

# Loss & Damage

## Loss & Damage:

The theme of slow onset impact

*Advance Version*

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## 1. Introduction

This policy briefing sets out a number of the issues relating to the slow onset portion of the climate change loss and damage agenda. It is not meant to be an exhaustive analysis of this new and sometimes complex subject. Instead, it should serve to introduce the concept of loss and damage related to slow onset climate change hazards and provide sign posts to guide further investigation of the subject – in particular for those institutions, experts and country representatives participating in the current work programme on loss and damage under the UN Framework on Convention on Climate Change (UNFCCC).

The work programme on loss and damage under the Cancun Adaptation Framework<sup>1</sup> currently has a two-year life, through 2012. It is structured around the following three thematic areas:<sup>2</sup>

- 1) Assessing the risk of loss and damage associated with the adverse effects of climate change and the current knowledge on the same;
- 2) A range of approaches to address loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events, taking into consideration experience at all levels; and
- 3) The role of the Convention in enhancing the implementation of approaches to address loss and damage associated with the adverse effects of climate change.

<sup>1</sup> UNFCCC, decision 1/CP.16, paragraphs 25 – 29, available at <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2>.

<sup>2</sup> UNFCCC, decision 7/CP.17, paragraphs 6 – 11, available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a02.pdf>. See Warner, K., S. Kreft and S. Harmeling, *Analysis: Loss and damage related outcomes of COP 17 in Durban – Decision 7/CP.17: A way forward on loss and damage* (UN University, December 2011), available at <http://germanwatch.org/en/download/6335.pdf>. See also Khan, H. I., S. Harmeling, S. Kreft and E. Roberts, *Loss and Damage associated with Climate Change – Key discussion and outcomes at SBI-36* (UN University, June 2012), available at <http://germanwatch.org/en/download/6309.pdf>.

Thematic area two is being addressed in the main through four expert meetings, three at the regional level and one for small island developing States (SIDS). To date, two of the regional expert meetings have taken place – one in Addis Ababa for Africa and the second in Mexico City for Latin America.

Both meetings addressed approaches to address loss and damage from the adverse effects of climate change from a regional perspective. While the agendas of both meetings touched on common themes, priorities and approaches to addressing loss and damage in the regions differ, and the expert meetings have provided the space for participants to explore these priorities and approaches in some depth. Nevertheless, the sharing of priority areas and actions taken to address them across regions will be critically important going forward to better understand the role of the Convention in addressing loss and damage from the adverse effects of climate change.

### Current and emerging science:<sup>3</sup>

The Intergovernmental Panel on Climate Change's Fourth Assessment Report (AR4) published in 2007 shows that there is growing scientific consensus over long-term climate change and its predicted impacts, and high or very high confidence is placed on the general trend of slow onset hazards such as increasing temperatures, rising sea levels, glacial melt and the acidification of oceans. However, greater uncertainty remains over the timing and magnitude of these onsets.

Climate science since the publication of the AR4 has progressed at a rapid pace, and in many instances observed changes have been at the top range of AR4 projections and newer projections show an acceleration in the rate of change of many slow onset processes.

<sup>3</sup> This section is based on information provided by the Survive Project, a joint Climate Analytics and the Potsdam Institute for Climate Impact Research (PIK). See <http://www.climateanalytics.org/projects>.

Recent observations of the CO<sub>2</sub> concentrations in the atmosphere show that concentrations are rising and the International Energy Agency reports that CO<sub>2</sub> concentrations in the atmosphere are at record levels.<sup>4</sup> WMO records show that 2011 was the eleventh warmest year on record (since 1850) despite the cooling effects of a La Niña episode. Since 2007, significant flooding has occurred on all continents, major droughts have affected parts of east Africa and North America, and there has been continuing sea ice decline in the Arctic.<sup>5</sup>

Sea level is rising faster than predicted<sup>6</sup> with an increasing proportion of the rise coming from melting ice sheets.<sup>7</sup> Rough estimates show potential sea level rise of one metre by 2100. Glacier losses have continued,<sup>8</sup> and losses from both the Greenland and Antarctic ice sheets have accelerated. Projections show a possible ice sheet loss of 56 centimetres by 2100.<sup>9</sup> The largest rate of ice mass loss in Antarctica is in the Amundsen Sea sector, which contains enough ice to raise sea level by 1.3 metres.<sup>10</sup> New projections on warming by the middle of the twenty-first century show sharper rises than earlier estimated<sup>11</sup> and projections now show that a sea ice free summer may come within the next thirty years, instead of at the end of the century as predicted in the AR4.<sup>12</sup>

<sup>4</sup> IEA, *World Energy Outlook 2011*, Executive Summary, p. 1, available at [http://www.worldenergyoutlook.org/media/weoweb/2011/executive\\_summary.pdf](http://www.worldenergyoutlook.org/media/weoweb/2011/executive_summary.pdf).

<sup>5</sup> WMO, *Statement on the status of the global climate 2011 (WMO-No. 1085, 2012)*, available at [http://www.wmo.int/pages/publications/showcase/documents/WMO\\_1085\\_en.pdf](http://www.wmo.int/pages/publications/showcase/documents/WMO_1085_en.pdf).

<sup>6</sup> Meyssignac, B., and A. Cazenave, *Sea level: A review of present-day and recent-past changes and variability*, *Journal of Geodynamics* 58 (2012): 96-109.

<sup>7</sup> Cazenave, A., et al., *Sea level budget over 2003–2008: A reevaluation from GRACE space gravimetry, satellite altimetry and Argo*, *Glob. Planet. Change* (2008).

<sup>8</sup> Jacob, T., et al., *Recent contributions of glaciers and ice caps to sea level rise*, *Nature* 482 (2012): 514–518.

<sup>9</sup> Velicogna, I., *Increasing rates of ice mass loss from the Greenland and Antarctic ice sheets revealed by GRACE*, *Geophysical Research Letters*, 36 (2009) and Rignot, E. et al., *Acceleration of the contribution of the Greenland and Antarctic ice sheets to sea level rise*, *Geophysical Research Letters*, 38 (2011).

<sup>10</sup> Lee, H et al., *Continuously accelerating ice loss over Amundsen Sea catchment, West Antarctica, revealed by integrating altimetry and GRACE data*, *Earth and Planetary Science Letters* 321-322 (2012): 74-80.

<sup>11</sup> Rowlands, D. J., D. J. Frame, et al., *Broad range of 2050 warming from an observationally constrained large climate model ensemble*, *Nature Geoscience* 5(4): 256-260 (2012).

<sup>12</sup> See Wang, M. and J. E. Overland (2009), *A sea ice free summer Arctic within 30 years?*, *Geophys. Res. Lett.* 36 and Zhang, X., *Sensitivity of*

## 2. Slow onset processes defined

### 2.1. The climate change Convention

The UNFCCC does not define ‘loss and damage’ to the adverse effects of climate change, much less the ‘slow onset events’ portion of the work programme on loss and damage established under the Cancun Agreements.<sup>13</sup> Therefore, we must develop our understanding of slow onset events through the guiding provisions of the Convention, supplemented by interpretations in subsidiary decisions, technical papers and accepted science as set out by the Intergovernmental Panel on Climate Change (IPCC).

*In 1991, when the UNFCCC was still being drafted, the Alliance of Small Island States (AOSIS) proposed the establishment of an international insurance pool. The proposal consisted of a collective loss-sharing scheme to compensate victims of sea-level rise.*

Over time in the UNFCCC negotiating process the gradual or slow onset of climate change impacts has been raised. In 1991, when the UNFCCC was still being drafted, the Alliance of Small Island States (AOSIS) proposed the establishment of an international insurance pool. The proposal consisted of a collective loss-sharing scheme to compensate victims of sea-level rise. While the AOSIS proposal never became part of the Convention, the concept of gradual or slow onset hazards can be found in preambular paragraph 12, which recalls two General Assembly resolutions, one on the possible adverse effects of sea-level rise on islands and coastal areas and the other on desertification.

*arctic summer sea ice coverage to global warming forcing: towards reducing uncertainty in arctic climate change projections*, *Tellus A* 62(3): 220-227 (2010).

<sup>13</sup> UNFCCC, decision 1/CP.16, *supra*.

The General Assembly resolution on sea level rise<sup>14</sup> expresses concern that sea-level rise resulting from global climate change could lead to abnormally high tides, which could intensify flooding and the erosion of coastal areas and damage infrastructure on islands and in low-lying coastal areas. Recent work of the IPCC provides evidence of these impacts.

The sea-level rise resolution also urges the international community to provide effective and timely support to countries affected by sea-level rise, particularly developing countries, in their efforts to develop and implement strategies to protect themselves. Such support is still being called for. The General Assembly resolution on desertification<sup>15</sup> calls for continued work under the UN system to halt and reverse the process of desertification. This resolution led to the negotiation of the UN Convention to Combat Desertification.

Responding to calls from Parties to investigate approaches for dealing with climate change impacts, the UNFCCC has organised events to consider slowly developing climate impacts such as sea level rise.<sup>16</sup> Agreement to the Bali Action Plan (BAP) required the consideration of risk management and risk reduction strategies, including risk sharing and transfer mechanisms such as insurance and disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change.<sup>17</sup> Work on loss and damage ensuing from the BAP mandate categorised direct climate impacts as either 'acute'<sup>18</sup> or 'chronic'.<sup>19</sup>

*Acute (sudden-onset) hazards are those that will happen anyway, but their frequency, severity and / or location may be changed by climate change. These hazards tend to be of a short time frame and high severity. Chronic (slow-onset) hazards are caused entirely by man-made climate change and are termed chronic because the impact is gradual.*

Acute (sudden-onset) hazards are those that will happen anyway, but their frequency, severity and / or location may be changed by climate change. These hazards tend to be of a short time frame and high severity. Chronic (slow-onset) hazards are caused entirely by man-made climate change and are termed chronic because the impact is gradual. For example, in the context of climate change, a drought could last for a few years, but it is considered 'acute' in contrast to a permanent change in climate, such as sea level rise or ocean acidification, which occurs over a longer time period.<sup>20</sup> The term 'slow onset events' is used in reports and papers related to UNFCCC events. It is never defined, however, but is deemed to include both drought and sea level rise – hazards that are clearly distinguished in the acute and chronic typology set out above.

<sup>14</sup> General Assembly resolution A/RES/44/206, 22 December 1989, available at <http://www.un.org/documents/ga/res/44/a44r206.htm>.

<sup>15</sup> General Assembly resolution A/RES/44/172, 19 December 1989, available at <http://www.un.org/documents/ga/res/44/a44r172.htm>.

<sup>16</sup> Linnerooth-Bayer, J., M.J. Mace, R. Verheyen, *Insurance-Related Actions and Risk Assessment in the Context of the UNFCCC* (UNFCCC, May 2003), available at [http://unfccc.int/files/meetings/workshops/other\\_meetings/application/pdf/background.pdf](http://unfccc.int/files/meetings/workshops/other_meetings/application/pdf/background.pdf). This paper was prepared based on a call in decision 5/CP.17 for the implementation of two insurance-related workshops.

<sup>17</sup> UNFCCC, decision 1/CP.13, paragraphs 1(c)(ii) and (iii), available at <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf#page=3>.

<sup>18</sup> See UNFCCC, *Mechanisms to manage financial risks from direct impacts of climate change in developing countries: Technical paper* (FCCC/TP/2008/9) p. 21. Acute climate hazards include windstorms, storm surges, floods, droughts, fires and heatwaves, available at <http://unfccc.int/resource/docs/2008/tp/09.pdf>.

<sup>19</sup> *Ibid.* Chronic climate hazards include sea level rise, ocean acidity, changes in precipitation, melting glaciers and permafrost and temperature rise.

<sup>20</sup> *Ibid.*

*Calling these longer-term slow onset hazards 'events' is a bit of a misnomer. Slow onset hazards unfold gradually over time and more akin to processes than one-off events.*

The Cancun Agreements use the term slow onset events to describe including sea level rise, increasing temperatures, ocean acidification, glacial retreat and related impacts, salinisation, land and forest degradation, loss of biodiversity and desertification.<sup>21</sup> Calling these longer-term slow onset hazards 'events' is a bit of a misnomer. Slow onset hazards unfold gradually over time and more akin to processes than one-off events. The work programme on loss and damage provides interested parties with the opportunity to resolve apparent internal inconsistencies among UNFCCC documents and decisions and clarify the classification of slow onset climate change hazards.

In our attempt to cobble together a definition of loss and damage to the adverse effects of climate change, especially from slow onset hazards or processes, it is important to note that the preambular paragraphs of the Convention provide guidance on the characteristics that render countries particularly vulnerable to these adverse effects: low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change.<sup>22</sup> The preambular paragraphs also remind us of the international responsibility to ensure that the activities of countries within their jurisdiction or control must not cause damage to the environment of other countries or of areas beyond the limits of national jurisdiction.<sup>23</sup>

While many of the provisions related to slow onset climate change hazards are found in non-binding preambular paragraphs, these paragraphs do provide historical context for the operational provisions of the

Convention and shed light on the intent of the Parties to the agreement – both of which aid in interpreting the operative provisions of the Convention.

The operative provisions of the Convention begin by defining both the 'adverse effects of climate change' as well as the term 'climate change' itself. Adverse effects of climate change are

*...changes in the physical environment or biota resulting from climate change which have significant deleterious effects on the composition, resilience or productivity of natural and managed ecosystems or on the operation of socio-economic systems or on human health and welfare... (Article 1.1)*

We learn from this that adverse effects must be serious (significant) and harmful (deleterious). This tells us something about the magnitude of the impacts we should expect of slow onset climate change hazards. We also learn that the scope of this damage covers both natural and human systems. Climate change, as defined under the Convention (Article 1.2), is the result of human activity and adds to the burden of natural climate variability. Since the ratification of the Convention, the IPCC has broadened the scope of climate change to include natural change.<sup>24</sup> Nevertheless, the distinction between man-made and natural hazards and their potential impacts is important to bear in mind when we look at the disaster risk reduction agenda, which is centred around natural hazards.

Further clues to the meaning of loss and damage under the Convention can be found in the objective of the Convention itself (Article 2). The ultimate objective of the Convention is to avoid dangerous human interference with (i.e. damage to) the climate system.<sup>25</sup> This objective is time bound in that greenhouse gas emissions must be stabilised soon enough to avoid loss and damage to ecosystems, our ability to feed ourselves and our ability to develop sustainably. Thus,

<sup>24</sup> IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 2.

<sup>25</sup> Article 1.3 of the Convention defines the climate system as the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

<sup>21</sup> UNFCCC, decision 1/CP.16, footnote 3, *supra*.

<sup>22</sup> UNFCCC, preambular paragraph 19.

<sup>23</sup> UNFCCC, preambular paragraph 6, the 'no harm rule'.

the issues of timing and the potential magnitude of slow onset hazards are reflected here.

The Convention's guiding principles tell us that preventing loss and damage to the climate system is a long-term endeavour – 'for the benefit of present and future generations' (Article 3.1), and that the seriousness of loss and damage suffered is predicated on a country's vulnerability (Article 3.2).

*...lack of scientific knowledge is no excuse for not acting, especially where there is the potential for irreversible damage...*

Uncertainty about long-term outcomes is acknowledged. However, lack of scientific knowledge is no excuse for not acting, especially where there is the potential for irreversible damage (Article 3.3). Cooperation is required in preventing and rehabilitating loss and damage to those areas affected by hazards such as drought and desertification (Article 41(e)), and developed countries are required to assist particularly vulnerable developing countries in meeting the cost of adapting to the adverse effects of climate change (Article 4.4). The nature of the costs to be covered and support provided includes transfers of technology (Articles 4.3 and 4.5) and developed countries must take the lead in fulfilling their commitments under the Convention (Article 4.7).

Other relevant provisions of the Convention include the obligation to develop initiatives aimed at furthering climate research and data observation (Article 5) and promote access to and the exchange of information (Article 6). Capacity building is another important modality for addressing loss and damage from slow onset climate change hazards.

## 2.2. *The disaster risk reduction agenda*

*It is important, however, to recognise that climate change magnifies existing disaster risk levels and brings a range of newly emerging risks and processes. Care must be taken to understand how the disaster risk reduction community defines slow onset hazards and where the differences lie in the way the climate change process views the issue.*

The disaster risk reduction agenda has great potential for adding value to climate change adaptation efforts. Experiences gained by the disaster risk management community can inform the development of climate-related policy. It is important, however, to recognise that climate change magnifies existing disaster risk levels and brings a range of newly emerging risks and processes.<sup>26</sup> Care must be taken to understand how the disaster risk reduction community defines slow onset hazards and where the differences lie in the way the climate change process views the issue.

The United Nations International Strategy on Disaster Reduction (UNISDR) is the UN office dedicated entirely to disaster risk reduction. The UNISDR is mandated to serve as the focal point in the United Nations system for the coordination of disaster reduction and to ensure synergies among the disaster reduction activities of the UN system and regional organisations and activities in socio-economic and humanitarian fields. With the adoption of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and

<sup>26</sup> Hay, J., *Disaster risk reduction and climate change adaptation in the Pacific: an institutional and policy analysis* (UNISDR 2012), available at [http://www.unisdr.org/files/26725\\_26725drrandccainthepacificaninstitu.pdf](http://www.unisdr.org/files/26725_26725drrandccainthepacificaninstitu.pdf).

Communities to Disasters (HFA), the United Nations General Assembly tasked the UNISDR with supporting its implementation. This section focuses on the UNISDR's approach to slow onset climate change hazards in the context of the broader disaster risk reduction agenda.<sup>27</sup>

The World Conference on Disaster Reduction held in January 2005 in Kobe, Hyogo, Japan, adopted the HFA. The scope of the HFA encompasses disasters caused by hazards of natural origin and related environmental and technological hazards and risks.<sup>28</sup> The HFA does not differentiate between sudden-onset and slow-onset hazards, per se. It does, however, 'promote the integration of risk reduction associated with existing climate variability and future climate change into strategies for the reduction of disaster risk and adaptation to climate change'.<sup>29</sup> This nod to future climate change could be considered to cover slow or gradual onset climate change. However, the current Hyogo Agreement only covers a ten-year period; therefore, the coverage of longer-term climate change processes is limited.

In 2009, the UNISDR updated its Terminology on Disaster Risk Reduction. There is no definition of slow onset climate change hazards in this manual, but it does clarify that the hazards of concern to disaster risk reduction are those of natural origin.<sup>30</sup> Climate change and sea level rise are treated merely as human-induced environmental degradation.<sup>31</sup> Therefore, while climate change is considered under the disaster risk reduction agenda, it is not the central focus. The broader concept of adaptation in the terminology manual also applies to non-climatic factors such as soil erosion and surface subsidence.<sup>32</sup>

*...a clear difference in the manner in which the disaster risk reduction community and the climate change community conceptualise the term slow onset. The disaster risk reduction community views slow onset hazards as disasters that unfold slowly over months or several years. In the climate change process slow onset time scales are counted in years and decades.*

The UNISDR considers drought a slow-onset event, but concedes that there is no single definition for drought. Drought occurs in virtually all climatic zones, but its characteristics vary significantly from one region to another. While deemed a slow onset process, the UNISDR deems drought a temporary aberration, differing from aridity, which is a permanent feature of climate.<sup>33</sup> Slow onset climate change hazards such as sea level rise, ocean acidification and glacial melt are not temporary aberrations. Therefore, while droughts may take time to manifest, they are not uncommon and they are recognised as reversible. This shows a clear difference in the manner in which the disaster risk reduction community and the climate change community conceptualise the term slow onset. The disaster risk reduction community views slow onset hazards as disasters that unfold slowly over months or several years. In the climate change process slow onset time scales are counted in years and decades.

The 2011 UNISDR Global Assessment Report (GAR) speaks most directly to slow or gradual onset climate

<sup>27</sup> UNISDR, Strategic framework 2025: work programme 2012-2015, with addendum on budget requirements for 2012-2013, available at <http://www.unisdr.org/we/inform/publications/23291>.

<sup>28</sup> UNISDR, Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, [http://www.unisdr.org/files/1037\\_hyogoframeworkforactionenglish.pdf](http://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf).

<sup>29</sup> *Ibid.*, p. 11.

<sup>30</sup> UNISDR, 2009 Terminology on Disaster Risk Reduction, p. 17.

<sup>31</sup> *Ibid.*, p. 14.

<sup>32</sup> *Ibid.*, p. 4.

<sup>33</sup> UNISDR, Drought risk reduction framework and practices: contributing to the implementation of the Hyogo Framework for Action (2009), p. 8, available at [http://www.unisdr.org/files/3608\\_droughtriskreduction.pdf](http://www.unisdr.org/files/3608_droughtriskreduction.pdf).



change hazards. The GAR separates climate change adaptation into two elements: (a) adapting to gradual changes in average temperature, sea level and precipitation; and (b) reducing and managing the risks associated with more frequent, severe and unpredictable extreme weather events, including those for which there may be no historic precedent. Adapting to gradual changes in climate averages is considered a medium- to long-term process, involving long-term planning of investments in strategic infrastructure that take into account changing climatic conditions.<sup>34</sup>

A recent UNISDR report on disaster risk reduction and climate change adaptation acknowledges that societies will be required to adapt to both extreme events/disasters as well as the incremental consequences of climate change. The mainstreaming of disaster risk reduction has been hampered by the fact that large, sudden-onset catastrophes have dominated the attention of the disaster management community.<sup>35</sup> On the other hand, mainstreaming of climate change into national-level policies has been aided by the broad scope of adaptation, which provides a mechanism for reducing potential dichotomies between humanitarian aid and development approaches.<sup>36</sup>

### 2.3. Others

Other organisations working alongside the UNFCCC and UNISDR systems contribute to our understanding of slow onset climate change hazards. A handful of their initiatives are described below.

The UN Office for the Coordination of Humanitarian Affairs (OCHA) has recognised that many humanitarian crises emerge over time based on a combination of complex and interrelated circumstances. The OCHA defines slow-onset emergencies as those that do not emerge from a single, distinct event but gradually over time, often based on a confluence of different events.<sup>37</sup> Drought is the primary slow onset emergency treated by the OCHA, but it also includes climate change, food and energy price spikes, macroeconomic trends,

irregular migration, rapid population growth, and urbanisation as potential slow-onset emergencies.<sup>38</sup> This is a very disparate set of situations with distinct drivers. The common denominator in the OCHA's classification of slow onset emergencies appears to be the potential impacts they have on vulnerable human populations.

The OCHA's key reason for distinguishing between slow and rapid-onset emergencies is that slowly unfolding emergencies can be mitigated by through preparedness, early warning and early response systems. The longer lead time means the humanitarian community can step in early enough to reduce human suffering and help prevent the cumulative effects of increased vulnerability to future hazards.<sup>39</sup> Slow onset emergencies are seen to have a beginning and end and are cyclical in nature. This is very different from slow onset climate change hazards such as sea level rise, ocean acidification or glacial melt. These hazards may take years to manifest, and their impacts on territory, human populations and ecosystems are potentially irreversible.

Both the World Meteorological Organisation (WMO) and the UN Environment Programme (UNEP) are specifically mentioned in the climate change convention for their important contribution to climate change, and the two organisations were instrumental in establishing the IPCC. The WMO, through its climate initiatives and international partnerships contributes considerably to the collection, dissemination and analysis of climate data as well as to the climate change research agenda – two important aspects to the development and operation of approaches to address loss and damage from slow onset climate change hazards.<sup>40</sup> UNEP's work on climate change is shaped by the UNFCCC talks and outcomes and UNEP's work is geared toward helping countries to respond to their needs under the Convention. UNEP has a strong focus on climate science, adaptation and outreach.<sup>41</sup>

The UNFCCC's sister agreements, the Convention on Biological Diversity (CBD)<sup>42</sup> and the Convention to Combat Desertification (CCD)<sup>43</sup> are also occupied with

<sup>34</sup> UNISDR, *Global Assessment Report 2011*, p. 11 available at [http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/GAR-2011/GAR2011\\_Report\\_Chapter1.pdf](http://www.preventionweb.net/english/hyogo/gar/2011/en/bgdocs/GAR-2011/GAR2011_Report_Chapter1.pdf).

<sup>35</sup> Hay, J., *supra*.

<sup>36</sup> *Ibid.*

<sup>37</sup> OCHA, *OCHA and slow-onset emergencies*, Occasional Policy Briefing Series No. 6 (April 2011), p. 3, available at [http://ochanet.unocha.org/p/Documents/OCHA\\_OPB\\_SlowOnsetEmergencies190411.pdf](http://ochanet.unocha.org/p/Documents/OCHA_OPB_SlowOnsetEmergencies190411.pdf).

<sup>38</sup> *Ibid.*

<sup>39</sup> *Ibid.*, p. 4.

<sup>40</sup> See WMO climate web pages, available at [http://www.wmo.int/pages/themes/climate/index\\_en.php#](http://www.wmo.int/pages/themes/climate/index_en.php#).

<sup>41</sup> See UNEP climate change web pages, available at <http://www.unep.org/climatechange>.

<sup>42</sup> See CBD website at <http://www.cbd.int>.

<sup>43</sup> See CCD website at <http://www.unccd.int/en/Pages/default.aspx>.

themes that contribute to our understanding of loss and damage from slow onset hazards. The CBD process has long contemplated issues of liability and redress for damage to biological diversity<sup>44</sup> and the CBD recently released a report outlining the threat to coral reefs caused by climate change and subsequent coral bleaching, as well as ocean acidification.<sup>45</sup> Through its standing programmes of work, the CBD process has gathered a storehouse of knowledge on the state of the world's ecosystems, which could prove very useful to future work in developing baselines and indices for measuring slow onset climate change hazards and processes. The CCD is the global authority on desertification, land degradation and drought, and works closely with the WMO, UNISDR and others in developing approaches to combat drought and desertification worldwide. Both the loss of biodiversity and desertification are considered slow onset processes under the Convention; therefore, the ongoing work under the CBD and the CCD will inform work on loss and damage from slow onset climate change processes going forward.

*More work needs to be done on a number of fronts to better understand the impact of slow onset climate change hazards in the broader mix of factors leading to significant movements of human populations.*

The UN Office of the High Commissioner for Refugees (UNHCR) and other organisations working on displacement and migration have begun to focus their attention on the impacts of climate change as they relate to the movement of populations. More work needs to be done on a number of fronts to better

<sup>44</sup> See CBD web pages on liability and redress, available at <http://www.cbd.int/iyb/doc/prints/factsheets/iyb-cbd-factsheet-liability-en.pdf>.

<sup>45</sup> WMO and CBD, *Climate Change, Carbon and Coral Reefs* (2010), available at [http://www.wmo.int/pages/prog/wcp/agm/publications/documents/Climate\\_Carbon\\_CoralReefs.pdf](http://www.wmo.int/pages/prog/wcp/agm/publications/documents/Climate_Carbon_CoralReefs.pdf).

understand the impact of slow onset climate change hazards in the broader mix of factors leading to significant movements of human populations.<sup>46</sup>

### **3. Approaches available for addressing loss and damage from slow onset processes**

Approaches for addressing loss and damage from slow onset climate change hazards can follow the model in place today for addressing extreme weather-related hazards and the disasters they give rise to. This model combines ex-ante (pre-disaster) actions and ex-post (after disaster) responses. Ex-ante actions work to reduce disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.<sup>47</sup> Ex-post actions respond to the inevitable fallout of disasters. Coupled with effective disaster risk reduction efforts, ex-post actions provide a safety net function using a humanitarian aid approach.<sup>48</sup>

From the perspective of slow onset climate change hazards, organising the ex-post or response element of a comprehensive approach will be the most challenging, involving specific methods for handling the consequences of permanent or irreversible loss and damage. This does not mean that there is not a role for well-structured ex-ante methods which incentivise and

<sup>46</sup> See e.g., Afifi, T., R. Govil, P. Sakdapolrak and K. Warner, *Climate Change, Vulnerability and Human Mobility: Perspectives of Refugees from the East and Horn of Africa* (UNU-EHS, June 2012), available at <http://www.ehs.unu.edu/article/read/climate-change-vulnerability-and-human-mobility> and ADB, *Addressing Climate Change and Migration in Asia and the Pacific* (2012), available at <http://www.adb.org/publications/addressing-climate-change-and-migration-asia-and-pacific>. Chapter 5: Demographic Dynamics and Sustainability, Agenda 21 calls for research to be conducted on how environmental factors interact with socio-economic factors as a cause of migration, and for the development of policies and programmes for handling the various types of migrations that result from or induce environmental disruptions, available at <http://www.un.org/esa/sustdev/documents/agenda21/english/Agenda21.pdf>.

<sup>47</sup> See UNISDR, 2009 Terminology, *supra*.

<sup>48</sup> See OCHA website, available at <http://www.unocha.org>. See also MacKinnon, W., et al., *The Humanitarian Costs Of Climate Change* (Feinstein International Center, December 2008), available at [http://www.unisdr.org/files/8058\\_FeinsteinTuftsclimatechange.pdf](http://www.unisdr.org/files/8058_FeinsteinTuftsclimatechange.pdf).

nurture proactive approaches for building resilience to these slow onset hazards.

Approaches to address loss and damage from slow onset climate change hazards can be classified as either 'soft' or 'hard'. Soft approaches include structures and processes to facilitate social participation and action by individuals and groups, allowing them to make choices and implement these choices to bring about change.<sup>49</sup> Hard approaches include engineering techniques and physical structures, which are built or developed, operated and which can be maintained.<sup>50</sup>

Soft or hard a number of these approaches can be employed in advance (ex-ante) of an impending disaster (e.g. long-term planning). Other approaches are responsive in nature (e.g. migration). Soft approaches such as awareness raising and capacity building should be appropriate both before and after the impacts of slow onset hazards manifest themselves.

Examples of soft approaches include:

- Awareness raising and capacity building
- Research and development
- Policy-making processes
- Long-term and contingency planning

Examples of hard approaches include:

- Early warning systems
- Infrastructure investment
- Migration
- Funds-based approaches
- Economic diversification

While the drivers of slow onset hazards may be addressed linearly through a combination of soft and hard measures, even if the frequency and magnitude of storms and other extreme weather events were to remain at historic levels, damage from them is likely to increase because of slow onset hazards such as rising sea levels.<sup>51</sup> At a certain stage a combination of stresses may exceed the ability of vulnerable social and ecological systems to cope and there is a risk that the

entire system will be subject to collapse. This is known as a tipping point.<sup>52</sup>

*Early warning of slow onset hazards can provide policy-makers with essential information to guide investment in climate resilient infrastructure as well as provide information that will enable people to adapt their livelihoods to potential upcoming hazards.*

Approaches, hard or soft, will be required to both gradually manage the impacts of slow onset hazards (through policy making, long term planning, infrastructure etc.) but will also need to be responsive to irreversible system change or collapse (e.g. through migration, the creation of rehabilitation and compensation funds, economic diversification etc.). Early warning systems can help identify social and ecological tipping points well in advance to allow for the timely launch of contingency planning.<sup>53</sup> Early warning of slow onset hazards can provide policy-makers with essential information to guide investment in climate resilient infrastructure as well as provide information that will enable people to adapt their livelihoods to potential upcoming hazards.<sup>54</sup>

There is general consensus and robust evidence showing that multi-hazard risk management

<sup>49</sup> See Faulkner, A. O. and M. L. Albertson, *Tandem use of Hard and Soft Technology: an Evolving Model for Third World Village Development*, International Journal of Applied Engineering Education, Vol. 2, No. 2 pp 127–137, 1986.

<sup>50</sup> *Ibid.*

<sup>51</sup> UNFCCC, *Mechanisms to manage financial risks from direct impacts of climate change in developing countries: Technical paper*, supra, p. 22.

<sup>52</sup> See IPCC Special Report, *Managing the Risks of Extreme Events to Advance Climate Change Adaptation* (SREX, 2012) chapter 8.5.1., available at [http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-All\\_FINAL.pdf](http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf).

<sup>53</sup> OCHA, *OCHA and slow-onset emergencies*, supra, p. 7.

<sup>54</sup> See *Emerging Challenges for Early Warning Systems in the Context of Climate Change and Urbanisation*, DKKV/ Platform for Promotion of Early Warning/ UNISDR (September 2010), available at [http://www.unisdr.org/files/15689\\_ewsincontextofccandurbanization.pdf](http://www.unisdr.org/files/15689_ewsincontextofccandurbanization.pdf), p. 10.

approaches provide opportunities to reduce complex and compound hazards. Considering multiple types of hazards reduces the likelihood that risk reduction efforts targeted at one type of hazard will increase exposure and vulnerability from other hazards, both in the present and future.<sup>55</sup>

### Case study: Approaches to sea level rise in Kiribati

Recent events in Kiribati, an island group in the central Pacific Ocean, provide an example of how soft and hard approaches can be combined to address potential loss and damage from slow onset climate change hazards. The Kiribati example also shows how slow onset processes can give rise to intensified extreme events.

In March 2012, the cabinet of Kiribati President Anote Tong endorsed a plan to buy nearly 6,000 acres of land on Fiji. The purchase would be funded by foreign exchange reserves from phosphate mining activities. Many of Kiribati's atolls rise just a few metres above sea level and some villages have already been forced to move away from coastal areas. The concept of 'migration with dignity' is crucial to the effectiveness of the Government's relocation policy and to this end President Tong's government has launched an Education for Migration programme aimed at upskilling the population to make them more attractive as migrants.<sup>56</sup> The aim is that migrants from Kiribati are sought after by the countries to which they wish to relocate.<sup>57</sup>

There have been increasing instances of seawater contaminating the scarce sources of underground fresh water in Kiribati, and flooding and storm surges have become more severe. 'Hard' approaches taken to address current impacts include shoring up some Kiribati islands with sea walls. Kiribati is calling for the international community to come up with a funding package to deal with its needs and those of countries like it.<sup>58</sup>

<sup>55</sup> SREX, *supra*, p. 439.

<sup>56</sup> Paul Chapman, *Entire nation of Kiribati to be relocated over rising sea level threat*, The Telegraph, 7 March 2012, available at <http://www.telegraph.co.uk/news/worldnews/australiaandthepacific/kiribati/9127576/Entire-nation-of-Kiribati-to-be-relocated-over-rising-sea-level-threat.html>.

<sup>57</sup> Kiribati government climate change website, *Relocation Strategies*, available at [http://climate.gov.ki/Kiribati\\_climate\\_change\\_strategies.html#apm1\\_3](http://climate.gov.ki/Kiribati_climate_change_strategies.html#apm1_3).

<sup>58</sup> 3 News NZ, *Rising sea levels swallowing Kiribati*, 14 March 2012, available at <http://www.3news.co.nz/Rising-sea-levels-swallowing-Kiribati/tabid/1160/articleID/246548/Default.aspx>.

*Life insurance is developed for a risk, which is long-term and inevitable like sea level rise, temperature increase, ocean acidification and glacial melt. Life insurance-type mechanisms require the long-term build up of funds to pay for foreseeable loss and damage and are in many ways a form of savings account.*

The categorisation of hazards into sudden-onset and slow-onset reflects the kinds of traditional financial instruments that might be available, e.g. life insurance versus non-life insurance. Life insurance is developed for a risk, which is long-term and inevitable like sea level rise, temperature increase, ocean acidification and glacial melt. Life insurance-type mechanisms require the long-term build up of funds to pay for foreseeable loss and damage and are in many ways a form of savings account.<sup>59</sup>

There are a number of instances of environmental protection frameworks at the international level, which use funds-based approaches to address environmental harm. These approaches are based on the customary international law principle called the 'no-harm rule' which requires States to prevent damage to other States.<sup>60</sup> When a State fails to take proportionate measures to prevent damage to other States, the rule of 'State responsibility' holds the offending State responsible for the cost of addressing it.<sup>61</sup>

<sup>59</sup> UNFCCC, *Mechanisms to manage financial risks from direct impacts of climate change in developing countries Technical paper*, *supra*, p. 21.

<sup>60</sup> Birnie, P., A. Boyle and C. Redgwell, *International Law and the Environment* (Third Edition, Oxford University Press, 2009), p. 137.

<sup>61</sup> See *Draft articles on Responsibility of States for Internationally Wrongful Acts*, with commentaries, available at [http://untreaty.un.org/ilc/texts/instruments/english/commentaries/9\\_6\\_2001.pdf](http://untreaty.un.org/ilc/texts/instruments/english/commentaries/9_6_2001.pdf).

Funds-based approaches to address environmental harm include the 1992 Fund Convention addressing risks and damage relating to oil spills from marine transport,<sup>62</sup> the Hazardous and Noxious Substances (HNS) Fund where contributions are levied on persons or entities receiving a minimum quantity of HNS cargo during a calendar year<sup>63</sup> and the nuclear damage Conventions, which address risks arising from the peaceful use of nuclear energy. This set of Conventions recognises the potentially limitless damage from nuclear incidents, limits owner liability, and distributes responsibility for compensation beyond owners to different groups of stakeholders.<sup>64</sup>

These funds-based approaches demonstrate how international law has embraced mandatory insurance tools to manage financial risk arising from potential transboundary effects of pollution damage. These tools can be used to cover certain risks effectively, and assist potential polluters in internalising the cost of pollution. These examples also illustrate that the types of damage and loss compensated under international law can be broad and include ecological damage as well as loss of income.<sup>65</sup>

*...an all-risk insurance approach, where a pay out is made whenever a loss occurs, provides a way to transfer sufficient funds for the establishment of alternative economies.*

For those economies which may be untenable in the long term because of slow onset climate change hazards, an all-risk insurance approach, where a pay

<sup>62</sup> See International Oil Compensation Funds, available at <http://www.iopcfund.org>.

<sup>63</sup> See HNS Convention, available at <http://www.hnsconvention.org/Pages/Home.aspx>.

<sup>64</sup> See IAEA, International Conventions and Legal Agreements, available at <http://www.iaea.org/Publications/Documents/Conventions/liability.html>.

<sup>65</sup> Verheyen, R. and P. Roderick, Beyond Adaptation: The legal duty to pay compensation for climate change damage (WWF UK, November 2008), available at [http://assets.wwf.org.uk/downloads/beyond\\_adaptation\\_lo\\_wres.pdf](http://assets.wwf.org.uk/downloads/beyond_adaptation_lo_wres.pdf), p. 27.

out is made whenever a loss occurs, provides a way to transfer sufficient funds for the establishment of alternative economies. These could be compared to life or pensions insurance, where funds are accumulated over a long period.<sup>66</sup>

At the national level, there are various funds-based instruments where governments 'save' current budgetary surpluses to cover future identified needs, which could include addressing environmental impacts. One such instrument that is growing in popularity is known as the sovereign wealth fund.<sup>67</sup>

The national trust fund model is common among Pacific islands countries. The funds are a mechanism for pooling, growing, and spreading out financial resources over time, and could be used in future to address loss and damage from slow onset climate change hazards.<sup>68</sup> Developing country governments, especially those particularly vulnerable to the adverse effects of climate change, are likely to require some level of donor assistance in the capitalisation of these types of funds.<sup>69</sup> Unlike the international-level funds-based approaches described above, the rules for creating, managing and disbursing national public funds are determined and controlled by national governments.

The present drought risk reduction approach developed by the UNISDR consists of the following elements:

- i) drought policies and governance,
- ii) drought risk identification, impact assessment, and early warning,

<sup>66</sup> UNFCCC, Mechanisms to manage financial risks from direct impacts of climate change in developing countries, Technical paper, *supra*, p. 85.

<sup>67</sup> See the Sovereign Wealth Fund Institute website, available at <http://www.swfinstitute.org/about/>. Examples include the Government Pension Fund of Norway, the Kazakhstan National Fund and the Government of Singapore Investment Corporation.

<sup>68</sup> See ADB, *Trust Funds in the Pacific: Their role and future* (January 2005), available at <http://www.adb.org/publications/trust-funds-pacific-their-role-and-future>.

<sup>69</sup> Trust funds have been set up in the Federated States of Micronesia, the Republic of the Marshall Islands and the Republic of Palau under their Compact of Free Association (COFA) arrangements with the United States 'to contribute to the long-term budgetary self-reliance' of the three Pacific islands countries. Annual US grant assistance is scheduled to be phased out within an agreed period of time. See e.g., COFA, Trust Fund, Agreement between the United States of America and Micronesia (2003), available at <http://www.state.gov/documents/organization/174118.pdf>.

- iii) drought awareness and knowledge management, and
- iv) effective drought mitigation and preparedness measures.<sup>70</sup>

This framework incorporates a number of the soft and hard approaches set out above. However, drought is relatively short-term, cyclical and its impacts are not permanent or irreversible when compared to slow onset hazards such as temperature increases, sea level rise, ocean acidification and glacial melt. Different scales of redress will be required to address this potential for irreversible damage.

### The IPCC's SREX

The IPCC recently published a Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX). The SREX evaluates the role of climate change in altering characteristics of extreme events, and assesses experience with a wide range of options used by institutions, organisations, and communities to reduce exposure and vulnerability, and improve resilience, to climate extremes. Among these are early-warning systems, innovations in insurance coverage, improvements in infrastructure, and the expansion of social safety nets.<sup>71</sup>

While the focus of the SREX is more on hazards of a sudden-onset nature, slower onset processes such as temperature and sea level rise are addressed. Evidence shows it likely that anthropogenic influences have led to warming of extreme daily minimum and maximum temperatures at the global scale. It is also likely that there has been an anthropogenic influence on increasing extreme coastal high water due to an increase in mean sea level.<sup>72</sup>

It is very likely that mean sea level rise will contribute to upward trends in extreme coastal high water levels in the future, and there is high confidence that locations currently experiencing adverse impacts such as coastal erosion and inundation will continue to do so in the future due to increasing sea levels. The very likely

contribution of mean sea level rise to increased extreme coastal high water levels, coupled with the likely increase in tropical cyclone maximum wind speed, is a specific issue for tropical small island states.<sup>73</sup>

There is high confidence that changes in heat waves, glacial retreat, and/or permafrost degradation will affect high mountain phenomena such as slope instabilities, movements of mass, and glacial lake outburst floods.<sup>74</sup> Conclusions in the SREX on changes in precipitation and intensified drought are less definitive.

## 4. Gaps and needs

*Approaches that are relevant to slow onset climatic processes are emerging primarily at the national level in planning for and monitoring of weather and climate, and early phases of coordination. However, most approaches are 'paper approaches' at this stage.*

Today, approaches to address loss and damage from the adverse effects of climate change are almost exclusively around the management of climatic events, not slow onset climate change hazards. As some of the potentially greatest loss and damage is expected to come from these slow onset hazards, there is an urgent need to identify effective approaches to manage them.<sup>75</sup> Approaches that are relevant to slow onset climatic processes are emerging primarily at the

<sup>70</sup> UNISDR, *Drought Risk Reduction Framework and Practices: Contributing to the Implementation of the Hyogo Framework for Action* (2009), *supra*, pp. 4 – 5.

<sup>71</sup> See [http://ipcc-wg2.gov/SREX/images/uploads/IPCC\\_SREX\\_fact\\_sheet.pdf](http://ipcc-wg2.gov/SREX/images/uploads/IPCC_SREX_fact_sheet.pdf).

<sup>72</sup> IPCC, *SREX, Summary for Policymakers*, available at [http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-SPMbrochure\\_FINAL.pdf](http://www.ipcc-wg2.gov/SREX/images/uploads/SREX-SPMbrochure_FINAL.pdf), p. 7.

<sup>73</sup> *Ibid.*, p. 13.

<sup>74</sup> *Ibid.*

<sup>75</sup> Warner, K., K. Yuzva, S. Kreft, *Literature Review under the Work Programme on Loss and Damage*, Working Draft, 8 June 2012 (UNFCCC), p. 34.

national level in planning for and monitoring of weather and climate, and early phases of coordination. However, most approaches are 'paper approaches' at this stage.<sup>76</sup>

Absent ambitious concerted efforts on the mitigation of global greenhouse gas emissions, the adverse effects of slow onset climate change processes will be significant and the latest science tells us that these impacts may manifest themselves sooner than originally anticipated. The level of funding that might be required to manage loss and damage related to slow onset climatic processes is highly uncertain and varies greatly country to country and between regions. However, the earlier approaches are put place to manage slow onset climate hazards, the lower the costs and higher the benefits will be.<sup>77</sup>

While the most significant inroads into developing approaches to slow onset processes are being made at national level, there is a need to build capacity on slow onset climate change processes at all levels from local to national to international. Understanding the level at which capacity can be built most effectively should be one of the important outcomes of the work programme on loss and damage under the UNFCCC. Capacity can be built and knowledge shared and disseminated in a number of ways including through further joint research and development projects, integrated planning processes and pilot projects.

Irrespective of regional differences in climate change impacts, to address slow impact hazards consistently across regions, international coordination and oversight of datasets will be required. These datasets would be used to set baselines and develop indices for measuring the extent of loss and damage from slow onset hazards. This data would also be used to improve the predictive nature of climate models and improve our understanding of the timing of slow onset hazards and the magnitude of their impacts. Assessments of loss and damage from slow onset climate change hazards in turn allow for the assessment of successes and failures of adaptation policies, setting up a feedback mechanism for national-level policymakers, informing adaptation efforts at community and local levels and contributing to global-level early warning systems.

<sup>76</sup> *Ibid.*, p. 28.

<sup>77</sup> *Ibid.*, p. ix.

Existing international legal frameworks dealing with issues of human displacement and migration will need to be expanded to handle human movement resulting from the pressures imposed by slow onset processes. An international 'home' for this work will need to be identified and established. The implementation of displacement and migration policies and strategies will require foresight and political will at the national level and a very careful roll out at the local level. No approach will be satisfactory if the culture and livelihoods of the local communities affected are not given top priority.

*As the international focal point for activity on global climate change activities, the UNFCCC process should take a lead role in inspiring, coordinating and synthesising action to address loss and damage to slow onset climate change hazards.*

The potential for large-scale disruption brought on by slow onset climate change hazards will require significant coordination of international trade and investment flows. Incentivising action in the private sector and marshalling the capital it has to offer is another essential feature of a concerted approach to addressing loss and damage from slow impact climate change hazards. As the international focal point for activity on global climate change activities, the UNFCCC process should take a lead role in inspiring, coordinating and synthesising action to address loss and damage to slow onset climate change hazards.

Future work on filling the current gaps to addressing loss and damage to slow impact climate change hazards must consider the special needs and concerns of developing countries, and especially those of particularly vulnerable developing countries. Both economic and non-economic loss and damage must be addressed.

The UNFCCC process has an active role to play in promoting international coordination and coherent approaches to strengthen national and regional capacities on slow onset hazards and their impacts, including through:

- Incentivising the development and maintenance of regionally consistent datasets for improving predictive modelling and use in the establishment of baselines and indices to measure loss and damage from slow-onset processes;
- Improving the access of countries to information and knowledge;
- Identifying gaps in availability and viability of approaches to address loss and damage and catalysing research and development efforts to fill them;
- Fostering short-term pilot projects and long-term planning efforts;
- Mobilising seed funds for regional (and national) risk reduction and risk transfer initiatives, as well as for long-term, life insurance type funds;
- Integrating and coordinating the work at the international level being done on slow onset climate change hazards, including on
  - desertification in the CCD;
  - ecosystems and biodiversity loss in the CBD;
  - disaster risk reduction in the UNISDR;
  - climate services in the WMO; and
  - displacement and migration in the UNHCR

## 5. Lessons learned and further recommendation for the UNFCCC work programme

Experience of the two regional meetings on addressing loss and damage held to date shows how easy it is to slip into discussing traditional approaches to disaster risk reduction, with its focus on natural hazards. The loss and damage we are addressing under the work programme on loss and damage is the result of man-made climate change, as defined under the UNFCCC. The IPCC's SREX states that

*...a changing climate leads to changes in the frequency, intensity, spatial extent, duration,*

*and timing of extreme weather and climate events...*<sup>78</sup>

*While a slot on the agendas was given over to slow onset approaches, more work needs to be done to build depth and breadth into the treatment of this issue at the subsequent expert meetings under the work programme*

Therefore, it is imperative that we, in exploring and developing approaches to address loss and damage to this changing climate, factor in the additional burden created by it. While a slot on the agendas was given over to slow onset approaches, more work needs to be done to build depth and breadth into the treatment of this issue at the subsequent expert meetings under the work programme

*While a slot on the agendas was given over to slow onset approaches, more work needs to be done to build depth and breadth into the treatment of this issue at the subsequent expert meetings under the work programme.*

The mandate of the work programme requires Parties to look at both approaches for dealing with climate change-related extreme weather events and slow onset

<sup>78</sup> SREX, *Summary for Policymakers*, supra, p. 6.



hazards, including sea level rise, increasing temperatures, ocean acidification and glacial melt. While a slot on the agendas of both the African<sup>79</sup> and Latin American agendas was given over to slow onset approaches, more work needs to be done to build depth and breadth into the treatment of this issue at the subsequent expert meetings under the work programme.

*Organising the last two meetings around the discussion of regional examples or case studies, analysing them for relevant stakeholders, institutional arrangements, problems and available solutions would begin to throw up gaps and needs in current approaches, including at the international level.*

Given the history that the AOSIS has in advocating for innovative approaches to address slow onset climate change hazards, this issue merits much more than a single slot on the SIDS expert meeting agenda. Organising the last two meetings around the discussion of regional examples or case studies, analysing them for relevant stakeholders, institutional arrangements, problems and available solutions would begin to throw up gaps and needs in current approaches, including at the international level

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<sup>79</sup> See Kreft, S. and K. Warner, *Gauging Solutions for Climate Loss and Damage: Key discussions and way forward from UNFCCC loss and damage meeting in Addis 13-15<sup>th</sup> June* (UN University, June 2012), available at <http://germanwatch.org/en/download/6328.pdf>.





## The Loss and Damage in Vulnerable Countries Initiative

Accepting the reality of unmitigated climate change, the UNFCCC negotiations have raised the profile of the issue of loss & damage to adverse climate impacts. At COP-16, Parties created a Work Programme on Loss and Damage under the Subsidiary Body on Implementation (SBI). The goal of this work programme is to increase awareness among delegates, assess the exposure of countries to loss and damage, explore a range of activities that may be appropriate to address loss and damage in vulnerable countries, and identify ways that the UNFCCC process might play in helping countries avoid and reduce loss and damage associated with climate change. COP-18, in December 2012, will mark the next milestone in furthering the international response to this issue.

The "Loss and Damage in Vulnerable Countries Initiative" supports the Government of Bangladesh and the Least Developed Countries to call for action of the international community.

The Initiative is supplied by a consortium of organisations including:

### **Germanwatch**

### **Munich Climate Insurance Initiative**

### **United Nations University – Institute for Human and Environment Security**

### **International Centre for Climate Change and Development**

*Kindly supported by the Climate Development and Knowledge Network (CDKN)*

For further information: [www.loss-and-damage.net](http://www.loss-and-damage.net)

## Germanwatch

Following the motto "Observing, Analysing, Acting", Germanwatch has been actively promoting North-South equity and the preservation of livelihoods since 1991. In doing so, we focus on the politics and economics of the North with their worldwide consequences. The situation of marginalised people in the South is the starting point of our work. Together with our members and supporters as well as with other actors in civil society we intend to represent a strong lobby for sustainable development. We endeavour to approach our aims by advocating fair trade relations, responsible financial markets, compliance with human rights, and the prevention of dangerous climate change.

Germanwatch is funded by membership fees, donations, grants from the "Stiftung Zukunftsfähigkeit" (Foundation for Sustainability), and by grants from a number of other public and private donors.

You can also help to achieve the goals of Germanwatch and become a member or support our work with your donation:

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