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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

**Subsidiary Body for Implementation**

**Thirty-seventh session**

**Doha, 26 November to 1 December 2012**

Item 10 of the provisional agenda

**Approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change to enhance adaptive capacity<sup>1</sup>**  
**- Activities to be undertaken under the work programme**

**Views and information from Parties and relevant organizations on the possible elements to be included in the recommendations on loss and damage in accordance with decision 1/CP.16**

**Submissions from Parties and relevant organizations**

1. The Subsidiary Body for Implementation (SBI), at its thirty-fifth session, invited Parties, relevant organizations and other stakeholders to submit to the secretariat, by 17 September 2012, taking into account the outcomes of the implementation of the work programme on loss and damage prior to that date, views and information on the possible elements to be included in the recommendations on loss and damage in accordance with decision 1/CP.16.
2. The SBI requested the secretariat to compile these submissions into a miscellaneous document to be made available by its thirty-seventh session.<sup>2</sup>
3. The secretariat has received three such submissions. In accordance with the procedure for miscellaneous documents, the two submissions from Parties<sup>3</sup> and the submission from a United Nations organization<sup>4</sup> are attached and reproduced\* in the languages in which they were received and without formal editing. In line with established

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<sup>1</sup> Decision 1/CP.16, paragraphs 26–29.

<sup>2</sup> Decision 7/CP.17, paragraph 10.

<sup>3</sup> <<http://unfccc.int/5902.php>>.

<sup>4</sup> <<http://unfccc.int/3714.php>>.

\* These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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practice, the two submissions from non-governmental organizations have been posted on the UNFCCC website.<sup>5</sup>

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<sup>5</sup> <<http://unfccc.int/3689.php>>.

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**Subsidiary Body on Implementation (SBI)**

**Submission of Nauru on behalf of**

**The Alliance of Small Island States**

**Views and information on elements to be included in the  
recommendations on loss and damage in accordance with decision  
1/CP.16**

**28 September 2012**

Nauru welcomes this opportunity to present the views of the 44 members of the Alliance of Small Island States (AOSIS), in response to the invitation to Parties to submit to the Secretariat, by 17 September 2012, their views and information on the possible elements to be included in the recommendations on loss and damage in accordance with decision 1/CP.16. See UNFCCC decision 7/CP.17, paragraph 9.

**1. Recommendations to the COP on loss and damage**

The absence of a mechanism under the UNFCCC process to comprehensively address the loss and damage to the world's most vulnerable developing country Parties from human-induced climate change is a gaping hole in the international climate change regime. This is a gap that must be closed as a central outcome of the AWG-LCA's work under Section 1 (c) the Bali Action Plan.

Current approaches discussed under the UNFCCC have focused primarily on risk management in the context of disaster risk reduction, ignoring the need for the international community - and the UNFCCC specifically - to directly address and redress loss and damage to small island developing States (SIDS), Least Developed Countries (LDCs) and other developing countries particularly vulnerable to the adverse impacts of climate change caused by increasing greenhouse gas emissions.

Rather than taking a piecemeal approach to the needs of the most vulnerable developing country Parties, a holistic approach is needed, bringing together tools to address adaptation, financial risk management and risk transfer, and loss and damage in a single mechanism that can comprehensively minimize and address the loss and damage from the impacts of climate change that cannot be avoided.

Against a backdrop of increasing emissions and accelerating impacts, a centralised mechanism at the international level, under the UNFCCC, is needed, *inter alia*:

- to provide leadership and build trust amongst the multiple stakeholder groups involved;
- to ensure the efficient development and operation of approaches to address loss and damage; and

- to marshal the level and types of expertise required to address the immense and complex problem of loss and damage.

Accordingly, it is now appropriate for SBI to recommend to the COP 18 to adopt a decision in Doha establishing an international mechanism to address loss and damage with three mutually-reinforcing components, as detailed in earlier AOSIS submissions to the COP and AWG-LCA:<sup>1</sup>

- An **Insurance Component** to help SIDS and other particularly vulnerable developing countries manage financial risk from increasingly frequent and severe extreme weather events;
- A **Rehabilitation/Compensatory Component** to address the progressive negative impacts of climate change, such as sea-level rise, increasing land and ocean temperatures, and ocean acidification; and
- A **Risk Management Component** to support and promote risk assessment and management tools and facilitate and inform the Insurance Component and Rehabilitation/Compensatory Component.

The decision establishing the mechanism should give guidance on the governance and functions of the mechanism so that the newly established body can start work immediately. With respect to governance, the mechanism should be situated under the umbrella of the Convention and housed within the UNFCCC Secretariat, where the administrative support can be provided. A Board would provide oversight, through a transparent governance structure. Institutional arrangements would identify technical, financial and administrative functions of each component. This new body will be unique in its reliance on specialised technical expertise and in its linkages to the work of other constituted bodies under the Convention.

## 2. Role of each component

The three components of the mechanism are inter-dependent and all three are needed as part of an integrated and comprehensive approach to minimizing and addressing loss and damage in SIDS, LDCs and other developing countries particularly vulnerable to climate change impacts.

The UNFCCC currently lacks a framework for comprehensively addressing permanent loss and damage. Existing approaches are restricted to risk management in the context of disaster risk reduction (DRR), which leaves many climate-related hazards completely unaddressed. An international mechanism to address loss and damage, with the three components below, will fill an existing void under the UNFCCC.

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<sup>1</sup> See Alliance of Small Island States (AOSIS), Proposal to the AWG-LCA, *Multi-Window Mechanism to Address Loss and Damage from Climate Change Impacts*, available at, [http://unfccc.int/files/kyoto\\_protocol/application/pdf/aosisinsurance061208.pdf](http://unfccc.int/files/kyoto_protocol/application/pdf/aosisinsurance061208.pdf).

### **A. The insurance component**

The insurance component is needed to assist SIDS, LDCs and other developing countries that are particularly vulnerable to the impacts of climate change in better managing financial risks associated with increasingly frequent and severe climate-related extreme weather events. These include hurricanes, tropical storms, storm surge, floods and droughts. These events already result in significant loss or damage and many hazards will be exacerbated by climate change.

The UNFCCC technical paper on physical impacts notes that SIDS are already experiencing an increase in the intensity and frequency of various extreme events, such as heavy rainfall, drought, high air and ocean temperatures, strong winds and storm surges and the capacity of SIDS to cope with these events is being increasingly exceeded.<sup>2</sup> Some regions of the world, for example Pacific Islands, have limited access to commercial risk sharing and risk transfer products, due to insurance markets that are small or difficult to establish, resulting in market failure. In other regions, where insurance is available, SIDS and many other vulnerable countries find it increasingly difficult to afford commercial insurance due to the burden of increasing risks due to climate change.

An international mechanism that pools the risks from all vulnerable countries will bring benefits to all through a spreading of the risks among a larger number of countries. New and innovative insurance tools in addition to, or in conjunction with insurance pools, can help manage, spread, hedge, reduce and transfer the increasing financial risk associated with climate-related hazards, if appropriate expertise and financing to design and support this work is marshalled and coordinated at the international level. It is increasingly clear that these solutions will not be forthcoming from the private sector for the benefit of SIDS and LDCs without intervention at the international level.

### **B. The rehabilitation/compensatory component**

This component is needed to address the progressive negative impacts of climate change, such as sea level rise, increasing sea and land temperatures and ocean acidification that result in loss and damage (e.g., permanent or extended loss of useful land, damage to coral reefs, damage to water tables, loss of fisheries, etc.).

Even with a range of new and innovative risk transfer mechanisms (made possible through the insurance component), and with risk reduction measures in place (through the support of the risk management component) a measure of loss and damage will remain and must be addressed by the international community. The UNFCCC technical paper on managing risk notes that "*even with the successful development and deployment of existing and new risk-transfer mechanisms, the vulnerable would still be at risk from climate hazards. Owing to the increased interdependence of global economy and society, impacts in poor and vulnerable regions could cascade throughout the world. It would therefore be cost-effective as well as equitable for the international community to contribute to managing these risks.*" The Technical Paper notes in this regard AOSIS's earlier proposal for an international insurance pool "to be funded by developed countries to compensate small-island and low-lying developing countries for the otherwise uninsured loss and damage from slow-onset sea level rise."<sup>3</sup>

The existing approaches to risk management and risk transfer that have been considered by the recent UNFCCC regional workshops show *inter alia* that there is a significant gap in the availability

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<sup>2</sup> FCCC/TP/2008/3, para. 55.

<sup>3</sup> FCCC/TP/2008/9 at 13.

of approaches now established to deal with slow onset events and permanent loss. Given the reality of climate change and its current and potential impacts, it is necessary that provision be made for addressing such losses, especially as the vulnerable developing country Parties that will be most impacted, including SIDS, have contributed little to the GHG emissions that are the cause of these impacts. In such circumstances, an international response is required and the UNFCCC is the institution best placed to lead such an international response.

### ***C. The risk management component***

This component is needed to provide both technical and financial support to risk reduction efforts in connection with climate-related extreme weather events. It would also facilitate consideration of ways to reduce risk from the impacts of progressive negative impacts of climate change that result in loss and damage, including sea level rise, increasing sea temperatures, increasing air temperatures and ocean acidification, which have impacts on coastal infrastructure, shorelines, coral reefs etc. This component would work closely with the other two components.

Given the inter-relationships that exist in the climate change context between risk prevention and management, risk transfer, and the incidence of permanent losses, it is best that all three aspects be addressed in one International mechanism under the Convention, with separate, mutually reinforcing, windows for addressing each component.

## **3. Demonstrated need for an international mechanism to address loss and damage**

The COP has an ample scientific and policy information base upon which to establish an international mechanism to address loss and damage to the adverse effects of climate change.

As far back as 1991, when the UNFCCC was still being drafted, AOSIS highlighted the need to address climate-related loss and damage for the most vulnerable Parties, and proposed the establishment of an international insurance pool as a collective loss-sharing scheme to compensate victims of projected sea-level rise. The scheme was to be funded by mandatory contributions from industrialised countries based on GNP and on relative greenhouse gas (GHG) emissions, i.e. contributions to the fund would be based on ability to pay as well as responsibility. The proposal used other international law precedents as a model for its design. The basic concept of the 1991 AOSIS proposal is still valid, though the needs AOSIS highlighted in 1991 have not yet been satisfactorily addressed.

In May 2003, two UNFCCC workshops explored insurance-related actions under the UNFCCC. The background paper prepared for those workshops identified various international law precedents for the use of insurance tools and collective loss-sharing schemes to address transboundary environmental damage, as well as the role insurance tools might play in managing, hedging and transferring risk from climate change impacts through collective-loss sharing mechanisms.<sup>4</sup> These two workshops acknowledged the role of the international community in contributing to loss sharing from climate-related impacts at local, national and global level<sup>5</sup> and the

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<sup>4</sup> Background paper: Insurance-Related Actions and Risk Assessment in the Context of the UNFCCC, [http://unfccc.int/files/meetings/workshops/other\\_meetings/application/pdf/background.pdf](http://unfccc.int/files/meetings/workshops/other_meetings/application/pdf/background.pdf)

<sup>5</sup> See UNFCCC, *Report on the UNFCCC workshops on insurance* (FCCC/SBI/2003/11), available at <http://unfccc.int/resource/docs/2003/sbi/11.pdf>

workshop report noted, *inter alia*, that “no insurance programmes aimed at covering property losses of the poor due to climate hazards are likely to be viable without government subsidy, especially in the least developed countries (LDCs), where a case may be made for burden sharing and risk transfer internationally via an international insurance pool, as was originally proposed by AOSIS.”

In 2008, a technical paper on financial flows prepared by the Secretariat recognized that it would be cost-effective as well as equitable for the international community to contribute to managing the risks of climate hazards.<sup>6</sup> Other technical papers, produced in 2008 in response to mandates from the Parties, have made much the same point- noting the extreme vulnerability to climate change of many developing country Parties, in particular SIDS and LDCs, and identifying possible approaches to address these challenges with appropriate international support. See:

- *Physical and socio-economic trends in climate-related risks and extreme events, and their implications for sustainable development*, which pays particular attention to vulnerable developing countries, especially least developed countries and small island developing states (FCCC/TP/2008/3)
- *Integrating climate risk assessment and management and disaster risk reduction strategies into national policies* (FCCC/TP/2008/4)
- *Mechanisms that can be used to manage financial risks from direct impacts of climate change* (FCCC/TP/2008/9)

Technical paper FCCC/TP/2008/3 on climate-related risks and extreme events highlighted the unusually high susceptibility of SIDS to climate risk. It noted the unique vulnerabilities of SIDS to current and future impacts of climate change related to sea level rise, high air and ocean temperatures, and an increase in the intensity and frequency of various extreme events, such as heavy rainfall, drought, strong winds and storm surges, and that the capacity of SIDS to cope with these events is being increasingly exceeded. The paper noted, *inter alia*, that the vast majority of infrastructure and industry in SIDS tends to be located close to the coast; hence SIDS face higher costs per capita from climate-related risks and extreme events.

Technical paper FCCC/TP/2008/4 on the integration of practices, tools and systems for climate risk assessment and management and strategies for disaster risk reduction into national policies and programmes, focused on the role of disaster risk reduction in adaptation. It nevertheless recognized that adaptation is a broad concept that addresses a wide range of risks, not only associated those with disasters, and that “*the progressive drying out of continental interiors, the melting of glaciers, sea level rise, changes in ecosystems, including extinction of species, and the salinization of groundwater are examples of climate-related risks that do not manifest themselves in the form of rapid disasters. Similarly, the economic sectors, livelihoods, stakeholders and decision-makers involved in adaptation are not synonymous in all cases with those involved in DRR.*”<sup>7</sup> The paper explained that while it focused on those risks that manifest in the form of climate-related disasters, and while responding to disaster risk is an aspect of adaptation that should be addressed as a priority, adaptation also addresses other negative consequences that were not considered in this paper.

Technical paper FCCC/TP/2008/9 addressed mechanisms that can be used to manage financial risks from direct impacts of climate change in developing countries. It explicitly considered the

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<sup>6</sup> UNFCCC, *Investment and financial flows to address climate change: an update* (FCCC/TP/2008/7, p. 6, available at <http://unfccc.int/resource/docs/2008/tp/09.pdf>.

<sup>7</sup> FCCC/TP/2008/4, para. 4



unique circumstances of the most vulnerable developing countries, especially LDCs, SIDS and countries in Africa, and looked at the design of appropriate mechanisms to manage financial risk, bringing together inputs from technical experts in the fields of insurance, reinsurance, and hazard assessment. The paper recognized though that while vulnerability to climate change hazards can be reduced to a certain extent by measures to promote resilience, adaptation and disaster risk reduction, this still leaves residual hazards caused by climate change, in addition to that, which societies would have experienced from natural climate variability.<sup>8</sup> To manage climate change hazards, a toolkit of approaches can be used, including risk reduction measures, resilience building, risk pooling and risk transfer.<sup>9</sup> Risk pooling requires the facilitation of access to insurance-type structures for the most vulnerable and risk transfer requires the establishment of new mechanisms whereby the extra risks to the vulnerable caused by climate change are spread more widely.<sup>10</sup>

The technical paper noted that In addition to humanitarian motives, there are strong socio-economic reasons for developed countries to participate in new insurance mechanisms: if not intercepted, climate impacts could lead to a downward socio-economic and humanitarian spiral, which could result in social collapse in vulnerable countries which could spread to other areas through economic and societal interdependence and migration, ending in even higher costs, including economic, social and humanitarian costs, for developed countries.<sup>11</sup> This could be partially avoided through the use of targeted ex ante risk-transfer mechanisms.<sup>12</sup>

Insurance products now available in developed countries and being piloted elsewhere could provide valuable risk-pooling services on a large scale for vulnerable developing countries against hazards due to climate change that are short-term and acute, and where there is a spatial and temporal uncertainty of impact, as with droughts and hurricanes.<sup>13</sup> It has proved difficult to scale up these products.<sup>14</sup> But even with the successful development and deployment of existing and new risk-transfer mechanisms, the vulnerable would still be at risk from climate hazards. It would therefore be cost-effective as well as equitable for the international community to contribute to managing these risks.<sup>15</sup>

TP/2008/9 also explored non-insurance mechanisms, which include informal risk sharing; inter-temporal risk spreading; and collective loss sharing (solidarity). It noted that these approaches can in some case be cost-effective compared to insurance, and can: (a) provide direct financing for adaptation measures that reduce chronic climate impacts, such as responding to salt water intrusion, as well as measures that address sudden-onset events, such as building dykes or levees; (b) serve communities that do not have insurance institutions in place, or an insurance

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<sup>8</sup> FCCC/TP/2008/9, para. 90. See also para 10: "Climate change is likely to affect a range of assets. Assets do not have to be financial; they can be of any kind, such as agricultural harvests, livestock, infrastructure or intangible assets such as public services and human life itself. The likely hazards as a result of climate change and its effects on assets are considerable, although not known precisely. Some risks are long-term and inevitable, such as sea level rise, and for many the risks are difficult to quantify, such as the effect on ecosystems, livelihoods and cultural capital. Costs could be significantly reduced by risk reduction measures, resilience building and climate change adaptation, but this would still leave a residual risk, which would have a particularly harsh impact on the poor."

<sup>9</sup> FCCC/TP/2008/9, para. 91.

<sup>10</sup> FCCC/TP/2008/9, para. 91.

<sup>11</sup> FCCC/TP/2008/9, para. 92.

<sup>12</sup> FCCC/TP/2008/9, para. 92.

<sup>13</sup> FCCC/TP/2009/9, paras. 11, 157, 460.

<sup>14</sup> FCCC/TP/2008/9, para. 11.

<sup>15</sup> FCCC/TP/2008/9, paras. 11, 13.

culture; (c) in some contexts offer a lower-cost alternative to insurance for providing post-disaster capital, especially for low-level risks; (d) redistribute climate-impact burdens from the poor with national and international solidarity.<sup>16</sup>

The paper went on to consider the possible design of a mechanism combining a number of possible tools and approaches, "Scheme C", which would coordinate international support to create a global solution for local problems in LDCs, SIDS and countries in Africa, where the underlying risks may be uninsurable, due to the high degree of hazard or the inability of the parties at risk to pay an adequate premium. It also considered the possibility of an all-risk parametric cover as a possible approach to slow onset hazards.

In final remarks, the paper noted that, *"Both insurance and non-insurance financial mechanisms potentially have a major role to play in an expanded and strengthened adaptation response to climate change risks. Adaptive capacity is being further undermined by climate change impacts and exposure of vulnerable countries and communities is increased. This means that LDCs, SIDS, countries in Africa and other vulnerable countries risk [sic] are becoming caught in a downward spiral of increasing climate change risks and diminishing capacity to manage them."*<sup>17</sup>

These and other technical papers and discussions inside and outside the Convention process have only served to highlight the need for a comprehensive mechanism to address loss and damage the needs of the most vulnerable.

#### **4. Current and emerging science underscores this need**

In small island developing states, many islands are a maximum of a few meters above sea level, and most of the population of island States lives by the coast. These characteristics limit the capacity of SIDS to adapt to the adverse effects of climate change. In addition to sea level rise, SIDS are also experiencing an increase in the intensity and frequency of various extreme events, such as heavy rainfall, drought, high air and ocean temperatures, strong winds and storm surges.

Scientific observations since the publication of the Intergovernmental Panel on Climate Change (IPCC)'s Fourth Assessment Report (AR4) show that sea level is rising faster than predicted<sup>18</sup> with an increasing proportion of the rise coming from melting ice sheets.<sup>19</sup> Glacier losses have continued,<sup>20</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>21</sup> State-of-the-art projections of the sea level rise for the next century indicate that there is a substantial risk of sea level rise of 1 meter or more by 2100, with much higher levels of sea level rise in following centuries unless

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<sup>16</sup> FCCC/TP/2008/9, para. 32.

<sup>17</sup> FCCC/TP/2008/9, para. 33.

<sup>18</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>19</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>20</sup> Jacob, T., et al., *Recent contributions of glaciers and ice caps to sea level rise*, Nature 482 (2012): 514–518.

<sup>21</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).

warming is limited to below 1.5°C.<sup>22</sup> It is now quite clear that small island developing states need to be planning for at least 1 meter sea level rise by 2100, far above the IPCC Fourth Assessment Report range. The annual rate of global sea level rise has doubled in the past 2 decades,<sup>23</sup> but regionally, sea level rise can be substantially larger, as seen for instance in the tropical Western Pacific, with a rate three times larger than the global mean.<sup>24</sup>

There is a growing risk of widespread, severe drought affecting many regions globally, including many small island developing states, even for a warming of around 2°C above preindustrial levels.<sup>25</sup> Recent drought trends are consistent with climate model projections.

The frequency of the most damaging tropical cyclone is projected to double by the end of the 21st century.<sup>26</sup> New research shows mortality risk depends on tropical cyclone intensity, exposure, levels of poverty and governance. Despite projected reduction in frequency of tropical cyclones, projected increases in both demographic pressure and tropical cyclone intensity over the next 20 years expected to greatly increase the number of people exposed per year and exacerbate disaster risk, despite potential progression in development and governance.<sup>27</sup> Risks such as these well in an extremely adverse late on small island developing states many of which occur within tropical cyclone risk regions.

A further risk is that of extremely high temperatures, causing increasing health problems and trouble for agricultural activities. Extreme high temperatures are projected even for low levels of warming and are already being experienced in many parts of the world. For example, hot extreme temperature conditions, which covered much less than 1% of the Earth's surface between 1951-1980, now typically cover about 10% of the land area.<sup>28</sup>

The most recent science is demonstrating profound risks to coral reef ecosystems even at 1.5° C warming above preindustrial due to the combined effect of sea surface temperature increase and ocean acidification.<sup>29</sup> A recent review shows that the anthropogenic rate of carbon input into the oceans appears to be greater than during any of the ocean acidification events identified so far

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<sup>22</sup> Schaeffer, M., W. Hare, S. Rahmstorf and M. Vermeer, *Long-term sea-level rise implied by 1.5°C and 2°C warming levels*. *Nature Clim. Change* advance online publication (2012).

<sup>23</sup> Meyssignac, B. and A. Cazenave, *Sea level: A review of present-day and recent-past changes and variability*. *Journal of Geodynamics* 58(0): 96-109 (2012).

<sup>24</sup> Becker, M., B. Messignac, C. Letetrel, W. Llovel, A. Cazenave and T. Delacroix, *Sea level variations at tropical Pacific islands since 1950*, *Global and Planetary Change*(80-81):85-95 (2012), available at [http://www.legos.obs-mip.fr/~delcroix/PDF\\_PUBLICATIONS/Becker\\_etal\\_GPC12.pdf](http://www.legos.obs-mip.fr/~delcroix/PDF_PUBLICATIONS/Becker_etal_GPC12.pdf)

<sup>25</sup> Dai, A. *Increasing drought under global warming in observations and models*. *Nature Clim. Change* advance online publication, doi:10.1038/nclimate1633 (2012).

<sup>26</sup> Bender, M. A., T. R. Knutson, R. E. Tuleya, J. J. Sirutis, G. A. Vecchi, S. T. Garner and I. M. Held. *Modeled Impact of Anthropogenic Warming on the Frequency of Intense Atlantic Hurricanes*. *Science* 327(5964): 454-458 (2010).

<sup>27</sup> Peduzzi, P., B. Chatenoux, et al., *Global trends in tropical cyclone risk*. *Nature Climate Change* 2(4): 289-294 (2012).

<sup>28</sup> Reported by NASA scientist in: Hansen, J., Sato, M. & Ruedy, R. *Perception of climate change*. *Proceedings of the National Academy of Sciences*, doi:10.1073/pnas.1205276109 (2012).

<sup>29</sup> Frieler, K., M. Meinshausen, A. Golly, M. Mengel, K. Lebek, S. D. Donner and O. Hoegh-Guldberg, *Limiting global warming to 2°C is unlikely to save most coral reefs*. *Nature Clim. Change* advance online publication (2012).

over the geological past, dating back millions of years and including mass-extinction events.<sup>30</sup> Large scale loss and damage to coral reefs will cause serious harm to the livelihoods of many small island developing states through loss of food resources, degradation of tourism assets and related problems.

There are many signs of rapid climate change occurring faster than expected. Apart from sea level rise, the recent record loss of Arctic summer sea ice is an indication of this. New 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>31</sup> The threshold for the Greenland ice sheet to irreversibly melt down is now estimated to be 1.6°C above preindustrial levels, compared to the IPCC AR4 estimate of 3.1°C.<sup>32</sup>

The IPCC's Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) makes clear the human contribution to climate extremes and states 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, noting that this is a specific issue for tropical small island states.<sup>33</sup>

The best available science confirms that loss and damage to small island developing states (SIDS) from the adverse effects of climate change is inevitable and that a portion of this loss and damage is the direct result of anthropogenic climate change.

## 5. Conclusion

Loss and damage to small island developing states from the adverse effects of human-induced climate change is now inevitable. A portion of this loss and damage is the direct result of anthropogenic climate change caused by greenhouse gas emissions.

It is the proper role of the Convention to minimise and address unavoidable loss and damage from the impacts of anthropogenic climate change. Accordingly, the time has come for the establishment of an international mechanism to address loss and damage from the adverse effects of climate change. Anything less than the establishment of such a mechanism in Doha will represent a failure of the international community to respond to what are now well-recognized needs of SIDS, LDCs and other particularly vulnerable developing countries.

AOSIS plans to bring forward recommended decision text following the SIDS expert meeting scheduled to be held in Barbados from 9 – 11 October 2012.

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<sup>30</sup> Zeebe, R. E. *History of Seawater Carbonate Chemistry, Atmospheric CO<sub>2</sub>, and Ocean Acidification*. Annual Review of Earth and Planetary Sciences 40(1): 141-165 (2012).

<sup>31</sup> See Wang, M. and J. E. Overland, *A sea ice free summer Arctic within 30 years?*, Geophys. Res. Lett. 36 (2009); Zhang, X., *Sensitivity of arctic summer sea ice coverage to global warming forcing: towards reducing uncertainty in arctic climate change projections*, Tellus A 62(3): 220-227 (2010); Maslowski, W., J. Clement Kinney, M. Higgins and A. Roberts, *The Future of Arctic Sea Ice*. Annual Review of Earth and Planetary Sciences 40(1): 625-654 (2012).

<sup>32</sup> Robinson, A., R. Calov and A. Ganopolski, *Multistability and critical thresholds of the Greenland ice sheet*. Nature Climate Change 2 (6): 429-432 (2012).

<sup>33</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).

## Paper no. 2: Norway

### **Work programme on approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change to enhance adaptive capacity**

1. **Norway** welcomes the opportunity to share views and information on possible elements to be included in the recommendations on loss and damage in accordance with 1/CP.16 (FCCC/SBI/2011/L.35/Add.1)
2. The activities under work programme on loss and damage are still ongoing. Norway is mindful that one of the regional workshops has not yet taken place and that the reports from the regional meetings are yet to be produced. Hence, the views reflected below on possible elements are preliminary reflections based on the technical papers and reports, including “Report on the expert meeting on assessing the risk of loss and damage associated with the adverse effects of climate change” (FCCC/SBI/2012/INF.3).

#### ***Framing loss and damage***

3. The risk of loss and damage is the very reason we mitigate greenhouse gases and adapt to a changing climate. Mitigation, adaptation and adaptive capacity will determine the scale of losses and damages. Loss and damage associated with climate change impacts is to Norway’s understanding the residual risk when mitigation is insufficient to prevent dangerous anthropogenic interference with the climate system, and when the full potential of adaptation to reduce the risks associated with the effects of climate change is met.
4. The risk of loss and damage can be substantially reduced by mitigation and adapting to a changing climate. This has been thoroughly established through the IPCC special report on managing the risks of extreme events and disasters to advance climate change adaptation (SREX report), as well as the annual Global Assessment Reports (ISDR). The approaches to reduce the risk of loss and damage are, to Norway’s consideration, an integrated part of mitigation and adaptation efforts.
5. Norway recognize that while adaptation and disaster risk reduction processes can build considerable resilience towards the risk of loss and damage, the current mitigation efforts are insufficient to keep the global average temperature rise at a level that enable nature and society to timely and adequately adapt to the impacts of climate change. According to the IPCC AR4 there are limits to adaptation both related to natural, managed and human systems. Further for some gradual changes such as ocean acidification, mitigation remains the only viable option to reduce the risk of loss and damage. As a result losses and damages to nature and human systems may occur.
6. Losses and damages associated with the effects of climate change are frequently perceived and addressed from a perspective of economic loss as a result of extreme weather events. Norway would highlight that key aspects of loss and damage such as losses of lives and negative impacts for health, e.g. cause a rise in infectious and vector borne diseases are not easily accounted for in economic figures. Also gradual changes, including temperature rise, glacial melt, ocean acidification and sea level rise add pressure to already stressed ecosystems, resulting in loss of biodiversity and ecosystem services necessary to sustain livelihoods. Norway consider that these are aspects that is key to understand losses and damages associated with the effects from climate change.

### ***Convention's role in addressing the risk of loss and damage associated with climate change***

1. Norway consider that elements in the recommendations on loss and damage to be considered at SBI 37<sup>th</sup> session may include;

- a. *Strengthening the knowledge base*

Loss and damage from the impacts of climate change is to Norway's opinion not well understood. An important element in the recommendations on loss and damage would therefore be to strengthen the knowledge base on losses and damages from the impact from extreme weather events and gradual changes associated with a changing climate. This should be included in existing workstreams on knowledge building for adaptation under the Convention and may be included as a pillar of the new Nairobi Work Programme to be considered at the SBSTA 38<sup>th</sup> session.

- b. *Strengthen coherence and cooperation*

A key message coming out of the regional expert meetings, as well as the workshop on methods to assess loss and damage held in Tokyo in March 2012, is that better coordination and coherence between frameworks, organizations and institutions working on risk management strategies and approaches to address risks of loss and damage, in particular with regard to risk assessments and risk reduction, is needed. Further, there is a need to improve sharing of information, for example related to climate and meteorological data, between countries (ref WMO's Global Framework for Climate Services). Norway considers that there is an opportunity for the Convention to play a catalytic role in this regard and that the Adaptation Committee may provide an arena for furthering coherence and cooperation in this regard.

- c. *Strengthen regional cooperation*

Shared risks and the benefits of working together across nations to develop knowledge and build capacity, calls for regional cooperation. The regional workshops have shown that such regional cooperation exists in many areas, but that there is also a need to strengthen them. Through the Cancun framework for adaptation, as well as the decision on the adaptation committee from COP 17 in Durban, regional cooperation through regional centres and networks has been highlighted. Norway consider that work to build knowledge and strengthen capacity to address loss and damage from the impacts of climate change should be an integrated part of an effort to strengthen regional cooperation under the Convention.

- d. *Support*

The effects of climate change are geographically specific, and the impacts are highly contextual. The time perspective is also a key dimension when considering the impacts of climate change. Further, the impacts of climate change imply different risks to different people, groups and communities. Hence any support to address these risks, must be able to respond to very different needs. To Norway's understanding, addressing loss and damage must include a range of activities such as strengthening data collection and improving climate-related research and systematic observation, impact, vulnerability and adaptation assessments; disaster risk reduction and management strategies, risk sharing and transfer as well as enhanced understanding and cooperation with regard to climate change induced displacement. These activities are already included in the list of actions Parties may undertake to enhance action on adaptation under the Cancun Adaptation Framework, referred to in § 14 of 1/CP.16, which are all eligible for support according to 1/CP.16, §18. With regard to risk sharing and transfer Norway regard that such instruments may work as in the context of climate change adaptation as long as such instruments incentives adaptation. In Doha, it is to Norway's consideration important that we reaffirm, rather than duplicate, efforts already undertaken to support activities that address loss and damage associated with climate change.

Paper no. 3: United Nations Development Programme

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**Subject Views and information from Parties and relevant organizations and other stakeholders, taking into account the outcomes of the implementation of the work programme on loss and damage prior to the submission on the possible elements to be included in the recommendations on loss and damage in accordance with decision 1/CP.16. (Decision 7/CP.17, paragraph 9)**

The United Nations Development Programme (UNDP) thanks the SBI for the opportunity to comment on the implementation of the work programme on *approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change*.

UNDP recognizes the value of the work programme on Loss and Damage and congratulates the UNFCCC for successful organization of one global workshop and three regional workshops under this work programme in 2012. These workshops have provided the opportunity to capture the needs emerging in all regions and the experiences and lessons learned related to the issue of loss and damage associated with climate change. UNDP is also looking forward to participating as an active observer in the upcoming regional expert meeting to be held in Barbados.

As the international community moves forward with its discussions on this issue, it remains important to recognize the broad scope of challenges and approaches associated with loss and damage existing globally. The types of impacts being discussed include slow-onset events such as sea level rise, desertification and temperature increases, as well as extreme events such as drought, floods, flash floods, tropical cyclones, and increasing frequency of other hydro-met disasters. As a result, addressing loss and damage will look different depending on the national situation, due to unique climate impacts as well as distinct capacities and a unique development context.

In response to the increasing need to address the risks of loss and damage posed by climate change, work must continue at the national and sub-national level to assess risks associated with climate change and identify innovative strategies to addressing these risks. As such, UNDP has identified three key areas where further work can be focused. In the table below, each of these three areas are elaborated based on challenges and issues identified during the recent workshops held under the Loss and Damage Work Programme, as well as lessons learned from UNDP's extensive experience in-country. Finally, examples of ongoing work aimed to address some of these challenges are also included.

Data Needs	Challenges and Needs identified during the Loss and Damage Work Programme	Lessons from UNDP's experience	Examples from UNDP's work
	<p>Data on losses and damages associated with historical hazard events have been compiled globally and at country-level in over 45 countries. The quality of the latter is uneven, however. Areas for improvement include:</p> <ul style="list-style-type: none"> <li>• a need for greater institutionalization of data collection, reporting and use</li> <li>• data quality assurance including of primary loss and damage data</li> <li>• consistency in the way losses and damages are attributed to specific hazards on an event-by-event basis.</li> </ul> <p>Data on historical loss and damage is a key risk assessment input</p>	<p>Data on losses and damages associated with historical hazard events have been compiled globally and at country-level in over 45 countries. The quality of the latter is uneven, however. Areas for improvement include:</p> <ul style="list-style-type: none"> <li>• a need for greater institutionalization of data collection, reporting and use</li> <li>• data quality assurance including of primary loss and damage data</li> <li>• consistency in the way losses and damages are attributed to specific hazards on an event-by-event basis.</li> </ul> <p>Information on hazards, exposure and vulnerability are limited at the country-level and local scales. Locally-resolved, geo-referenced data on exposed elements such as agricultural areas, settlements and infrastructure, are needed as a basis for assessing risks of socio-economic impacts including loss and damage.</p>	<p>UNDP has contributed to on-going country-level support on institutionalization of loss and damage accounting systems in 20 countries, including adoption and application of standards and quality control of data, in partnership with WMO, National Meteorological Services, UN CT members, IFRC and others.<sup>1</sup></p> <p>UNDP leads on behalf of the UN system on the implementation of Post Disaster Needs Assessments (PDNAs) in partnership with the European Commission and the World Bank, contributing to the standardization of primary loss and damage data collection at country level.</p> <p>The Regional Risk Reduction Initiative (R3I) is strengthening hazard mapping and vulnerability assessment capacities in the Caribbean by improving GIS technical skills and equipment, and tools and processes for data collection and management of national databases</p>
<p>Historical hazard event data is insufficient for assessing risks of future losses and damages; Additional data is needed on exposed assets, their vulnerabilities to specific hazards, and hazard event return periods factoring in future climate scenarios</p>		<p>Under the Africa Adaptation Programme (AAP) funded by the Government of Japan, UNDP supports 20 countries in Africa, including 10 LDCs, to generate, analyze and share diverse national and sub-national level data. Examples of activities include procuring, installing and maintaining high performance computer services, promoting open source data and content management systems, developing Action Intelligence to analyze socio-cultural data, assessing economic costs of climate change in key sectors, and setting up wireless networks to share data between Ministries.</p> <p>UNDP Supports disaster risk assessment capacity development in approximately 35 countries annually through its country programmes. This includes assisting countries to assess their current inventory of hazard exposure, vulnerability and loss data.<sup>2</sup></p>	

<sup>1</sup> Documentation on UNDP support to loss and damage accounting systems in Asia can be found at <http://www.gripweb.org/gripweb/?q=countries-risk-information/methodologies-tools/guidelines-and-lessons-establishing-and>.

<sup>2</sup> see [www.gripweb.org/gripweb/sites/default/files/disaster\\_risk\\_profiles/mozambique\\_CSA\\_2012\\_04\\_25\\_WA.pdf](http://www.gripweb.org/gripweb/sites/default/files/disaster_risk_profiles/mozambique_CSA_2012_04_25_WA.pdf)



- UNDP has actively supported the collection of data on slow-onset events. For example, at the request of CARICOM, UNDP has commissioned work to model the transformational impacts and costs due to sea-level rise in the Caribbean region. The study included recommendations on improving the information base for informed decision making on adaptation to climate change. Further work is now underway on a new study to assist Caribbean SIDS policy makers and negotiators to better understand the implications of slow onset events within the context of loss and damage.

Data has been gathered over the past few decades by the Disaster Risk Reduction community, which can provide a baseline for future data collection

There is significant global experiences on damage and loss accounting, but more work must be done related to slow-onset events and the incremental costs of climatic changes and accounting of non-economic impacts

Capacity Needs for Risk Assessments		
Challenges and Needs identified during the Loss and Damage Work Programme	Lessons from UNDP's experience	Examples from UNDP's work

There are serious capacity gaps at the national level to continually assess the risk of loss and damage from a changing climate. There is need for sustained support at the national level;

Understanding available risk assessment methodologies and how to apply them is a challenge in many countries. While many methodologies exist, the most appropriate approach must be identified for the specific context and the questions being asked.

Many risk assessments have ended up on the shelf with little or no demonstrable decision-support impact.

Active engagement of decision makers in risk assessment processes contributes to a better understanding of the results and, hence, to an increased use of risk assessment in policy and decision making processes. This includes capacity building which is essential in order to ensure country-owned and driven assessments.

- Through its country programmes, UNDP is actively engaged in supporting countries to develop capacity to not only undertake risk assessments but apply their results, expand and improve the documentation of disaster-related losses, coordinate the generation of evidence-based risk information and facilitate its applications to policies, decisions and investments at all levels.<sup>3</sup>
- UNDP has supported capacity building in the Caribbean in effectively capturing the impacts of natural and other hazards in a consistent and coherent approach using the UNECLAC Damage and Loss Assessment (DALA) methodology, a component of the PDNA methodology developed by the UN, EC and World Bank. This remains a priority in the Eastern Caribbean
- In Mexico, Tijuana, the UNDP Global Risk Identification Programme (GRIP) implemented a global pilot project to demonstrate the use of risk assessment and information to support humanitarian activities and enhance community preparedness. Risk mapping was utilized for pre-disaster shelter planning in a project implemented on behalf of the Global Emergency Shelter Cluster, together with international, national and local institutions. As a result of the project the city of Tijuana now has a clear plan of action in case of an emergency, which is being revised annually. In 2010 the city passed a new civil protection law and these efforts are

<sup>3</sup>Examples include in Laos (<http://www.gripweb.org/gripweb/?q=countries-risk-information/documents-publications/national-risk-profile-laos>) and Myanmar (<http://www.gripweb.org/gripweb/?q=countries-risk-information/documents-publications/multi-hazard-risk-assessment-nargis-affected-areas>)

currently being replicated in the other 4 main cities of Baja California State, Mexico. This success highlights the need to ensure the involvement of local institutions and decision-makers in the risk assessment process.

- In Egypt, UNDP is supporting an initiative financed by the Special Climate Change Fund (SCCF), which has trained over 30 engineers and scientists from Shore Protection Authority, Coastal Research Institute and Marine Survey Authority on international/regional methodologies for climate change risk assessment and adaptation intervention measures and the fundamentals of risk assessment of Sea Level Rise on coastal zones. The training was a first step in introducing soft engineering solutions that will be followed by hands-on training during the design and implementation of the project pilots.
- Through the Climate Risk Management Technical Assistance Support Programme UNDP has worked with national governments in seventeen high-risk and climate sensitive countries to complete country reports on climate-related risks and risk management capacity. The climate risk assessments in these countries focus on assessing the risks and impacts on one key socio-economic development sector and on the overall risk profile especially the extreme events. The methodology entails compiling and analyzing climate data/information on three time-scales: historical data, current/observable trends, and projected scenario and multi-stakeholder interaction. The process is used to identify climate risk management options (risk reduction and adaptation options) for mitigating the risks and impacts.

The Disaster Risk Reduction community provides experience and data which must be built on for climate-related risk and vulnerability assessments

Combining different methodologies which examine historical climate behavior, current trends, future scenarios and climate impacts on development will all contribute to identifying and prioritizing climate-related risk

Robust Institutions Challenges and Needs identified during the Loss and Damage Work Programme	Lessons from UNDP's experience	Examples from UNDP's work
An essential part of effective planning for loss and damage is robust institutions which are capable of planning and executing evidence-based decisions	In many countries, capacity development is needed to strengthen institutions' ability to manage risk, including strengthening local institutions that often serve as safety nets that help communities bounce back climate-induced impacts	<ul style="list-style-type: none"> <li>Under the ERC, R3I and CRMI projects, work has been focused on investing in regional institutions to facilitate their sustained support to countries, particularly given that Caribbean countries are small and have limited resources. R3I has also sought to increase the engagement between national agencies (e.g. DM, GIS, Planning, Public Works, Met Services, Police, Fire) to improve their coordination on data sharing, development of risk mitigation measures, and response.</li> <li>Through an initiative funded by the Least Developed Countries Fund (LDCF), UNDP is supporting Cambodia to reduce vulnerability of the agricultural sector to climate-induced changes in water resources availability. Through this project, all technical staff from the Provincial Department of water Resources and Meteorology have been trained on resilient irrigation systems. The initiative has also contributed to the formulation of the Ministry of Agriculture, Forestry and Fisheries (MAFF) climate change technical team through experience sharing from the field and involvement of the MAFF focal points in various knowledge and training events. In the long-run, this will have a significant impact on the sectoral policies and approaches that MAFF takes.</li> </ul>
With regards to risk transfer, several countries have recognized the need to strengthen capacities for institutions to engage with insurance schemes as a means for risk transferring	<p>Several countries, primarily Middle Income Countries, have strengthened enabling environments to ensure institutional readiness to engage with market-based mechanisms. Several Caribbean countries have joined a parametric risk transfer mechanism, but face challenges with regards to to understanding what is cost effective, what thresholds to adopt and how much insurance to purchase</p>	<ul style="list-style-type: none"> <li>UNDP in Peru has aimed to advance the risk management capacity of rural communities and the working poor in northern Peru to manage the consequences of catastrophic rainfall and flooding from severe El Niño events. UNDP and GlobalAgRisk are facilitating the market development process for index-based El Niño Insurance that can be utilized by households, producer associations, and the regional government in Piura to facilitate improved resilience and adaptation to El Niño and other climate risks within the community.</li> </ul>

To support risk assessments and their application for national policies, it is important to bring in all relevant actors at the national and sub-national level to inform the process.

Structures must be in place to support input from a range of line Ministries including planning and finance departments, national academic and research institutions, as well as non-governmental stakeholders and community based organizations which can provide valuable insight into risk trends, impacts and approaches to addressing such risks.

- UNDP is committed to supporting countries to strengthen coordination between government stakeholders and establish coordination mechanisms in the Ministries. For example, UNDP is currently assisting Jamaica in the planning and design of an institutional coordination mechanism on climate change, learning from other countries' experiences.
- UNDP has provided technical support to the CARICOM Task Force for Climate Change and Development established by the CARICOM Heads of State and Government, which is responsible for coordinating a common regional approach to address the threats and challenges of climate change. UNDP also has helped to build the capacity of Caribbean diplomats on climate change and development issues. UNDP is currently working with UNISDR to advance the effective HFA monitoring and reporting to include national stakeholders