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## LOSS AND DAMAGE FROM CLIMATE CHANGE IN CROSS ROAD : CHALLENGES FOR AN OPERATIONAL FRAMEWORK

Dr. Abdullah Hel Kafi<sup>\*</sup>  
Muhammad Moinul Hasnat<sup>\*\*</sup>  
Suban Kumar Chowdhury<sup>\*\*\*</sup>

**Abstract :** The concept of loss and damage is now emerging as a hot topic of discussion under UNFCCC. The developed and developing countries are standing on two different positions in regard to framed loss and damage. Rather than focusing on the actual cause of loss and damage, the developing countries are now putting emphasis on the most effective approaches to address the same. Moreover debates are also going on whether historical loss and damage could be address or not. The paper aim to assess the position of developing, developed, LDCs and AOSIS on addressing loss and damage. This paper also tries to make a critical assessment on loss and damage under 'right to development, equity and justice' as articulated in the Article 3.1 of the convention.

**Key Words:** Climate Change; Loss & Damage; Historical Loss & Damage; Economic & Non-Economic Loss & Damage, Compensation Fund.

### Introduction

Loss and damage was addressed in paragraph 8 of the AWG-LCA's text related to adaptation. The Cancun Agreements recognized the need to strengthen international cooperation and expertise in order to understand and reduce loss and damage associated with the adverse effects of climate change, including impacts related to extreme weather events and slow onset events [Decision 1/CP.16, Para 25]. Climate change related loss and damage could neither be reduced through adaptation and nor through mitigation. There exist a debate among the experts and state parties on whether loss and damage (*i.e. residual impact of climate change*) is linked to adaptation<sup>1</sup> or not.

### A Brief Concept About Loss & Damage

However in general sense, the phrase refers to the entire range of damages and losses associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change<sup>2</sup>. There are three types of climate change induce damage (see the matrix 1).

Matrix 1: Categories of L & D

| Avoided<br>Avoidable Damage<br>Avoided                          | Avoided<br>Avoidable Damage and<br>Loss not Avoided                                                                                                                                             | Unavoidable<br>Unavoidable Damage<br>and Loss                                                                                                                                                                                  |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Damage prevented through mitigation and/or adaptation measures. | Where the avoidance of further damage was possible through adequate mitigation and/or adaptation, but where adaptation measures were not implemented due to financial or technical constraints. | Damage that could not be avoided through mitigation and/or adaptation measures; e.g., coral bleaching, sea level rise, damage due to extreme events where no adaptation efforts would have helped Prevent the physical damage. |

There is no agreed definition of loss and damage by the parties since it is a new concept of international climate negotiations. A precise definition of loss and damage must be quite encompassing and inclusive taking in to consideration its various aspects: decides direct costs of physical impacts of slow and sudden onset events it should also include indirect costs e.g. loss of productivity and livelihoods, social disruption and relocation. It is likewise important to not only consider public loss (e.g. damage of infrastructure) but also private loss<sup>3</sup>.

### Loss and Damage for Climate Change: Perspective on Developing Countries

Future loss and damage in developing countries are related to which is the level of mitigation target over the next two to three decades. Analysis shows that in a 4 Degree Celsius world, more than one-third of current cropland in east and southern Africa would be unsuitable for cultivation<sup>4</sup>. Fatality rates and economic losses expressed as a proportion of GDP are higher in developing countries (IPCC 2012). From 1970 to 2008, due to natural disaster, approximately 95% of death occurred in the developing countries, particularly who are most vulnerable to climate change<sup>5</sup>. The low-lying states are now most vulnerable to climate change. Through study it is predict that

<sup>\*</sup> Associate Professor, Dept. of International Relations, Jahangirnagar University.

<sup>\*\*</sup> Assistant Professor, Dept. of International Relations, Jahangirnagar University.

<sup>\*\*\*</sup> Researcher at Unnayan Onneshan- Innovators, Climate Change, Bio-diversity & DRR Unit

see level could rise by up to 2100 metres by 2100<sup>6</sup>. If that prediction comes true then it will be too much devastating for the coastal region and the low-lying states. As for instance most of the island of Maldives will be inhabitable. Bangladesh is also not behind this prediction. Analysis shows that the coastal areas of Bangladesh are most vulnerable to climate change. It is estimated that a 1.5 metre rise in sea level could displace as many as 17 million people in Bangladesh<sup>7</sup>.

### **Equity should be considered to address loss & Damage**

It is very unfortunate that climate induces loss and damage is very severe in countries that are historically less responsible for GHG emission. In this situation, it is very important to keep in mind the issue of equity, as articulated in article 3.1<sup>8</sup> of the convention of UNFCCC, to address loss and damage within an agreed framework. The developed countries should be more proactive in addressing loss and damage through a need based approach of the most vulnerable countries.

### **Compensation for loss and damage: Perspective from Developing Countries**

Climate related natural disaster are increasing day by day but we could hardly quantify the future amount of climate induce loss and damage in totality. In other words, the severe impact of climate change could neither be predicted nor is it totally predictable. This is because from 2000 to 2006, the number of climate related disaster averaged to 365 whereas from 1987 to 1998, the annual number of climate related disaster 195. This represents an increase of 87 percent. In compare to industrialized states, more than 95 percent of all deaths caused by natural disasters occur in developing countries. Accordingly losses due to natural disasters are 20 times greater (IPCC) in developing countries. In this circumstance the developed countries need to pay as compensation for climate induces loss and damage beyond adaptation and mitigation finance. And this type of compensation should be made as obligatory rather than voluntary under the UNFCCC umbrella. Currently climate finance are going through several windows like- Global Environment Facility (GEF), Least Developed Countries Fund (LDCF), Adaptation Fund (AF), Adaptation Fund (AF) and few others, but none of these funds specifically provide for compensation, rather they promote mitigation and adaptation activities. This is for that we need a more specific window for the distribution of compensation fund based on right based approach. In this regard, for addressing the issue of compensation for climate change related loss and damage; the UNFCCC has considered mechanisms including insurance and non-insurance mechanisms.

### **Insurance**

However, Article 3.14 of the Kyoto Protocol calls for the implementation of Articles 4.8<sup>9</sup> and 4.9 of the UNFCCC in fulfilling obligations of the Kyoto

Protocol, and explicitly calls for the consideration of the "establishment" of insurance there is no specific definition of the term insurance, both either in the treaty or in COP decision and thus the term does not refer to any specific kind of risk transfer or collective loss sharing instrument<sup>10</sup>.

The UNFCCC contemplated insurance mechanisms in its technical paper, "Mechanisms to manage financial risks from direct impacts of climate change in developing countries" (FCCC/TP/2008/9). This is basically a financial mechanism for dealing with issues like climate induces loss and damage. Three types of insurance are more relevant to dealing with climate related loss and damage and these are-

### **Traditional insurance**

If the insured experience a loss of pre-described type then the insurer will pay out previously agreed amount.

### **Micro insurance**

With low premium and low coverage characteristics micro insurance is basically an outcome of micro finance and this type of insurance is basically targeted at LDCs. The flood of 1988 in Bangladesh can be cited as one of the prominent example of micro insurance when offered by Proshika, a non-governmental organization of Bangladesh, scheme of the insurance covered 10 percent of population of Bangladesh for property insurance and 25 percent for life insurance. In spite of this laudable outcome of micro-insurance still vast majorities of population in Bangladesh are vulnerable to climate change and this is why an alternative option is urgently required.

### **Insurance-linked Securities**

This type of insurance includes policies that are tied to the capital markets. There are many problems with insurance as a financial mechanism for managing financial loss associated with climate change. These problems include:

- Involvement of profit driven private sector;
- Premiums which are too high, especially for persons in vulnerable states;
- Lack of understanding about insurance and lack of a 'culture' of insurance amongst vulnerable states;
- Limited coverage of policies; "amoral hazard" – that is, persons have no incentive to mitigate loss; difficulties that smaller insurance companies face in building up sufficient capital to insure; and
- Insurance may not be appropriate for very slow-onset climate impacts, such as desertification.

This is why many vulnerable countries either cannot access insurance or find it increasingly difficult to afford commercial insurance to address impacts on

national economies and require support in addressing the burden of increasing temperature. Instead they are asking for compensation funds for climate induce loss and damage.

### Loss and Damage: Bangladesh Context

Slow onset events such as increase in ocean surface temperature and rising sea levels are predicted to intensify cyclonic storm which could surge an additional 15 percent of coastal area with greater inundation depth. Without strengthening coastal polders, 6-8 million people could be displaced by 2050, if sea level rise is higher than currently projected (World Bank, December, 2011).

Bangladesh is considered as one of the most vulnerable countries of the world due to the severe impacts of climatic changes such as tropical cyclone; flood, river bank erosion, sea level rise, drought etc (see the table below). Bangladesh experiences frequent natural disaster which caused loss of life (see the table) and damage to infrastructure and economic assets and adversely impacts on lives and livelihoods, especially of poor people. UNDP has identified Bangladesh to be the most vulnerable country in the world to tropical cyclones and the sixth most vulnerable country to flood (see table 1 below)-

**Table 1: Most Vulnerable Countries to Floods or Cyclones (Deaths/100000 People Exposed to Flood or Cyclones)**

| Flood       | %   | Tropical Cyclones | %    |
|-------------|-----|-------------------|------|
| Bangladesh  | 1.1 | Bangladesh        | 32.1 |
| India       | 1.2 | India             | 20.2 |
| China       | 1.4 | Philippines       | 8.3  |
| Pakistan    | 2.2 | Honduras          | 7.3  |
| Afghanistan | 4.3 | Vietnam           | 5.5  |
| Venezuela   | 4.9 | China             | 2.8  |

Source: UNDP (2004)<sup>11</sup>

### Floods

Floods in Bangladesh caused loss of thousands of hectares of agricultural land and scores of villages and displace many thousands of people from their homes. Apart from the previous other floods, in 2007, caused a massive damage in the country, particularly in the north eastern and south eastern regions of the country. A study conducted by the ministry of environment and forest; and Disaster management bureau of Bangladesh, estimate the amount of total loss and damages caused by floods in Bangladesh (see the table 2)-

**Table 2: Total Loss and Damages Caused by Floods in Bangladesh**

| Event      | Total Loss & Damages                                                                                                                                                                                     |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1984 flood | inundated over 50000 sq. km, estimated damage USD 378 million                                                                                                                                            |
| 1987 flood | inundated over 50000 sq. km, estimated damage USD 1 billion, 2055 deaths                                                                                                                                 |
| 1988 flood | Inundated 61% of the country estimated damage USD 1.2 billion, more than 45 million homeless, between 2000 to 6500 deaths.                                                                               |
| 1998 flood | Inundated nearly 100,000 sq. km., rendered 30 million people homeless, damaged 500,000 homes, heavy loss to infrastructure, estimated damage US 2.8 billion, 1,100 deaths                                |
| 2004 flood | Inundation 38%, damage US 6.6 billion, affected nearly 3.8 million people. Estimated damage over 2 billion, 700 deaths                                                                                   |
| 2007 flood | Inundated 32,000 sq. km, over 85,000 houses destroyed and almost 1 million damaged, approximately 1.2 million acres of crops destroyed or partially damaged, estimated damage over 1 billion, 649 deaths |

**Source:** Government of Bangladesh (2005), National Adaptation programme of Action, Ministry of Environment and Forest, Dhaka and Government of Bangladesh (2007) Consolidated Damage and Loss Assessment, Lessons Learnt from the Floods 2007 and future Action Plan, Disaster Management Bureau, Dhaka.

### Tropical Cyclones

Tropical cyclones occur in Bangladesh particularly just before and after the monsoon season. they are accompanied by high winds of over 150 kph and can result in storm surges up to seven meters high, resulting in extensive damage to houses and high loss of life to human and livestock in coastal communities. The cyclones in 1970 and 1991 are estimated to have killed 500000 and 140000 people respectively. Similarly according to government estimates, around 1.5 million people took refuge in cyclone shelters when cyclones Sidr hit the coastal areas of Bangladesh in November, 2007.

### Initiatives to Tackle Climate Induce Loss & Damage: Perspective on Bangladesh

Loss and Damage is the ultimate result of climate change. Loss and damage occurred high in the vulnerable countries, while they are historically less responsible for such kind of loss and damage which caused by climatic changes. For this reason, the national government is responsible for implementing loss and damage within their respective national boundaries. By considering foreseeable imminence of severe climate events that may affect the country, in 2009 after the Cancun agreement, BCCSAP recognizes intensification of inland monsoon flooding and tropical cyclones in a changing climate as major climate hazards requiring a rapid, strategic response. The Disaster Management Bureau has organized national lessons learned workshops after the Flood 2007 and the Cyclone Sidr 2007. During that time a great emphasize was given on the importance of disaster risk reduction as well as strengthening of the emergency response system in the country<sup>12</sup>.

Moreover since 1997, the government of Bangladesh introduced the Standing Order on Disaster (SOD) to tackle catastrophic impacts of a sudden and unfortunate natural disaster.

The initiatives on disaster risk reduction are basically related to mitigation. Along sides with disaster risk reduction, BCCSAP also takes initiatives on adaptation. Climate change adaptation needs sufficient funds which oftentimes, as a least developed country, Bangladesh failed to cope with. By 2050, the adaptation cost of coping with cyclonic storm surge in a changing climate will total about USD 204 billion, with an annual recurrent cost of more than USD 50 million (WB, December 2011, see the table 3) .

**Table 3: Total Adaptation Cost for Cyclones and Associated Storm Surges by 2050 (at 2009 Prices)**

| Measure                            | Baseline Scenario        | Additional Cost With Climate Change |                                     |
|------------------------------------|--------------------------|-------------------------------------|-------------------------------------|
|                                    | Investment (million USD) | Investment (million USD)            | Annual recurrent cost (million USD) |
| Polders                            | 2462                     | 892                                 | 18                                  |
| Foreshore afforestation            |                          | 75                                  |                                     |
| Multipurpose cyclone shelters      |                          | 1200                                | 24                                  |
| Cyclone-resistant private housing  |                          | 200                                 |                                     |
| Strengthening early warning system |                          | 39                                  | 8+                                  |
| Total                              | 2462                     | 2407                                | 50+                                 |

Source: World Bank<sup>13</sup>

Very rational to say that, despite the extensive infrastructure Bangladesh has in place to protect coastal residents from cyclonic storm surges and tidal waves, it has a current adaptation deficit of USD 2.46 billion (WB, December 2011). Therefore climate change adaptation is related only to livelihood but there are other residual loss and damage which is very urgent to capture within a frame. Moreover, Bangladesh should stand on a pro-climatic focus to catch the eyes of the developed countries. In this stance, Bangladesh should raise voice for the establishment of a strong financial provision to address loss and damages related to climate change effects that progressively become development tools. Therefore the financial instruments could be intended not only for recovery from an emergency, but also to move to less risky investments and to create awareness among population and authorities. Since climate change effects are already happening and there will be no immediate remedy, governmental plans need to consider special funds to both face emergencies and reduce vulnerability.

In this response the national government of Bangladesh, with support of development partners, has invested in flood management scheme to raise

the agricultural productivity of many thousands of km<sup>2</sup> of low lying areas and to protect them from extremely damaging severe floods.<sup>14</sup> However, the æClimate Change Strategic and Action Plan, 2009, (BCCSAP) assess the pro-activeness of the government of Bangladesh in putting strategies and plan to address the impact of climate change but due to the lacks of enough knowledge regarding the concept of loss and damage, at present it would be quite impossible for Bangladesh to identify a specific approach to address loss and damage by moving beyond adaptation.

### **Disaster risk reduction and L & D: Critical Assessment of Knowledge from Bangladesh perspective**

Disaster risk reduction strategies are often used effectively for those kinds of climate related stressors which occur often and whose impacts are relatively low. The benefit of avoiding and reducing loss and damage outweighs the costs of investing in risk reduction measures. The foundational requirements for risk reduction include political commitment to change the largely reactive approach to risk management that dominates today, strong institutions for implementation, data on weather-related extremes, vulnerability, hazard mapping and other types of risk assessment<sup>15</sup>. Bangladesh has a strong disaster risk reduction strategy including early warning system but this could not resist the catastrophic and residual impact of climate except offering a sustainable path that accommodates its effects in the least disruptive way without placing a disproportionate burden on the poor and vulnerable. This is for that, initiatives to frame loss and damage is very urgent for Bangladesh. This is because, it could help Bangladesh to bargain on the negotiation table to ensure a separate fund for loss and damage beyond the adaptation and mitigation fund.

While loss and damage is a new emerging concept and also a hot topic of adaptation negotiations in 2012 at global level, loss and damage itself is incurred at the local level. The mechanisms to address loss and damage in the next decade will have to be introduced at the national and sub-national level as it is unlikely that an agreement under the UNFCCC will come in time to meet the needs of the world's climate vulnerable people within that time frame. Thus, the onus is on national and sub-national governments to develop policies that address loss and damage. After the Cancun agreement, Bangladesh approached to the climate and development knowledge network (CDKN) to ask for assistance in understanding what loss and damage exactly means and how it might be approached, not just in Bangladesh but also in other vulnerable countries. Since then a loss and damage initiative in vulnerable countries was born<sup>16</sup>. Now CDKN is offering continuous technical support to the government of Bangladesh in areas such as designing a work programme for loss and damage in the country and assisting in providing policy options for climate migrants which is the terrible

climate challenge for Bangladesh.<sup>17</sup> Moreover as a Part of a consortium of organizations implementing the initiative, the International Centre for Climate Change and Development (ICCCAD), BRAC University, North South University together with other leading research institutes has been charged with coordinating a series of studies on loss and damage in the national context of Bangladesh. One of the goals of this comprehensive approach is to enhance national capacity on loss and damage<sup>18</sup>.

### **Loss & Damage: A Critical Analysis**

Loss and damage is the impact of climate change. The level of vulnerabilities can exacerbated such climate induce loss and damage in a tremendous way. However in the international climate negotiations under UNFCCC, the phrase loss and damage emerged as a technical issue but now-a-days due to a deadlock condition on agreeing a new legal outcome to replace Kyoto protocol and for the reluctance of the Annex 1 parties to approve a new innovative fund for the most vulnerable countries the phrase loss and damage become a matter of climate justice. So to ensure climate justice the LDCs including Bangladesh should must takes a more coherent stand with AOSIS, African Countries and the developing countries in order to build a united front to bargain from a more specific point of view. Principle 2 of the Rio Declaration stated that- "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." The negotiators of the least developed countries like Bangladesh should codify this principle on the negotiation table to demand a compensation for the historical loss and damage and to include the non-economic losses for climate change. This is because the developed countries, who are the major emitter of GHG, hardly obeyed by this principle and caused loss and damage in most vulnerable countries particularly through GHG emission..

The basic purpose of loss and damage initiatives in Bangladesh is to support other LDCs enlisted vulnerable stated through sharing of knowledge. Undoubtly such initiatives would help the negotiators, stakeholders and decision makers of the LDCs to perceive and solution of climate change. Bangladesh is now working to build a common understanding of loss and damage particularly among the LDCs. This is because to participate in the climate negotiation on loss and damage from a focal point of view. Accordingly it is also very important for Bangladesh to develop a conceptual frame of loss and damage at second stage.

Loss and damage is a continuing issue debate of international climate negotiations. Definitely loss and damage for climate change caused a negative impact on the economies and livelihood of the developing and least developed countries. So LDCs including Bangladesh should urge to find a systematic way to help the LDCs to address loss and damage including

through a compensation mechanism apart from mitigation and adaptation funds. The LDCs should also negotiate from the point of what will be global response on loss and damage according to the principle of CBDR.

### **Key Challenges**

However the subsidiary body of implementation entrusted the task to address loss and damage but there exist some key challenges which are discussed below-

### **Reality of Global Temperature Rise: 2 Degree Celsius Vs 4 Degree Celsius**

GHG emission is a major cause of loss and damage associated with climate change. However through the ambition of emission reduction the future level of global temperature is targeted at 2 degree Celsius but it will be very rational to plan for a 4 degree Celsius increase and as such the magnitude of loss and damage could require an entirely different set of approach to what we are currently considering<sup>19</sup>.

### **Loss & Damage: Slow onset Events Vs Extreme Weather Events**

One of the great challenges to address future loss and damage is whether it is important to focus more emphasis on extreme weather events or on slow onset events. However the regional experts meetings at Addis Ababa and Mexico focused on the impact of extreme weather events but from the perspective of Asia it is very important to put emphasis on slow onset events. This is because due to sea level rise and as a consequence the intrusion of saline water in to the cultivable land of the coastal areas causes huge economic loss through the degradation of land fertility in the most vulnerable countries like Bangladesh. Moreover the glacier melt is an impact of slow onset event and Himalayas is a prominent example in this regard. In this stance one of the prime success is the recently concluded regional expert meeting is that this expert meeting, which is held at Bangkok, focus minds on why and how to tackle slow onset event impacts as part of the loss and damage agenda.

### **Issues Should be Taken into Consideration**

Loss and damage due to slow onset events are very prevalent in the Asian region. Having taken this into concern the attended experts intends to prioritize assessment of potential loss and damage as an essential first step, trans-boundary cooperation, communication with relevant stakeholders, and development of specific methods and technologies and tools based on community needs<sup>20</sup>.

Due to the irreversible nature of loss and damage for climate changes of the earth, the inhabitants of the developing and most vulnerable countries are now in a severe condition. However initiatives for adaptation are still going on

but oftentimes adaptation become failed to tackle the severe impact of climate change. In that case compensation for the climate vulnerable countries emerged as an alternative option to make up the actual loss and damage associated with climate change. As compensation is a matter of fairness and equity of GHG so how are poor countries going to be compensated for irreparable and irreversible losses caused by rising sea levels, desertification, loss of biodiversity or loss of territory is now comes first<sup>21</sup>. Since there is no agreed framework on loss and damage so it will be very rational to rethink again about the approaches to address loss and damage. Moreover the developed countries must increase their level of ambition to more than 40 percent emission reduction below 1990 levels by 2020 and at least 80-90 percent by 2050<sup>22</sup>.

### Conclusion

Loss and Damage is an ongoing issue of debate of international climate negotiation under the umbrella of UNFCCC. Its need further work to address loss and damage. The regional experts meetings will play a vital role in this regard.

### Notes and References

- <sup>1</sup> Adaptation- means the adjustment in natural or human systems in response to actual or expected Climactic stimuli or their effects, which moderates harm and exploit beneficial opportunities.
- <sup>2</sup> Decision 1/CP.13. See the Annex for the mandate and negotiating history on loss and damage within UNFCCC.
- <sup>3</sup> For details please visit, <http://unfccc.int/resource/docs/2011/smsn/ngo/246.pdf>
- <sup>4</sup> Thornton P.K. et al, 2011., Agriculture and food systems in sub-Saharan Africa in a 4° C+ world, The Royal Society, pages 120-123, For details please visit, <http://www.agriskmanagementforum.org/farnd/sites/agriskmanagementforum.org/files/Documents/ag%20and%20food%20systems%20in%20SSA%20in%20a%204C+%20world.pdf>
- <sup>5</sup> IPCC, 2012., *Managing the risks of extreme events and disasters to advance climate change adaptation*, page 9, For details please visit, [http://ipcc-wg2.gov/SREX/images/uploads/SREX-All\\_FINAL.pdf](http://ipcc-wg2.gov/SREX/images/uploads/SREX-All_FINAL.pdf)
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- <sup>7</sup> Mainstreaming Adaptation to Climate Change in Coastal Bangladesh by building Civil Society Alliances, For details please visit, <http://pubs.iied.org/pdfs/G00016.pdf>
- <sup>8</sup> Principle 3.1 of the Convention clearly states that "The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities

and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof."

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- <sup>19</sup> Saleem ul Haq, CDKN's partner for the project stressed at the Asia workshop.
- <sup>20</sup> Dr. Akio Takemoto, 2012., APN in UNFCCC Meeting on Loss and Damage associated with the Adverse Effects of Climate Change, For details please visit, <http://www.apn-gcr.org/2012/09/03/apn-in-unfccc-meeting-on-loss-and-damage/>
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- <sup>22</sup> Ibid