events represent the earliest, and in some places most significant, threats to the most vulnerable countries that are driven by climate change. An outcome of the 16<sup>th</sup> session of the Conference of the Parties (COP16) to the United Nations Framework Convention on Climate Change (UNFCCC) in Cancún was the decision to establish a work programme to consider approaches to address loss and damage associated with climate change impacts in the most vulnerable countries, including the adverse impacts of extreme weather events. This represents a significant opportunity to consider in more detail the feasibility and design aspects of current proposals on loss and damage, and undertake activities to develop a menu of viable measures and practical implementation options to inform discussions at COP18 in 2012. We conclude that there is already significant expertise and knowledge available on loss and damage that will form important inputs to these activities. However, there are also many open questions, particularly on approaches for operationalising a loss and damage mechanism. We identify high priority open questions about the design, implementation and governance of such a mechanism. We suggest that a valuable activity of the work programme would be to address such open questions with a view to informing recommendations by the UNFCCC Subsidiary Body for Implementation (SBI) to COP18.

## I. INTRODUCTION

The Cancún Adaptation Framework<sup>2</sup>, an outcome of the 16<sup>th</sup> session of the Conference of the Parties (COP16) to the United Nations Framework Convention on Climate Change (UNFCCC), highlights the need to strengthen international cooperation and expertise to understand and reduce loss and damage associated with the adverse effects of climate change<sup>2</sup>. Extreme weather events, such as droughts, floods and storms, which are the focus of this paper, are recognised as a key driver of this potential loss and damage, alongside

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<sup>1</sup> This paper builds on the submission made by the Grantham Research Institute on Climate Change and the Environment and the Centre for Climate Change Economics and Policy on 21<sup>st</sup> February 2011.

<sup>2</sup> Contained in /CP.16 (UNFCCC/AWGLCA/2010/L.7), paragraphs 25-29, [http://unfccc.int/files/meetings/cop\\_16/application/pdf/cop16\\_lca.pdf](http://unfccc.int/files/meetings/cop_16/application/pdf/cop16_lca.pdf)

slow-onset events, such as sea level rise, desertification and increasing average temperatures.

Today, extreme weather events cause devastating loss of lives and livelihoods across the world. The effects of disasters are felt particularly strongly in developing countries; roughly 90 per cent of deaths from disasters occur in the developing world<sup>3</sup>. According to estimates from the global reinsurer Munich Re, since 1980, weather catastrophes have caused almost 1,200,000 fatalities and led to direct damages amounting to US\$610 billion in low and lower middle income countries<sup>4</sup> (Figure 1). These disasters also have long-run negative impacts on development, for example, by damaging natural capital and infrastructure, undermining economic development and setting back poverty reduction efforts<sup>5</sup>. Climate change is likely to affect the frequency, intensity and geographical distribution of extreme weather events and in some areas this will lead to greater risks. Stern (2007) highlighted that extreme weather events represent the earliest and, in places most significant, threats to the most vulnerable populations that are driven by climate change. The World Development Report 2010 emphasised that unless the impacts of disasters can be systematically reduced, past development gains will be at risk<sup>6</sup>.

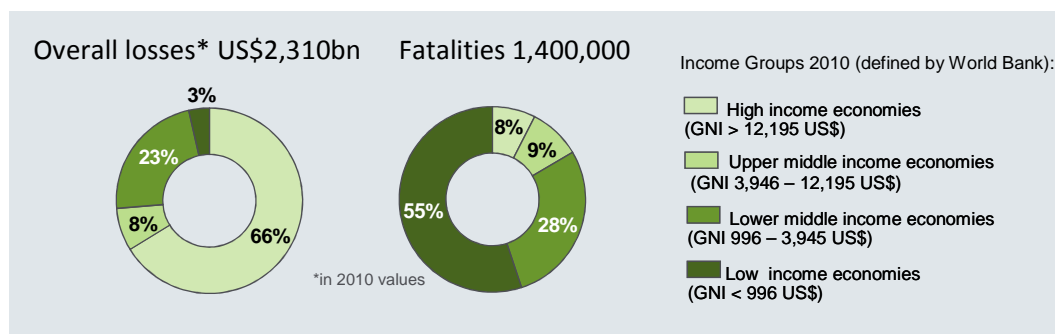


Figure 1: Fatalities and overall losses from global weather catastrophes by World Bank (as of 2010) income group between 1980 and 2010. Source: the Munich Re NatCatSERVICE database<sup>7</sup>

Even if efforts to mitigate climate change, by reducing greenhouse gas emissions, are successful, the world is committed to some further warming which means that people across the world will need to adapt to increasing impacts of climate change. The reduction and management of the risks from extreme weather events must play a major part in adaptation strategies and financing.

<sup>3</sup> Hoeppe and Gurenko (2006).

<sup>4</sup> Low and lower middle income countries are defined as those countries with a gross national annual income per capita of less than US\$3,946 in 2010.

<sup>5</sup> UNISDR (2009).

<sup>6</sup> World Bank (2009).

<sup>7</sup> 2011 Münchener Rückversicherungs-Gesellschaft, Geo Risks Research, NatCatSERVICE (as at April 2011)

Several proposals have been made by Parties to the UNFCCC and organisations about mechanisms to address loss and damage within an international adaptation framework (hereafter, a *loss and damage mechanism*). An outcome of the 16<sup>th</sup> session of the Conference of the Parties (COP16) in Cancún was the decision to establish a work programme in order to consider these approaches and to request that the Subsidiary Body for Implementation (SBI) agree the activities to be undertaken under this work programme. This represents a significant opportunity to consider in more detail the feasibility and design aspects of current proposals on loss and damage, and undertake activities to develop a menu of viable measures and practical implementation options to inform discussions at COP18 in 2012.

This paper responds to the call by the UNFCCC<sup>8</sup> following Cancún for relevant organisations to “*submit views and information on what elements should be included in the work programme, specifically related to:*

- a) Possible development of a climate risk insurance facility to address impacts associated with severe weather events;*
- b) Options for risk management and risk reduction; risk sharing and transfer mechanisms such as insurance, including options for micro-insurance; and resilience building, including economic diversification;*
- c) Approaches for addressing rehabilitation associated with slow onset events;*
- d) Engagement of stakeholders with relevant specialized expertise.”*

This paper aims to provide input on the important gaps in current understanding that could be addressed by the SBI work programme on loss and damage in order to inform recommendations by the SBI to COP18. This paper addresses parts (a), (b) and (d) listed above, which are each associated with managing risks from extreme weather<sup>9</sup>. The following section provides a discussion of the tools that are available to manage loss and damage associated with severe weather events, and of the lessons learnt and principles that could be relevant inputs to a work programme on loss and damage. Section III reviews the current proposals made by Parties and organisations for a loss and damage mechanism. Section IV provides suggestions on elements of an SBI work programme on loss and damage, starting from its desired outcomes and outputs, and working towards a definition of the required inputs and activities. Section V focuses on important knowledge gaps around one input, approaches to operationalising risk management options, and lists high priority open questions that should be addressed by the work programme.

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<sup>8</sup> Outlined in paragraph 28 of /CP.16 and subsequent message to Parties on 12<sup>th</sup> January 2011.

<sup>9</sup> Part (c) is not directly addressed in this paper as it goes beyond managing extreme events and requires a different set of tools and policies.

## II. BACKGROUND: OPTIONS FOR MANAGING LOSS AND DAMAGE ASSOCIATED WITH SEVERE WEATHER EVENTS

There is a deep knowledge and experience available to the SBI work programme on loss and damage regarding approaches to managing risks from severe weather events. This section provides a brief summary of the array of tools available and lessons learnt about how these tools can be applied together to reduce risks within an adaptation framework.

The array of tools available can be divided into *ex-ante* and *ex-post* categories. *Ex-ante* measures are implemented before a disaster occurs. These include:

- **Tackling the underlying social drivers of risk**, for example, poverty reduction and development, including strengthening governance and institutional structures, economic diversification, improving health care, access to social protection and education<sup>10</sup>.
- **Early warning systems and disaster preparedness**, including monitoring and forecasting, evacuation procedures and emergency response planning.
- **Structural and non-structural measures to limit physical risks (also known as risk prevention and reduction)**, such as flood defences, enforced building codes and land-use planning.
- **Measures to enhance financial resilience**, including financial risk-sharing (insurance).

These types of measures are appropriate for managing different scales of risk and so are often complementary within a risk management strategy (Figure 1). For example, measures, such as sea walls, can significantly reduce risks from more frequent, smaller-scale extreme weather events, but can not substantially limit the consequences of rarer, more severe and large-scale disasters which can often overwhelm them. For these disasters, preparedness coupled with financial resilience can be a cost-effective way to limit impacts on people and the economy, and to speed recovery.

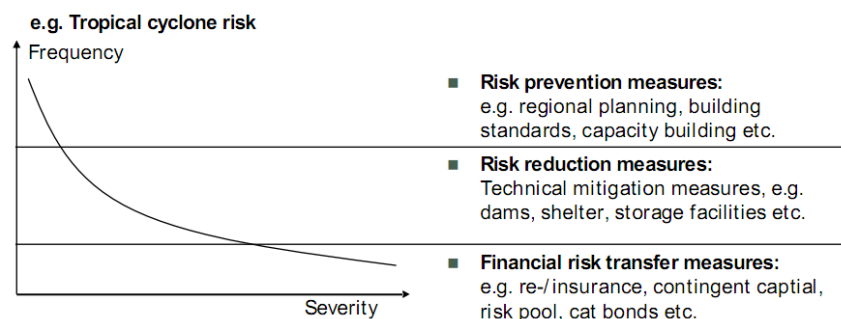


Figure 2: Illustration of available ex-ante risk management tools and their applicability for managing different scales of risk, in terms of severity and frequency (Source: Warner and Spiegel 2009)

<sup>10</sup> World Bank (2009).

*Ex-post* measures are implemented after a disaster occurs, and include: disaster response; humanitarian assistance; reconstruction; and rehabilitation. Historically, low- and middle-income countries have tended to rely on *ex-post* measures, in particular, post-disaster assistance, rather than measures to increase resilience before a disaster strikes. There are several reasons for this. The advantage of post-disaster assistance over *ex-ante* action is that the latter draws on local public/private finances for investments (with uncertain benefits), whereas post-disaster assistance is financed upfront by external groups (e.g. aid or lending donor countries) and is reactive (i.e. requires no forward planning). Also it is specifically targeted at the affected group.

The major disadvantage of post-disaster assistance is that it does not prevent fatalities or damages. The reliance on aid can also cause ‘charity hazard’, where the expectation of help after an event can discourage countries and individuals to take preventative measures, potentially putting more lives and livelihoods at risk. The United Nations International Strategy for Disaster Reduction (2009) notes: *“The traditional model of post-disaster financing, relying on slow and unreliable assistance from the international community, the diversion of budget allocations from development to recovery, or raising new debt in expensive post-disaster capital markets, is increasingly inefficient as disaster occurrence and the magnitude of loss increase”*. International assistance often offsets less than 10 per cent of the losses caused by a disaster, and reconstruction funding may take up to 12 months or more to put into action, even if it is allocated effectively to help those most affected<sup>11</sup>.

For these reasons, enhanced *ex-ante* risk management can have huge and immediate benefits in developing countries. In the majority of cases, *ex-ante* disaster risk reduction is a far more cost-effective, sustainable and humanitarian approach to managing risks than simply bearing the losses or relying on *ex-post* measures. For example, one global study estimates that US\$1 invested in pre-disaster risk management activities in developing countries can prevent US\$7 in losses<sup>12</sup>. There are also many examples of cost-benefits at a local level. For example, it has been estimated that between 1960 and 2000, China spent US\$3.15 billion on flood control, averting potential losses of US\$12 billion, and in India, disaster risk management and preparedness programmes in Andhra Pradesh yielded a benefit/cost ratio of more than 13<sup>13</sup>. Ashdown (2011) reported that Mozambique unsuccessfully requested £2 million in 2006 from the international community to help prepare for floods, but in 2007 the international community spent £60 million on responding to floods in the country. That is not to say that *ex-ante* investments in flood preparedness would have avoided the need for all of the £60 million expenditure on post-disaster aid, but

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<sup>11</sup> ISDR (2009).

<sup>12</sup> Cited in UNDP (2007).

<sup>13</sup> Cited in Stern (2007).

it is likely that it would have reduced the suffering of some of the almost 300,000 people affected by the floods.

### ***Rationale for Risk Transfer Tools, such as Insurance, and their Limitations***

Not all of the risks from extreme weather events can be eliminated cost-effectively; there will always be some residual risks. For instance, it may not be economically or technically feasible to build a flood defence that is high enough to protect against, say, a storm surge with a 500-year return period. The impacts arising from this residual risk can be reduced through better preparedness and disaster response, but in many cases, households, businesses and governments are left with a resource gap in rehabilitation and rebuilding that can slow recovery and may impair the long-term health, human development and productivity of the most vulnerable, exacerbating chronic poverty<sup>14</sup>.

For many smaller countries, the magnitude of potential disaster losses can be comparable to, or greater than, the size of their economic output, making them highly vulnerable financially (e.g. Figure 3). For example, Hurricane Ivan caused damages in Grenada that was equivalent to 200 per cent of the country's GDP<sup>15</sup>. Having immediate funds to jump-start rehabilitation and recovery reduces the derailing effect of disasters on development.

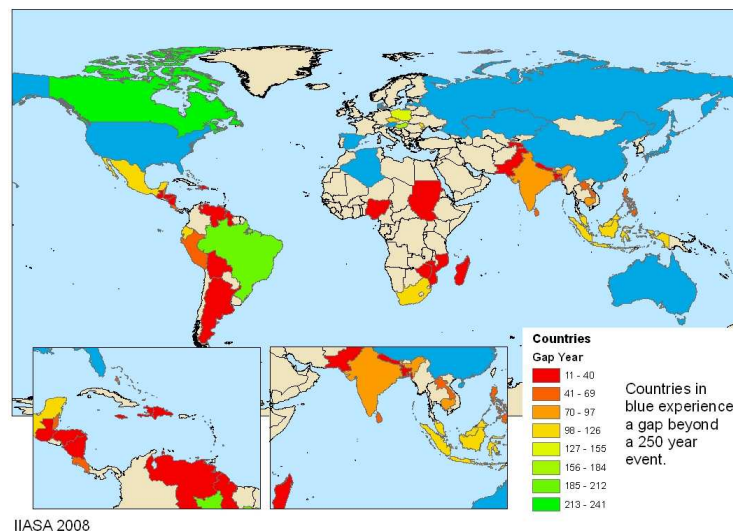


Figure 3: The financial vulnerability of selected countries to floods, droughts and storms. For example, for countries shaded light orange (like India) a severe weather event with a 70 – 97-year return period would exceed the public sector's financial ability to restore damaged infrastructure and provide relief while continuing with development as planned. Note that the analyses cover only countries at substantial risk and with available data (i.e. those shown in beige are not covered). Source: Mechler *et al.* (2009).

<sup>14</sup> For example, affected populations may be forced to cut back on more productive investments to fund rehabilitation (World Bank 2009).

<sup>15</sup> World Bank (2009).



The resource gap can be closed pro-actively through risk-sharing and transfer, including social safety nets and insurance. Here the term ‘insurance’ is used as a collective term that covers a range of risk transfer tools appropriate for different users and circumstances, including regional risk pooling, sovereign catastrophe bonds, state insurance schemes, traditional insurance, micro-insurance and public-private partnerships<sup>16</sup>. Insurance is a mechanism whereby an individual or organisation (the insured) transfers part of their risk to an insurer in return for a payment (the premium); if the insured experiences a loss, the insurer pays out a previously agreed amount.

Insurance is a tool specifically highlighted by the Cancún Adaptation Framework (Paragraph 28(a) and (b) of /CP.16). For this reason, this sub-section describes its benefits and limitations, and applications in an adaptation context, based on lessons learnt from its use today.

Well-functioning insurance markets can have significant benefits for the insured; by sharing risks across individuals, regions and countries, they can reduce the negative welfare effects of shocks of all types on the affected population. The advantage of *ex-ante* insurance over post-disaster assistance is that it is relatively fast to respond, reliable and the payouts are certain<sup>17</sup>.

Insurance is a form of risk transfer common in developed countries with a growing application in the developing world, for example:

- Micro-insurance schemes, which are specifically designed to be affordable and appropriate for low-income groups (although still largely as pilot projects), are operating successfully in many parts of Asia and Africa, including India, Mongolia, Kenya, Malawi, Rwanda and Tanzania<sup>18</sup>. MicroEnsure, a leading UK-based micro-insurance agency (with the assistance of a US\$24 million grant from the Bill & Melinda Gates Foundation), has been working with intergovernmental and local partners across the world to provide 3,500,000 low-income families with access to a range of life, health and (to a lesser extent) weather insurance products across Africa and Asia<sup>19</sup>. For low-income communities, access to micro-insurance can also unlock rural credit for farm inputs, such as drought-resistant seeds, which not only help farmers to become more resilient, but also provide higher crop yields and improve food security.
- At the other end of the scale, catastrophe risk transfer products are being used by governments to reduce the public resource gap for rehabilitation and redevelopment after a disaster occurs. These types of products typically cover the

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<sup>16</sup> e.g. UNFCCC (2008); Warner and Spiegel (2009).

<sup>17</sup> Hoeppe and Gurenko (2006).

<sup>18</sup> Hellmuth *et al.* (2009).

<sup>19</sup> Richard Leftley *pers. comm.*

risks of less frequent but higher impact events. The most significant example of this is in the Caribbean, where a number of small island states have created a regional insurance pool (the Caribbean Catastrophe Risk Insurance Facility - CCRIF) to cover potential sovereign catastrophic losses from hurricanes and earthquakes<sup>20</sup>. Risk pooling allows those who are exposed to share responsibility for dealing with the consequences of disasters. Through spreading risk, pooling allows participants to gain catastrophe insurance on better terms and to access collective reserves in the event of a disaster. The CCRIF was able to secure more than US\$100 million of reinsurance capacity in addition to its own reserves<sup>21</sup>. Index-linked securities, most commonly catastrophe bonds, are another option being used by some governments to share risks more broadly with the capital markets<sup>22</sup>.

However, insurance is not a 'silver bullet' and has limitations as an adaptation tool. This has implications for the design of a loss and damage programme:

- Fundamentally, risk transfer and risk-sharing schemes do not directly reduce the risk of damage or loss from disasters. *Ex-ante* disaster risk reduction is the only approach that can prevent fatalities and limit direct damage from disasters. In a warming world, without efforts to reduce risks, both post-disaster assistance and insurance will become increasingly expensive and ultimately unsustainable.
- Like post-disaster assistance, poorly designed risk transfer initiatives can be a maladaptation to climate change if they reduce incentives for risk reduction or create moral hazard. Conversely, well designed risk transfer schemes can incentivise risk reduction efforts and promote a greater focus on resilience.
- Insurance alone, particularly its traditional form, is not practical or viable everywhere; there are barriers to, and practical constraints on, its adoption on a scale that might make other tools more effective. In a developing country context, these barriers and practical constraints include lack of affordability of insurance, low level of risk information (lack of data), constraints caused by local cultural and risk knowledge factors (e.g. some cultures have little experience of insurance or have values that prevent use of insurance), lack of local skills and capacity for insurance, local legislative structures, lack of appropriate distribution networks and moral hazard issues. Innovative insurance tools, such as micro-insurance, have overcome such issues in some contexts.

Many of these limitations can be overcome by implementing insurance as one component of an integrated risk management approach, which draws on an appropriate balance (or 'optimal' combination) of disaster preparedness, risk reduction, risk transfer, and *ex-post* measures. The appropriate balance is country-specific and dependent on local risk appetite

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<sup>20</sup> Ghesquiere *et al.* (2006).

<sup>21</sup> Warner *et al.* (2009).

<sup>22</sup> Cummins and Mahul (2009).

and societal values. This argues for country-led risk management plans, supported by technical assistance, risk analyses and capacity-building as necessary.

### ***Implications for the Design of a Loss and Damage Mechanism***

The evidence described in this section leads to a number of necessary principles that have direct implications for the design of both local adaptation programmes and a potential international mechanism for managing loss and damage associated with the adverse impacts of climate change under the Cancún Adaptation Framework.

Firstly, there must be an appropriate balance of risk reduction and risk transfer measures that recognises the changing nature of risks over time. Secondly, risk transfer mechanisms should be designed to incentivise good risk management behaviour. In general, the design of a loss and damage mechanism should be founded upon the lessons learnt from initiatives to reduce and transfer risks in the current climate, both in developed and developing countries. There is no single tool that can effectively reduce all types of risk; a combination is required. In addition, there is no ‘one size fits all’ risk management plan; the ‘optimal’ combination will depend on the local conditions, such as geography, historical risk governance, attitudes to risk and cultural dimensions.

A loss and damage mechanism should also recognise the lessons and principles learnt from disaster risk management and development activities today, for example, those outlined in the Hyogo Framework for Action (Box 1). In particular, the need to mainstream efforts into existing national planning and policy-making processes, including development planning, poverty alleviation, environmental management and natural resource management. It should also build on the principles laid out by the UNFCCC and the Cancún Adaptation Framework, including being country-driven and participatory, promoting local capacity-building and resilience, and targeting assistance to the most vulnerable groups.

#### **Box 1: The five “Priorities for Action” of the Hyogo Framework for Action**

1. Ensure that disaster risk reduction is a national and local priority with a strong institutional basis for implementation.
2. Identify, assess and monitor disaster risks and enhance early warning.
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
4. Reduce the underlying risk factors.
5. Strengthen disaster preparedness for effective response at all levels.

Source: UNISDR (2005; 2009)

### **III. CURRENT PROPOSALS FOR A LOSS AND DAMAGE MECHANISM IN THE UNFCCC PROCESS**

Numerous proposals for disaster risk reduction and insurance instruments have been put forward and have been considered in the UNFCCC negotiation process<sup>23</sup>. In 2008, the Swiss Government reinforced earlier calls by proposing a multi-lateral adaptation fund that would be spent on prevention and insurance. Building on this initiative, the Alliance of Small Island States (AOSIS) and the Munich Climate Insurance Initiative (MCII) submitted two separate but similar proposals on disaster risk reduction and insurance mechanisms<sup>24</sup>. Both propose that the international community makes funding available to assist developing countries, particularly those that are most vulnerable, to adapt to climate change, by reducing climate-related risks and transferring them where necessary through financial mechanisms.

### ***The Proposal of the Munich Climate Insurance Initiative (MCII)***

The MCII proposal incorporates two pillars (Figure 4). The Prevention Pillar provides support for activities that cost-effectively prevent or reduce low-level weather-related risks from, for example, frequently occurring dry seasons or heavy rains. The Insurance Pillar covers those risks that can not be cost-effectively prevented, described as medium- and high-level weather-related risks. MCII proposes two tiers to deal with these risks. At medium levels of risk (e.g. from 1-in-50-year return period events) a Climate Insurance Assistance Facility would enable public or private insurance and other social protection systems for vulnerable communities. This might include, for example, micro-insurance for agriculture or risk pooling for countries. To provide a financial safety net to safeguard against the less frequent and higher impact events, MCII proposes a Climate Insurance Pool that will absorb a pre-defined portion of high-level risks, particularly in vulnerable countries, at no cost to the beneficiary countries. The Climate Insurance Pool would be reinsured against years of extreme loss in the global reinsurance market. The April 2009 submission of the MCII costed its proposal at US\$10 billion per year.

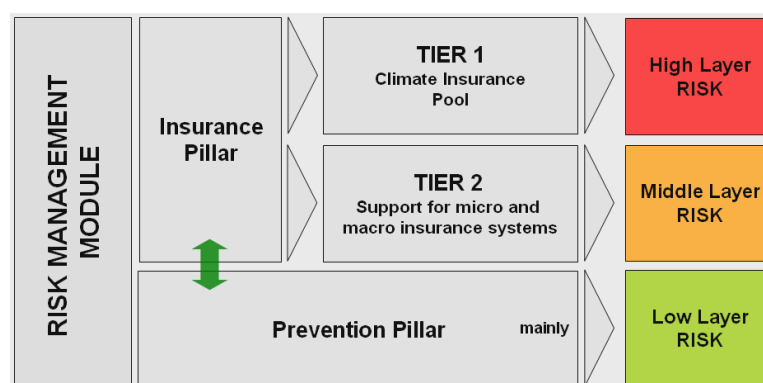


Figure 4: The MCII Proposal (reproduced from Warner *et al.* 2009b).

<sup>23</sup> See review paper by Warner and Spiegel (2008).

<sup>24</sup> AOSIS (2008); MCII (2008); MCII (2009); Warner *et al.* (2009a,b).

### ***The Proposal of the Alliance of Small Island States (AOSIS)***

The AOSIS proposal (Figure 5) calls for a multi-window mechanism with three components (or pillars) to address loss and damage from climate change impacts: insurance, rehabilitation, and risk management. The AOSIS proposal takes a similar form to the MCII proposal but with the additional pillar to deal with financial support for slow-onset loss events like sea level rise (the ‘Rehabilitation/Compensation Component’). The three pillars would be supported by a financial and technical support facility.

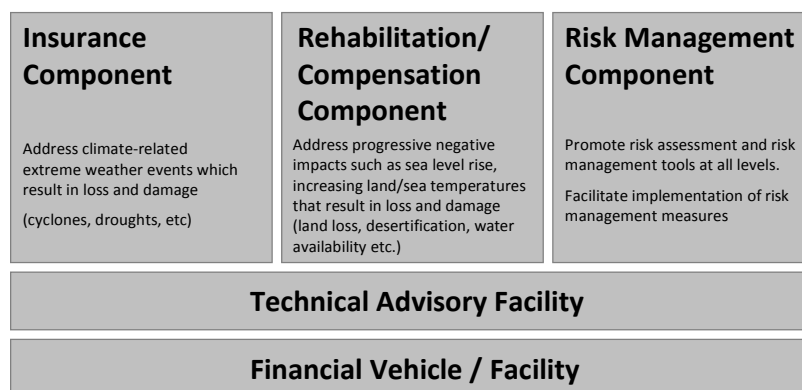


Figure 5: The AOSIS Proposal (reproduced from AOSIS 2008).

These proposals have been extensively discussed by Parties, experts and stakeholders. A number of open questions remain regarding the design and implementation of such mechanisms, as recorded for example by Iyehen and Young (2009) and MCII (2008; 2009b). These questions and others are outlined in Section V.

#### **IV. 'ELEMENTS' OF AN SBI WORK PROGRAMME ON LOSS AND DAMAGE**

As discussed in Section I, the UNFCCC requested that the SBI agree the activities to be undertaken under the work programme on loss and damage and called for the submissions of views from Parties and relevant organisations on what elements should be included. Our views on these elements, based upon the areas laid out in Paragraphs 28 and 29 of /CP.16, are summarised in Figure 6.

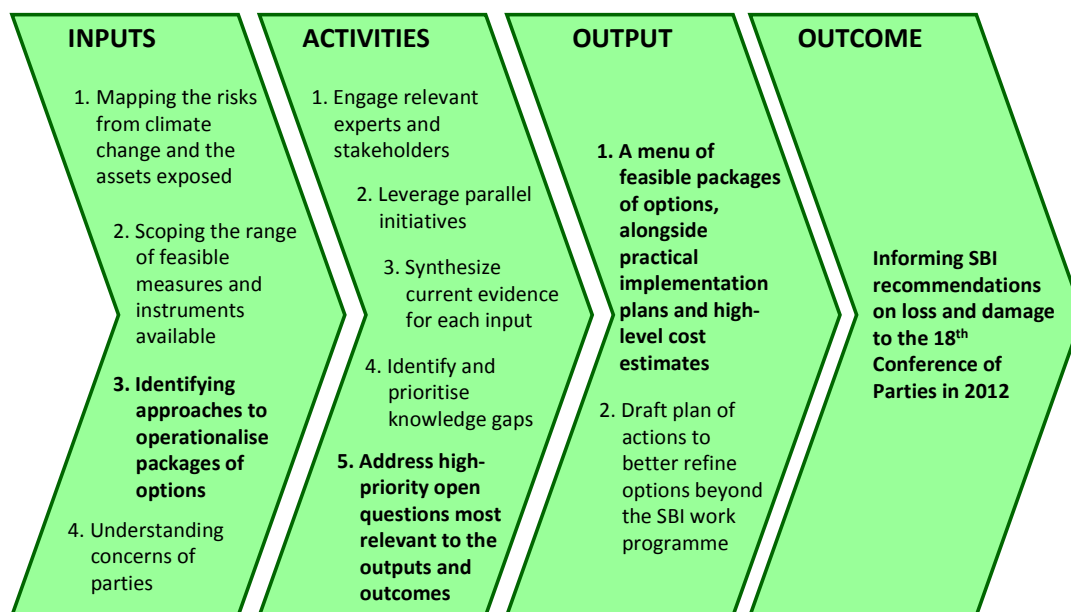


Figure 6: Summary of suggested elements of an SBI work programme on loss and damage. The highlighted elements (in bold) are those that we suggest are highest priority in order to achieve the desired outcome, given the current state of the evidence related to loss and damage and Paragraphs 28 and 29 of /CP.16.

### ***Outcomes and outputs***

First and foremost, the work programme should have a clearly defined desired outcome, or goal, from the start, and this should lead directly to a set of specific outputs. Paragraph 29 of the Cancún Adaptation Framework suggests one desired SBI outcome from the work programme should be **inform recommendations by the SBI on loss and damage to the 18<sup>th</sup> session of the Conference of the Parties to the UNFCCC in late 2012.**

We suggest that in order to achieve this outcome, an output of the work programme should be to **identify a menu of viable packages of tools (including measures, instruments and policies) and possible structures (institutional and otherwise) alongside outlines of practical implementation options** and high-level cost estimates (where possible).

A secondary output of the work programme could be a document identifying any remaining open questions, and a draft plan of how these could be answered in order to refine the menu of options, implementation plans and cost estimates after COP18. Such a plan could help to inform and catalyse future activities on loss and damage beyond the SBI work programme as well as building capacity for implementation. This plan could include, for example, options for pilot studies, strengthening local capacity and international cooperation on loss and damage, within both the research and policy-making communities, as well as within the private sector.

## ***Inputs and Activities***

When a set of desired outputs is defined, it will be possible to identify the inputs and the activities required. Figure 7 summarises our suggested four inputs to the loss and damage programme. This is an area in which substantial expertise, experience and knowledge are already available and therefore, an initial activity of the work programme could be to synthesise this information then identifying and prioritising key gaps in current knowledge and experience (i.e. the inputs) that need to be filled in order to develop a menu of viable options and implementation plans to manage loss and damage.

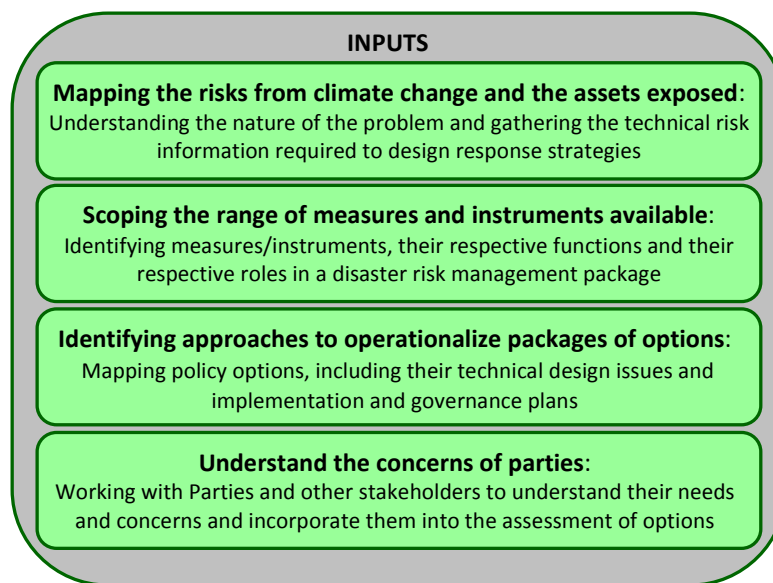


Figure 7: Suggested required inputs to the SBI work programme on loss and damage

Evidence-gathering as part of the work programme should begin by engaging relevant stakeholders, Parties and experts. In particular, it is crucial that the packages of options and implementation plans reflect the needs of Parties and take into account their concerns, as well as being strongly founded on existing knowledge and experience of loss and damage mechanisms. This engagement could occur through a series of focused workshops and meetings. There is substantial work being undertaken that is relevant to loss and damage, such as the IPCC Special Report on Extreme Events and the UNISDR Global Assessment Report, so it will be important for the SBI to take account of these initiatives and leverage their resources and information appropriately. While this evidence-gathering will include scientific and technical considerations, we suggest that it should take place within the SBI work programme on loss and damage and should be focused on the development of practical recommendations for implementation.

A next step would be to prioritise the gaps in current knowledge to inform the specification of outputs, based on input from the expert network. We suggest that the most significant gaps in current knowledge, and areas in which the greatest value can be added by the SBI in

in order to achieve the desired outcome, are related to approaches for operationalising packages of options; for example:

1. **Mapping the risks from climate change and the assets exposed:** Much research attention has focused on understanding the nature of the problem, and parallel efforts by the Intergovernmental Panel on Climate Change (IPCC) and UN ISDR will provide further information on this by 2012. Important information gaps occur due to the lack of detailed risk assessments required to inform specific local response strategies. However, this is an intensive, locally-specific exercise that may be non-essential to the development of broad recommendations about implementation, and may therefore be beyond the scope of the SBI work programme. Some have suggested that financing for such detailed risk assessments might form one component of a loss and damage mechanism<sup>25</sup>.
2. **Scoping the range of measures and instruments available:** Substantial information and expertise is available about risk management tools, and, therefore, a valuable activity of the SBI, in the context of completing its defined outputs, might be to:
  - i. Gather knowledge and assess the relative roles of different tools for managing climate change risks, given the core principles and lessons learnt from existing programmes. An output of this would be to develop the viable packages of measures for consideration (with cost estimates as appropriate).
  - ii. Identify current gaps in knowledge, data and capacity (both local and global) for the implementation of these packages of options.
  - iii. Catalyse an international expert network, leveraging complementary initiatives, to be later harnessed to refine and implement a loss and damage mechanism.
3. **Identifying approaches to operationalise packages of options:** This input includes issues of design, implementation and governance of different packages of risk management options that need to be resolved in order to develop practical implementation plans. This input has so far received the least attention, but is an area in which many queries from Parties have been centred<sup>26</sup>.
4. **Understanding the concerns of Parties:** Efforts have already been made to gain and synthesize these perspectives and address remaining questions<sup>22</sup>. Engaging Parties and other stakeholders to test the relevance of plans and gain buy-in should be a continuous activity of the SBI work programme on loss and damage.

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<sup>25</sup> Such technical risk analyses could form a technical assistance component of a loss and damage mechanism, as has been proposed, e.g. MCII (2008); AOSIS (2008); and Warner and Spiegel (2009).

<sup>26</sup> Iyahan and Young (2009); MCII (2008); and MCII (2009b).



Each input is important. Our assessment of current evidence is that information gaps relating to the third input could create the largest barrier to developing a set of viable recommendations for COP18.

We suggest that addressing these gaps should be a priority activity for the SBI work programme on loss and damage. This could occur through a series of expert workshops, drawing on pools of expertise to address different components (e.g. technical design issues, international governance or local institutional arrangements) as necessary. Specific open questions related to this element are outlined in the following Section.

### ***Work Streams for Inputs and Activities***

The individual components of a loss and damage mechanism outlined in the Cancún Adaptation Framework have differing information needs and design, governance and implementation issues. To reflect this, we suggest that the inputs and activities of the work programme be divided along the lines of the different tools and levels of risk outlined in paragraph 28 of /CP.16:

- a. The development of a climate-insurance facility to address impacts related to severe weather events.** That is, a facility to address infrequent, high impact risks of loss and damage from extreme events at a country level.
- b. Options for risk management, including risk sharing/transfer and risk reduction.** This includes, for example, insurance and micro-insurance, resilience-building and economic diversification. This stream is focused on addressing more frequent and medium-scale risks of loss and damage at the country or regional level, compared with the first work stream. However, the risk reduction and resilience activities will also have benefits for managing the risks of the most severe weather events.
- c. Approaches to address longer-term foreseeable loss and damage:** Approaches for addressing rehabilitation measures associated with gradual events, such as increasing mean temperatures, sea level rise, biodiversity loss, glacial retreat and desertification.

These three work streams are not independent. It is important to examine the inter-relationships between the different tools. The findings from the activities of each work stream should contribute to the overall menu of options (Figure 8).

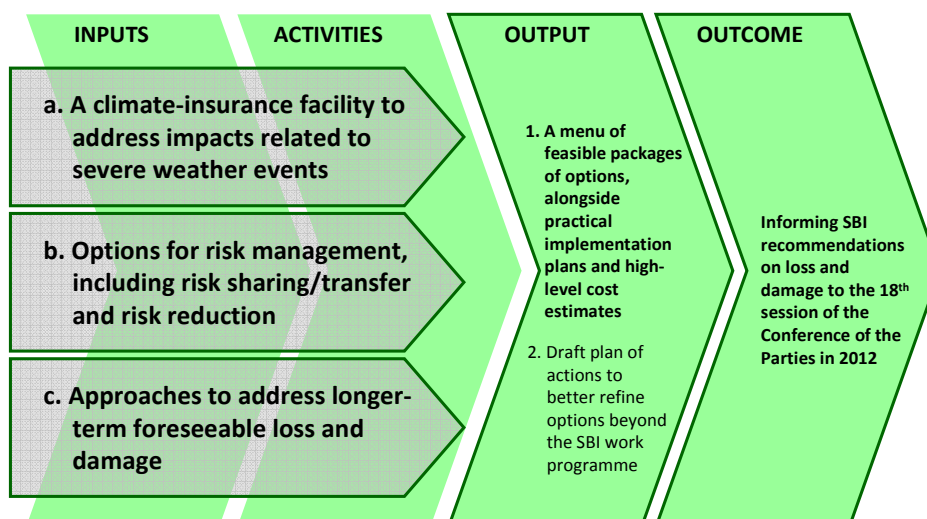


Figure 8: The three proposed work streams of inputs and activities.

## V. KEY OPEN QUESTIONS RELATED TO THE OPERATIONALIZING OPTIONS

Given the knowledge available today, in the context of paragraphs 26-29 and the proposals already made by Parties outlined in Section III, we suggest the following open questions that could be addressed by the SBI work programme on loss and damage. The full list is given in the Technical Annex of this paper. Summarised below are those questions and issues which we suggest should have highest priority for investigation within the SBI work programme; where we define high priority questions and issues as those that could create barriers to the development of meaningful recommendations if not tackled ahead of COP18. The questions are divided by work stream, and are limited to the first two streams that address options for managing the risks from extreme weather events.

We suggest that a first step of the work programme should be to scope a comprehensive and prioritised list of open questions in consultation with Parties, stakeholders and experts.

### ***a. Possible development of a climate-insurance facility to address impacts associated with severe weather events***

This work stream should focus on developing options for a ‘climate-insurance facility’ to manage damages associated with the most severe weather events; that is, those that would usually cause losses that go beyond the capacity of a country to cope. It would particularly explore the proposals made by Parties and Organisations (Section III) and consider specific feasibility, design and implementation questions.

Unlike for work stream b., it is more difficult to identify an existing model for a climate-insurance facility that exactly fits the descriptions provided by current proposals, and therefore, some innovation is likely to be required to design and implement this facility.

However, there are models that could be drawn upon to inform specific components, for example, the CCRIF and the European Union Solidarity Fund<sup>27</sup>.

We suggest that high priority open questions and issues related to this work stream include:

- i. **What should be the nature of the ‘climate-insurance facility’?** For example, should it be designed to act as an international solidarity fund or a financial risk-sharing instrument? How should solvency be ensured?
- ii. **Which risks should be covered?** For example, national, regional or local risks? Immediate liquidity gaps (as in the CCRIF) or public infrastructure damages also? Property damage or business interruption? What levels of losses should be covered? Should they include only risks from climate change or all climate risks? Which hazards should be covered<sup>28</sup>? Should the facility have scope to include non-climate hazards, such as earthquakes?
- iii. **Who should pay the premia?** What fractions of premia should be contributed by the international community rather than beneficiary countries? How should any subsidies be structured - how should this vary depending on capacity of the beneficiary country and the level of coverage of the scheme?
- iv. **What expertise and entities should be required to establish and run the facility?** What would be realistic timescales for start-up and growth?
- v. **What data, institutional, legal and expertise gaps would need to be filled to operationalize the facility?** How should country level capacity issues be addressed?
- vi. **How should the facility be established and grow?** Should it begin with individual regional pools covering specific risks, with the aim of growing to a more global, comprehensive solution?
- vii. **What public/private entities would need to be established to operate the facility and how should these interact with existing public institutions?** Independent non-profit organisations, MLFAs or regional development banks? What international, regional and local institutions and bodies would need to be involved or established? How should operational entities be designed and what responsibilities should they have?
- viii. **Would there be a role for the private sector?** What would be the benefits of involving the private insurance and/or reinsurance industry to provide risk transfer

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<sup>27</sup> The EU Solidarity Fund (EUSF), founded in 2004, provides assistance in the form of a single or global grant to member states when large-scale disasters occur. For further information: [http://europa.eu/legislation\\_summaries/regional\\_policy/provisions\\_and\\_instruments/g24217\\_en.htm](http://europa.eu/legislation_summaries/regional_policy/provisions_and_instruments/g24217_en.htm).

<sup>28</sup> Including a broader range of risks beyond climate hazards might have advantages for diversification of the risk pool, therefore reducing overall costs, but would pose a problem for the “polluter pays” principle as, for example, earthquakes are not influenced by greenhouse gas emissions.

or other services? How might public sector finance help leverage private sector contributions?

- ix. **How should the facility be governed?** Which institutions should be responsible? What auditing and verification processes would be required?
- x. **Who should benefit?** Which countries should be eligible to participate in the insurance facility? Should it be limited to least developed countries and the most vulnerable to climate change, or should there be broader participation, with premia based on financial capabilities or risk levels? How should the payouts of the facility be targeted to assist the most vulnerable people?
- xi. **How should the facility promote risk reduction?** For example, the MCII approach suggests that eligibility for the scheme should be linked to the performance of the individual states in complying with risk reduction measures. This would raise questions about how one should measure compliance and performance.

***b. Options for risk management and risk reduction; risk-sharing and transfer mechanisms such as insurance, including options for micro-insurance; and resilience-building, including economic diversification.***

The adaptation options addressed through this work stream should aim to manage medium-scale or sub-national level loss and damage (e.g. Figure 1). This scale of risk can typically be cost-effectively reduced (or in some cases, eliminated) and residual risks shared or transferred. The types of measures required here would be similar to those used today to manage risks in both developed and developing countries and would be those already advocated by international development and disaster risk reduction organisations. This means that for this component, fewer knowledge gaps exist. However, implementation could be more challenging than for (a) as it is more likely to require 'bottom-up' actions and could therefore come up against barriers to action on the ground, such as institutional inertia and challenges through lack of local data and capacity.

Investments and actions associated with this component would have strong synergies with other areas of adaptation financing (e.g. reducing risks from gradual changes in climate), as well as broader humanitarian, disaster risk reduction, development and poverty reduction activities that are not directly related to climate change. Examples include strengthening adaptive capacity, building risk information and early warning systems, addressing the underlying drivers of vulnerability (including economic diversification), strengthening institutional capacity and risk governance, and building financial safety nets. This means that investments will have immediate benefits in terms of loss reduction and 'win-wins' with other near-term non-climate priorities and development goals.

The proposals currently made as part of this element<sup>29</sup> emphasize the need for local ownership and coordination, with international financing being directed towards technical assistance, local capacity-building (directed toward individuals, governments and the private sector) and funding of specific adaptation projects. In this context, high priority questions for the SBI work programme on loss and damage would include:

- i. **How should a loss and damage mechanism be designed to support local capacity-building? What types of knowledge and data gaps would need to be filled? For example,** a technical assistance facility to help identify and fill gaps in present-day climate risk information and risk understanding, and to provide support for local capacity-building, including risk governance, finance distribution channels and the legal and regulatory frameworks to support insurance tools.
- ii. **What local/international and public/private entities would need to be established?** What international, regional and local institutions would need to be involved? How should operational entities be designed and what responsibilities should they have?
- iii. **Would there be a role for the private sector?** What would be the benefits of private sector involvement, such as insurance and reinsurance? How might public adaptation finance help leverage private sector contributions to address loss and damage, particularly risk reduction, risk transfer and technical assistance?
- iv. **How should finance be targeted to assist the most vulnerable?**
- v. **Governance:** how should the allocation of finance be governed? Who should pay? How should financing be organised (e.g. central pool vs. bilateral arrangements)? Should governance be centralised or disaggregated? How should adaptation finance be allocated between beneficiaries and projects? How should success be measured?
- vi. **What should be the start-up procedure?** What should be immediate priorities and how should initial actions be scaled up? What would be feasible timescales?

## VI. CONCLUSIONS

An outcome of the SBI work programme on loss and damage should be to inform recommendations to the 18<sup>th</sup> session of the Conference of the Parties to the UNFCCC in late 2012. To achieve this, we suggest an important output should be the development of a menu of viable measures, instruments and policies that could form part of a loss and damage mechanism, alongside an outline of approaches to implement these. There are several necessary inputs for such a menu of options. To date, research and evidence-gathering efforts have focused on understanding the nature of the risks faced from climate

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<sup>29</sup> AOSIS (2008); MCII (2009a).

change and the potential damages. Proposals have been made for approaches to managing these risks, including risk reduction, risk transfer and resilience-building. An important gap is created by the lack of viable plans to operationalise these options, including their design, implementation and governance. A priority activity for the SBI work programme should be to draw together relevant expertise to explore the design and feasibility of proposals and sets of tools, given the needs of Parties, as well as to consider issues of implementation, operation and governance and how to put them into practice.

## VII. ACKNOWLEDGMENTS

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## TECHNICAL ANNEX: OPEN QUESTIONS ON THE DESIGN AND IMPLEMENTATION OF A LOSS AND DAMAGE MECHANISM

### *(a) Possible development of a climate-insurance facility to address impacts associated with severe weather events*

#### Design/feasibility issues:

- i. **What should be the nature of the ‘climate-insurance facility’?** For example, should it be designed to act as an international solidarity fund or a financial risk sharing instrument? How should solvency be ensured? What should be the role of private versus public insurance/reinsurance providers?
- ii. **What different types of ‘climate risk insurance’ exist and do they provide a useful and effective template or would it necessary to design and develop a new insurance facility?** How should the insurance facility relate to existing insurance solutions?
- iii. **Which risks should be covered?** For example, national, regional or local risks? Immediate liquidity gaps (e.g. as in the Caribbean Catastrophe Risk Insurance Facility, CCRIF) or public infrastructure damages also? Property damage or business interruption? What levels of losses should be covered? Should it include only risks from climate change or all climate risks<sup>30</sup>? Which hazards should be covered? Should the facility have scope to include non-climate hazards, such as earthquakes?
- iv. **How should the insurance facility target assistance to the most vulnerable?**
- v. **Who should pay the premia?** What fractions of premia should be contributed by the international community rather than beneficiary countries? How should any subsidies be structured - how should this vary depending on capacity of the beneficiary country and the level of coverage of the scheme?
- vi. **How should the insurance facility be designed to complement other disaster risk management and adaptation activities?** How should it operate alongside existing post-disaster aid, e.g. in the form of loans, donor aid or charities?
- vii. **How should the facility promote risk reduction?** For example, the MCII approach suggests that eligibility for the scheme should be linked to the performance of the individual states in complying with risk reduction measures. This would raise questions about how one should measure compliance and performance.

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<sup>30</sup> Including a broader range of risks might have advantages for diversification of the risk pool, and therefore reduce overall costs.



- viii. **How should the facility involve the private sector?** For example, technical assistance, operational entities, capitalisation and/or reinsurance? How should initiatives be designed to avoid crowding out the private sector? Should there be scope for fostering private sector growth in developing countries (i.e. local insurers/service providers) or should this be mainly covered by large multi-national financial players? Should public financing be designed to leverage private sector expertise and finance?
- ix. **How should the reserves of the facility be invested?** Should these be invested in adaptation in developing countries?
- x. **How should the facility relate to the other elements of the loss and damage mechanism?** How should a macro facility relate to micro level facilities? Should it be the role of the central facilities to develop local facilities? How should it support these facilities? Should a facility also be used to manage long-term risks such as sea level rises?

**Technical design issues:**

- i. **How should contracts be designed?** For example, should parametric triggers be used as with CCRIF, or should it be closer to traditional reinsurance?
- ii. **Who should be the policy-holder/insured entity?**
- iii. **How should the facility be organised?** For example, global or regional groupings? Global-level reinsurance initiatives to link regional pools? How many different cover layers?
- iv. **Costs versus benefits:** What levels of risk should be covered and at what cost? What levels of capitalization would be required?
- v. **How should risks be assessed?**

**Implementation:**

- i. **What expertise and entities would be required to establish the facility?** What would be realistic timescales for start-up and growth?
- ii. **What data, institutional, legal and expertise gaps would need to be filled to operationalize the facility?** How should country level capacity issues be addressed?
- iii. **How should the facility be established and grow?** For example, should it begin with individual regional pools covering specific risks, with the aim of growing to a more global, comprehensive solution?

**Operation and governance:**

- i. **What public/private entities would need to be established to operate the facility and how should these interact with existing public institutions?** For example, independent non-profit organisations, MLFAs or regional development banks? What international, regional and local institutions would need to be involved? How should operational entities be designed and what responsibilities should they have?
- ii. **How should be the facility be governed?** Which institutions should be responsible? What auditing and verification processes would be required? Jurisdiction? How to manage conflicts?
- iii. **Who should benefit?** Which countries should be eligible to participate in the insurance facility? Should it be limited to LDCs or broader participation with premia based on capabilities?
- iv. **Who should oversee and manage underwriting and claims?** That is, risk selection process, risk assessment, premium setting and claims payout. How should the risk of political interference be reduced, and what should be the role of private market drivers.

***(b) Options for risk management and risk reduction; risk-sharing and transfer mechanisms such as insurance, including options for micro-insurance; and resilience building, including economic diversification***

**Design issues:**

- i. **What risk reduction and risk transfer tools are currently available?** What are the benefits and limitations of these tools and how should they work together? What are their requirements, in terms of finance and operation?
- ii. **Do we need any new tools?**
- iii. **What should be achieved and at what cost?** Where and how can adaptation finance have the greatest benefits? For example, global knowledge and data, versus specific local adaptation projects?
- iv. **What would be the appropriate balance between near-term risk transfer and short-term/long-term risk reduction activities?** How should risk transfer tools be designed to incentivise long-term risk reduction?
- v. **What forms of risk transfer would be appropriate?** Who should be insured (individuals, communities and/or governments)? What should be insured? How should affordability ensured? How should risk transfer tools, like micro-insurance, be

designed to promote risk reduction and long-term adaptation? What should be learnt from existing schemes in both developed and developing countries? What designs of risk transfer tools would be appropriate? Should risk transfer tools be delivered by the public sector, private-public organisations, or the private sector? How should the residual risks be managed? How should moral hazard be avoided?

- vi. **What should be the role of the private sector?** How should public finance leverage private finance and expertise? How should initiatives be designed to incentivise rather than crowd-out the private sector? Role of local markets versus global players?

#### **Implementation:**

- i. **What knowledge, data and local capacity gaps would need to be filled for implementation and how might this be achieved?** For example, gaps in local risk governance capacity, present-day climate risk information and risk understanding, distribution channels and regulation needs of insurance.
- ii. **Should there be one 'official' risk assessment and risk data source?** How should this data be generated, managed and disseminated?
- iii. **How should loss and damage projects work alongside, leverage and support existing national or international initiatives to protect vulnerable populations, as well as local broader development needs?** For example, the UNISDR and Hyogo Framework, national development activities and the NAPAs.
- iv. **What would be a good set of principles for implementing programmes?**
- v. **What should be the start-up procedure?** What should be immediate priorities and how should initial actions be scaled up? What would be feasible timescales?

#### **Operation and governance:**

- i. **What public/private entities would need to be established?** What international, regional and local institutions would need to be involved? How should operational entities be designed and what responsibilities should they have?
- ii. **Should there be a role for the private sector?** What would be the benefits of involving the private sector, such as insurance and reinsurance? How might public adaptation finance help leverage private sector contributions to addressing loss and damage in this context; related to risk reduction, risk transfer and technical assistance?
- iii. **How should finance be targeted to assist the most vulnerable?**
- iv. **Governance:** How should the allocation of finance be governed? Who should pay? How should financing be organised (e.g. central pool vs. bilateral arrangements)?

Should governance be centralised or disaggregated? How should adaptation finance be allocated between beneficiaries and projects? How should success be measured?

**v. Should risk transfer instruments be centrally or locally operated and governed?**

What international facilities should be involved? For example, should central bodies be involved for technical assistance, reinsurance and/or providing insurance?