

# The Development of a Quasi-Loss and Damage Compensatory System for Developing Countries through Climate Litigation

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*The Paris Agreement of COP21 distinctly recognises the issue of climate change loss and damage with Article 8 in the main text and Paragraph 51 in its decision text. The Parties at COP22 in Marrakesh 2016 approved a strategic workstream for the Warsaw International Mechanism for Loss and Damage's Executive Committee to guide the implementation of the Mechanism's function of enhancing action and support (including finance, technology and capacity-building) to address loss and damage, with the next progress review in 2019. International negotiations on loss and damage did not see considerable progress at COP23 in Bonn. Financial interests still took priority at COP24 to halt accounting mechanisms. COP25 also failed with a lack of consensus amongst post-2020 tasks such as art 6. With reference to some evolving legal principles in other related fields of international law and civil environment cases in Germany, United States, India and China, this paper will examine possible options to prove causal links between the economic activities of developed countries and loss and damage associated with the impact of climate change for developing countries against the backdrop of the Sendai Framework. An alternative standard of proof for climate change loss and damage-related litigations would culminate into a quasi-loss-and-damage compensatory response for countries more vulnerable to the impact of climate change. It could support the implementation and amplify the effectiveness of the Sendai Framework for Disaster Risk Reduction.*

## I. Introduction: Loss and Damage in the Paris Agreement

In the lead-up to COP21, international negotiations revolved around developed-country Parties' responsibility for addressing climate change loss and damage. Climate-vulnerable developing-country Parties, particularly small island States, had been advocating since the 1990s for a formal process under the UNFCCC to help them combat some unprecedentedly catastrophic consequences linked to climate change. A breakthrough in international climate negotiations, the Paris Agreement adopted in December 2015 distinctly recognises the issue of loss and damage under its Article 8 and paragraph 51 of Decision 1/CP.21. At COP24 in December 2018, loss and damage is included in paragraph 115 of the Draft Decision regarding the 'Modalities, procedures and guidelines for the transparency framework for action and support', which mandates Parties to provide information re-

lated to averting, minimising and addressing loss and damage associated with climate change impacts.<sup>1</sup> COP25 aimed to formally consolidate Article 8, with a demand from the G77 & China on the Warsaw International Mechanism. However, no consensus was reached. Parties are now looking towards COP26.

These Decisions acknowledge the reality that some climate change impacts are so severe that countries cannot adapt to (including extreme weather events and slow onset events that could result in the disappearance of islands, loss of heritage sites, transformation of ecosystems, or infeasibility of traditional land

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<sup>1</sup> UNFCCC Secretariat, 'Draft Decisions 1/CP.24 and 3/CMA.1 (Proposal by the President - Version 15/12/2018 19:27)' (2018).

uses), through the inclusion of Article 8. Article 8.3 reads, 'Parties should enhance understanding, action and support, including through the Warsaw International Mechanism<sup>2</sup>, as appropriate, on a cooperative and facilitative basis with respect to loss and damage associated with the adverse effects of climate change.'<sup>3</sup> However, loss and damage remain a sub-category under adaptation<sup>4</sup> with many arguing that that loss and damage exceeds the limits of adaptation.<sup>5</sup>

Arguably, climate change-induced loss and damage could be addressed through both precautionary (e.g. insurance mechanisms) and post-cautionary (e.g. compensation for retrospective losses).<sup>6</sup> This paper will focus on some legal issues for post-cautionary solutions. Since the beginning many developed-country Parties have resisted discussions on the issue of setting up a compensatory response in the international legal system which could create undesired legal liability for them to pay for climate change-induced harm.<sup>7</sup> The Paris Agreement ostensibly resolved this controversial issue of loss and damage with Paragraph 51 in Decision 1/CP.21. It enshrines that:

[Parties agree] that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation.<sup>8</sup>

As this clause appears to have limited the legal space for interstate litigations, some critics consider that Paragraph 51 of Paris has shut the door for States to file any climate change loss and damage-related claim<sup>9</sup> and its inclusion in the decision text apparently betrays the legal rights of developing countries to compensation for possibly an empty promise.<sup>10</sup> Nonetheless, Paragraph 51 in a COP decision can neither override general rules of customary international law nor cancel any public international law remedies which remain available and unaffected.<sup>11</sup> Indeed, in interpreting Paragraph 51, the clause does not preclude Parties from agreeing to a legal regime for loss and damage over time. It could be composed of a liability scheme and financial support system in case of actual transboundary damage.<sup>12</sup> Additionally, rather than in the Paris Agreement's main text, Paragraph 51 is in its decision text. COP decisions, according to scholars' consensus, do not constitute binding rules under international law.<sup>13</sup> Additionally, developed countries currently do not show any appetite to reopen negotiations on any legally-binding prescriptive compensatory response through a new COP decision which in fact would have to be adopted by consensus according to the UNFCCC 'rule of thumb'. From COP23 to 25, the lack of par-

- 2 Warsaw International Mechanism on Loss and Damage (WIM) is an institution established at COP19 (2013) in Warsaw to explore initial questions about loss and damage, but it was supposed to expire in 2016. By making WIM permanent, Paris Agreement creates a dedicated framework for Parties to improve their understanding of the issue and consider appropriate responses. At COP22 in Marrakesh 2016, Parties approved a strategic workstream for the WIM Executive Committee to guide the implementation of the WIM's function of enhancing action and support, including finance, technology and capacity-building, to address loss and damage. A process is recommended to periodically review the Mechanism, with the next review scheduled for 2019. Outstanding issues include defining loss and damage concept, and determining the most effective ways to support countries suffering from unescapable effects of climate change. To advance this agenda, concerted efforts are required to devise insurance and risk transfer schemes and integrated approaches to "avert, minimise and address" climate-related displacement. But there is very limited progress on these issues during the negotiations at COP23 in Bonn.
- 3 UNFCCC Secretariat, 'Paris Agreement', UNFCCC, COP Report No.21, Addendum, at 2, UN Doc FCCC/CP/2015/10/Add.1 (Jan 20, 2016) (2015).
- 4 Subset of information to be reported in the Transparency Framework on Action and Support under the chapter on Article 7 (adaptation and climate change impacts); Draft Decision -/CMA.1, Annex, para 115).
- 5 Erin Roberts and Mark Pelling, 'Climate Change-Related Loss and Damage: Translating the Global Policy Agenda for National Policy Processes' (2018) 10 *Climate and Development* 1, 4-17.

- 6 Anju Sharma, 'Precaution and Post-Caution in the Paris Agreement: Adaptation, Loss and Damage and Finance' (2017) 17 *Climate Policy* 33.
- 7 Prior to COP21, developed countries had insisted excluding any linkage of loss and damage to liability and compensation in return for including loss and damage into the Agreement. With developed-country Parties' rejection of liability and compensation, developing-country Parties had compromised by removing any reference to those principles from their submitted text before the climate negotiations in Paris began.
- 8 UNFCCC Secretariat, 'Adoption of the Paris Agreement: Proposal by the President to the United Nations Framework Convention on Climate Change', vol 21932 (2015).
- 9 Julia Kreienkamp and Lisa Vanhala, 'Climate Change Loss and Damage: Policy Brief - March 2017' (2017).
- 10 Nitin Sethi, 'US Pressure Tactics Work, Clause Excluding Compensation Option Retained' (2015) *Business Standard*
- 11 Roda Verheyen, *Climate Change Damage and International Law: Prevention Duties and State Responsibility* (Martinus Nijhoff 2005).
- 12 MJ Mace and Roda Verheyen, 'Loss, Damage and Responsibility after COP21: All Options Open for the Paris Agreement' (2016) 25 *Review of European, Comparative and International Environmental Law* 197, 206.
- 13 Jutta Brunnee, 'COPing with Consent' (2002) 15 *Leiden Journal of International Law* 1, 1 - 52; Robin . Churchill and Geir Ulfstein, 'Autonomous Institutional Arrangements in Multilateral Agreements' (2000) 94 *Am J Int Law* 4, 623-659; Thomas Gehring, 'Treaty-making and treaty evolution' Brunnee et al (eds) *The Oxford Handbook of International Environmental Law* Oxford (University Press, 2007) 467-497.

ties' consensus *de facto* illustrates today's negotiations.

Mace and Verheyen argue that 'all options remain open' for addressing loss and damage under the Paris Agreement and that paragraph 51 may actually serve to liberate the WIM by allowing it to fill the information gap (i.e. gathering information that can inform policymakers of the timing and scale of projected impacts and the loss and damage expected in different regions).<sup>14</sup> That said, any new regulatory system governing liability and compensation has to be developed on the basis of political will of states. Given past failure to reach any agreement on a legally binding loss and damage mechanism over the past years, litigation based on existing international agreements and legal principles could be the only pathway for developing-country Parties to seek 'compensation' for climate change-induced loss and damage.

While Roberts and Pelling argue that insurance can provide a soft-landing space against climate change impacts, although the concept of 'compensation' should not be reducible to insurance.<sup>15</sup> It can be delivered with innovative legal and policy mechanisms such as climate change compensation commissions, international solidarity funds and international litigation. For example, there is no simple methodology by which to calculate the amount of compensation that should be awarded for the loss of habitable or arable sites. Such losses may need a quasi-compensatory response that comprises measures of 'climatic satisfaction' as suggested by Page and Heyward such as public apologies and disclosures, truth and reconciliation initiatives designed to restore 'relations of respect' between agents differentially affected by and responsible for climate change<sup>16</sup> and possibly accompanied with the 'victim-centred' measures that ensure that a similar situation does not recur in the future.<sup>17</sup>

However, the fundamental question yet to be resolved is whether any legal rights do in fact exist in other related fields of international law. Basically, any loss and damage claims would be based on the principle that states should be held responsible for any violation of an international 'obligation'.<sup>18</sup> In public law litigation, a person may file a case with a court with regard to the 'obligation' of the government or another to undertake a particular course of action. In climate change-related cases, litigants have often focused on the state 'obligation' to mitigate climate

change. For examples, in *Massachusetts v Environmental Protection Agency (2007)*, the US Supreme Court ordered the Environmental Protection Agency to regulate GHGs as air pollutants. In the 2015 case of *Urgenda Foundation v The State of the Netherlands*, the District Court of The Hague ordered the Dutch government to honour its 'obligation' to mitigate climate change under international law by reducing national GHG emissions by at least 25% from 1990 levels by the end of 2020. Similarly, public law litigation has also been able to pressurise a government to take actions for climate change adaptation or to address losses and damages. In *Ashgar Leghari v Federation of Pakistan (2015)*, for instance, the High Court of Lahore ruled that 'the delay and lethargy of the State in implementing the Framework offend[ed] the fundamental rights of the citizens which need to be safeguarded' (W.P. No. 25501/2015, at para. 8) and ordered the government of Pakistan to redress issues pertaining to climate change adaptation under the supervision of an *ad hoc* panel of experts reporting to the court. Simlinger and Mayer argue that public law litigation is subject to constraints that national authorities can be challenged on the basis of rules regarding the action or omission of it; and that domestic constitutional provisions on the protection of funda-

14 MJ Mace and Roda Verheyen, 'Loss, Damage and Responsibility after COP21: All Options Open for the Paris Agreement' (2016) 25 *Review of European, Comparative and International Environmental Law* 197.

15 Erin Roberts and Mark Pelling (n 5).

16 Joy Hyvarinen, 'Loss and Damage Caused by Climate Change: Legal Strategies for Vulnerable Countries' (2012) London: Foundation for Environmental and International Law (FIELD).

17 Edward A Page and Clare Heyward, 'Compensating for Climate Change Loss and Damage' (2017) 65 *Political Studies* 2, 356–372; Elisabeth Gsothbauer et al, 'Broadening the Scope of Loss and Damage to Legal Liability: An Experiment' (2018) 18 *Climate Policy* 18, 600–611; Emma Lees, 'Responsibility and Liability for Climate Loss and Damage after Paris' (2016) 17 *Climate Policy* 1, 59–70; Benoit Mayer, 'Less-Than-Full Reparations in International Law' (2017) 56 *Indian J Int Law* 3–4, 463–502; Benoit Mayer, 'The Relevance of the No-Harm Principle to Climate Change Law and Politics' (2016) *Asia-Pacific J Environ Law*, 79–104; Benoit Mayer 'Climate Change Reparations and the Law and Practice of State Responsibility' (2017) 7 *Asian J International Law* 1, 185–216; Linda Siegele, 'Loss and Damage (Article 8)' in Klein et al (eds.) *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford University Press, 2017) 224–238; Sam Adelman, 'Climate Justice, Loss and Damage and Compensation for Small Island Developing States' (2016) 7 *Journal of Human Rights and the Environment* 1, 32–53; Tarcisio Reis *Compensation for Environmental Damages under International Law: The Role of the International Judge* (Kluwer Law International, 2011).

18 MG Faure, 'International Liability as an Instrument to Prevent and Compensate for Climate Change' (2007) 26 *Stanford Environmental Law Journal* 123.

mental rights, which was conjured in the case of *Ashgar Leghari*, are applicable only to the given territory. In contrast, the case of *Urgenda* illustrated that international law can be invoked before domestic courts in support of public law litigation related to climate change.<sup>19</sup>

In line with the arguments of Simlinger & Mayer above, the first step is, therefore, to determine whether mitigating greenhouse gas emissions should be regarded as an 'obligation' on major emitting States. The violation of such 'obligation' could trigger liability under some principles in customary international law, or the text of other related international treaties.<sup>20</sup>

There has been a great deal of discussions on climate change loss and damage from the perspective of the UNFCCC regime. This paper will discuss this issue from the perspective of litigation, which, it is argued, is pivotal to creating a loss and damage compensation regime. Beginning with the definition of loss and damage, it will discuss the existing legal space for developing countries to receive compensation through international courts, barring from the restrictions in the Paris Agreement. With reference to some evolving legal principles in other related fields of international law and civil environment cases, this paper will set forth possible options to prove causal links between the economic activities of developed countries and climate change-related loss and damage for developing countries. An alternative standard of proof for litigation in relation to climate change loss and damage would culminate into a quasi-loss-and-damage liability and compensation regime outside of the current UNFCCC process, which means that it will be the courts that determine the extent of loss and damage as well as its attribution with reference to existing law and legal principles on a case-by-case basis. A quasi-loss-and-damage response system (by way of redefining court practice as precedents to which international or domestic courts can refer) could support and amplify the

effectiveness of Sendai Framework for Disaster Risk Reduction by providing a new legal basis for reinforcing litigants' case to press the State to honour its 'obligation' to reduce disaster risk in collaboration with private and third sector stakeholders. Such a court-based response system, if it is in practice consistent with the guiding principles enshrined in the Sendai Framework, can potentially turn the Sendai Framework which is a voluntary and non-binding agreement into *de facto* legally binding commitment for States.

The primary advantages of leaving the loss and damage matters to the courts include: (1) climate victims can bypass very long-winded international climate negotiations, disturbed by a cacophony of different political stances over the past 25 years, and claim badly-needed compensation through a relatively more efficient and apolitical avenue; and (2) rather than rely on an international mechanism which cannot necessarily establish a hard and fast rule that perfectly covers all loss and damage cases in all jurisdictions, courts can have some space to interpret relevant law with some flexibility in accordance with specific circumstances in individual climate change cases, which will eventually increase the clarity and applicability of relevant international and domestic law for similar L&D-related litigation in the future. Nevertheless, the major drawback of a court-based system lies in the subjectivity of judges in assessing the credibility of evidence and applying appropriate legal principles, which implies that cases of the same nature might be subject to different treatment in different courts.

## II. Defining Loss and Damage

The discussion of legal responses to loss and damage is increasingly important as it is emerging as a major issue of concern in the international climate negotiations. Vanhala and Hestbaek and Boyd et al. explain why it remains a complex, unclear and contested concept<sup>21</sup> with a spectrum of opinions, ranging from framing loss and damage as essentially adaptation-equivalent issue to an existential and irreversible threat.<sup>22</sup> While there is no official definition for loss and damage and the UNFCCC seldom distinguishes between the two terms, the UNFCCC provides a working definition stating, 'loss and damage [being] the actual and/or potential manifestation of impacts associated with climate change in developing countries

19 Florentina Simlinger and Benoit Mayer, 'Legal Responses to Climate Change Induced Loss and Damage' in *Loss and Damage from Climate Change* (Springer, 2018) 179-203.

20 Malcolm Shaw, *International Law* (Cambridge University Press, 2003).

21 Lisa Vanhala and Cecilie Hestbaek, 'Framing Climate Change Loss and Damage in UNFCCC Negotiations' (2016).

22 Emily Boyd et al, 'Typologies of Loss and Damage and Associated Actions' (2016) Policy Brief Revised from a Draft Prepared for the April 2016 Meeting of the WIM Executive Committee.



that negatively affect human and natural systems'.<sup>23</sup> Additionally, Van der Geest and Warner find that two strands of definitions exist, one suggesting loss and damage climate impacts negatively affecting human and natural systems and the second eluding to adverse effects that have not been mitigated, and therefore beyond adaptation. Thus, they define Loss and Damage as 'adverse effects of climate-related stressors that have not been or cannot be avoided through mitigation and adaptation efforts'<sup>24</sup>; Mechler et al.<sup>25</sup> note various interpretations of losses referring to fatalities from climate disasters and damages being impacts that can be dealt with through alleviation or repair. He suggests that 'L&D may refer to actions dealing with the residual, adverse impacts of climate change which remain after mitigation and adaptation measures have been adopted'. Loss and damage is also construed as negative effects that can be reduced, but not completely avoided, through adaptation.<sup>26</sup> In nature, some of these impacts are purely economic and quantifiable such as damages to infrastructure; whereas others cannot be expressed in monetary terms such as loss of life, cultural heritage or biodiversity. This paper should adopt Mechler's interpretation (which has attempted to address two terms separately) as causation may need to be established between losses and damages in climate change-related litigation.

For developing-country Parties (especially some SIDSs and Least Developed Countries) and some developed countries, loss and damage is an issue of intolerable threat because of their geographical locations, climatic patterns, limited financial and institutional capacities which make them more vulnerable to climate change effects. Climate change-induced loss and damage is also increasingly visible and tangible in vulnerable communities in exposed areas in developed countries, for example the US Atlantic coast impacted by hurricanes of increasing magnitude and frequency. Some developed-country Parties have long subsumed loss and damage under the adaptation framework by framing it as risk manageable through insurance mechanisms. The major drawback to the use of insurance to address loss and damage is that such high level of climatic risks would be translated into prohibitive premiums which the most vulnerable households cannot afford. By contrast, some developing-country Parties regard loss and damage as an issue of liability. On moral grounds, premiums should be paid by those responsible for

climate change rather than those at risk. That is, industrialised States which have been emitting most greenhouse gases historically should have a moral and legal obligation to compensate poorly affected States.<sup>27</sup> The fact that the Paris Agreement elevates the issue of loss and damage to be a distinct category of negotiations and action, alongside adaptation and mitigation, is perceived by observers as a minor victory for developing-country Parties.<sup>28</sup> Such move sets the stage for a more meaningful international discussion on what constitutes loss and damage, what the appropriate responses should be, and who should bear the legal responsibility to act.

### III. Legal Attributes of Climate Change Loss and Damage

Even though both 'loss' and 'damage' are common legal terms, the phrase—'loss and damage' does not necessarily signify legal liability or State responsibility for damage. Liability as a legal concept within the climate change governance regime actually began with the context of Principle 13 of the 1992 Rio Declaration: 'States shall cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.'<sup>29</sup>

23 UNFCCC, 'A Literature Review on the Topics in the Context of Thematic Area 2 of the Work Programme on Loss and Damage: A Range of Approaches to Address Loss and Damage Associated with the Adverse Impact of Climate Change' (2012) <<http://unfccc.int/resource/docs/2012/sbi/eng/inf14.pdf>> accessed 1 April 2020.

24 Kees Van der Geest and Koko Warner, 'Editorial: Loss and Damage from Climate Change: Emerging Perspectives' (2015) 8 Int J Global Warming 2, 133–140.

25 Reinhard Mechler et al, 'Science for Loss and Damage. Findings and Propositions' in *Loss and Damage from Climate Change* (Springer, 2019) 3–37.

26 In Decision 2/CP.19 (2013), the Parties acknowledged that 'loss and damage associated with the adverse effects of climate change includes, and in some cases involves more than, that which can be reduced by adaptation'.

27 Kreienkamp and Vanhala (n 9).

28 M Al-Dabbagh, 'Towards a Middle Path: Loss & Damage in the 2015 Paris Agreement' (*Georgetown Environmental Law Review*, 2016) <<https://gelr.org/2016/04/04/towards-a-middle-path-loss-damage-in-the-2015-paris-agreement/>> accessed 20 December 2017.

29 United Nations, 'The Rio Declaration on Environment and Development' (1992).

To develop further international law regarding 'liability and compensation' in the context of the environment and climate change, the international community have to deliberate upon who is liable. But questions lie in: How should we determine if a State is liable? Against which benchmark should we evaluate whether a State is a 'major emitter'? Should we adopt one universal benchmark such as rendering all States that account for over 20% of the global carbon emissions liable to compensating small-island States which suffer from damage caused by the impact of climate change? Or should we adopt different benchmarks for developed and developing-country Parties? Who should be responsible for formulating this benchmark? More importantly, if a small island State seeks compensation from 'major emitters' for transboundary loss and damage, how should State liability for climate change-related loss and damage be determined? These are key questions which have been addressed by many legal scholars and stakeholders as discussed in Murase, Lees and Doelle and Seck.<sup>30</sup>

In general, under international law, a State responsibility-based claim for damages must fulfil the criteria below:

- Damaging activity attributable to a State identified;
- A causal link between the activity and the damage established;

- Either a violation of international law or a violation of a duty of care (due diligence) determined to be owed to the damaged State; and
- Damage quantified and related back to the activity.<sup>31</sup>

However, unlike dealing with weather disasters through emergency preparedness in which countries worldwide have gained good experience, an immense challenge of weaving loss and damage in international law lies in dealing with unprecedented slow onset events. It is difficult to assess or quantify the adverse impacts of slow-onset disasters such as extreme drought, sea-level rise and glacial melt, which result in large-scale, indirect economic and non-economic losses with impacts spread over large geographical areas.<sup>32</sup>

#### IV. Applicable Liability Principles in Customary International Law

Based on established theories of customary international law, some legal principles which can support interstate climate change loss and damage litigations include transboundary damage, no-harm rule, and polluter-pays principle.

##### 1. Trans-Boundary Damage

On 22<sup>nd</sup> September 2011, at the UN General Assembly, the Pacific island nation of Palau announced plans ('Palau Proposal') seeking an advisory opinion from the International Court of Justice on whether countries have a legal responsibility to ensure that any activities on their territory that emit greenhouse gases do not harm other States.<sup>33</sup> The 'Palau Proposal' sets out an important issue for climate negotiations and international law, i.e. How should State liability for climate change loss and damage be determined?

As Palau suggested, State liability for climate change loss and damage may fall into the domain of 'transboundary damage' – a general principle in international law. Xue (2009) defines 'transboundary damage' as '[embodiment] of a certain category of environmental damage, including physical injury, loss of life and property, or impairment of the environment, caused by industrial, agricultural and techni-

30 Shinya Murase, 'First Report on the Protection of the Atmosphere' (2014); Emma Lees, 'Responsibility and Liability for Climate Loss and Damage after Paris' (2017) 17 Climate Policy 59; Meinhard Doelle and Sara L. Seck, 'Loss & Damage from Climate Change: A Maturing Concept in Climate Law?' (2019).

31 International Law Commission, 'Report of the International Law Commission, 53rd Session (Chapter IV of the "Report of the International Law Commission, 53rd session", General Assembly, Official Records, 56th session, Suppl. No. 10, UN Doc. A/56/10.)

32 At the national and international levels, legal experts have identified numerous difficulties and/or risks to pursue climate change-related lawsuits in various courts. This is primarily due to the difficulties or even impossibility of presenting a causal links between greenhouse gas emissions and climate harm to the normal standard of proof for conventional cases. Nevertheless, some evolving legal principles are shedding light to cases related to climate change loss and damage (which will be discussed in details under the ensuing section of 'Evolving legal principles for alternative burden of proof').

33 United Nations News Service, 'Palau Seeks UN World Court Opinion on Damage Caused by Greenhouse Gases' (2011) <[http://www.un.org/apps/news/story.asp?NewsID=39710#.Wjp\\_DzenxPY](http://www.un.org/apps/news/story.asp?NewsID=39710#.Wjp_DzenxPY)> accessed 20 December 2017; D Kysar, 'Climate Change & the International Court of Justice: Seeking an Advisory Opinion on Transboundary Harm from the Court' (2013) Public Law Research Paper No. 315.

cal activities conducted by, or in the territory of, one country, but suffered in the territory of another country or in the commons areas beyond national jurisdiction and control'.<sup>34</sup> Thus, the concept of transboundary damage contains three features:

- (i) The activities are conducted in one State cause ecological damage in the territory of another State;
- (ii) The responsibility for the damage depends on the level of seriousness of the damage; and
- (iii) The environmental damage is impacting people, property or goods (including cultural heritage).

When the principle of transboundary damage applies, international courts may have to put the case on the three-point test above before ruling if a State is liable to provide compensation to affected State(s).<sup>35</sup>

In fact, there are numerous treaty precedents for liability and compensation schemes for transboundary pollution. Examples include the 1999 Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal, 1989 Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels, 2003 Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters, 1992 Civil Liability Convention and 1992 Fund Convention (which address oil spills from tankers), etc.<sup>36</sup> These treaties regulate the safe handling of pollutants, and then formulate mechanisms for compensating for pollution-related damage, covering risks from nuclear damage, oil spills, transportation of dangerous and hazardous goods, and the pollution of watercourses through industrial accidents.<sup>37</sup>

However, arguably, there have not been objective or universal benchmarks for evaluating 'the level of seriousness' and measuring the 'environmental damage' for climate cases. An international court may find it problematic to judge a climate case in which losses and damages are not easily attributable to the emissions from one single country.

## 2. No-Harm Rule and Polluter-Pays Principle

In customary international law, the 'no-harm rule' and 'polluter-pays principle' could substantiate a loss

and damage case in the context of climate change. Both principles are reflected in the 1992 Rio Declaration, enshrining that States have a 'responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States' (Principle 2) and '...the polluter should, in principle, bear the cost of pollution' (Principle 16).<sup>38</sup>

### a. No Harm Rule

Considered as an important norm, the 'no-harm rule' obliges States to prevent, reduce and control the risk of environmental harm to other States.<sup>39</sup> A State is held liable if the following two conditions are satisfied:

- (i) The offending State has inflicted serious harm on the injured State; and
- (ii) The actions of the offending State have failed to adhere to a required standard of care through negligence.<sup>40</sup>

Amid growing consensus on anthropogenic climate change among scientists, States may be deemed negligent if they fail to act upon their knowledge of climate change-induced harm. It certainly entails legal assessment of the scientific evidence and causes of climatic change within a given 'damaged' State(s). Nonetheless, in practice, a caveat of the 'no-harm rule' is that its application also necessitates balancing the

34 H Xue, *Transboundary Damage in International Law* (Cambridge University Press 2009).

35 *ibid.*

36 Joanne Linnerooth-Bayer, MJ Mace and Roda Verheyen, 'Insurance-Related Actions and Risk Assessment in the Context of the UNFCCC' (2003).

37 Example transboundary damage-related treaties include: the 1969 International Convention on Civil Liability for Oil Pollution Damage and the 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (Fund Convention), which have now been superseded by the 1992 Civil Liability Convention (CLC 92) and the 1992 Fund Convention.; the International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention), the Nuclear Liability Conventions (1960 Paris Convention, as amended by the 1963 Brussels Supplementary Convention, 1963 Vienna Convention, and the 1988 Joint Protocol).

38 United Nations (n 23).

39 Richard Tol and Roda Verheyen, 'State Responsibility and Compensation for Climate Change Damages - a Legal and Economic Assessment' (2004) 32 Energy Policy 1109.

40 Christina Voigt, 'State Responsibility for Climate Change Damages' (2008) 77 Nordic Journal of International Law 1.

technical and economic capabilities of the offending State against the damage inflicted on the injured State.<sup>41</sup> It involves weighing the territorial sovereignty of one State against the territorial integrity of another, which may allow subjectivity and arouse controversy.<sup>42</sup> Thus, it is likely that the no-harm rule alone would not result in any conclusive findings of liability for which high-emitting States are obliged to pay compensation to the affected ones.

### b. Polluter-Pays Principle

The 'polluter-pays principle' mandates that polluting States should bear the costs of repairing the damage they cause to the environment and/or to human health (in another State).<sup>43</sup> In other words, it obliges polluters to be responsible for the externality of the pollution attributed to them.<sup>44</sup> This principle could provide an appropriate basis for States seeking compensation for climate change-related loss and damage from historical polluters (i.e. carbon emitters). Yet, the responsibility of centuries-long pollution in the context of climate change (i.e. emitting behaviour) cannot be easily attributable to individual legal entities (including States and corporations); so their legal negligence in pursuing or permitting such polluting behaviour has not been well-documented; and their wrongdoing cannot be unequivocally linked to the losses and damages to the injured like those in normative context.<sup>45</sup> Some suggested that this is due to the interconnectedness between

greenhouse gas emissions and industrialisation in virtually every sector and country, and no single country can be held entirely responsible, which renders apportioning of responsibility impracticable.<sup>46</sup> Likewise, it is also difficult to prove the causation between the polluting behaviour of a single corporation and the loss and damage incurred to a community. However, the *Lliuya v RWE AG* case, filed in a German court in 2015, marks a significant development in international environmental law as the court recognises the liability of a greenhouse gas-emitting private company for potential harms arising in a different jurisdiction from the warming effects of climate change.<sup>47</sup>

The controversies on the application of the no-harm rule and polluter-pays principle loop the discussion back to the core question: How could an individual State prove that it has suffered, or will suffer, harm as a result of carbon emissions from a particular State(s)? If, in a climate case, current and future projected climatic changes within subject States are consistent with the global detection and attribution evidence<sup>48</sup>, it can be said there is a prima facie evidence that those State-level changes are caused, at least, in part by greenhouse gas emissions. In international jurisprudence, there is a suite of evolving principles which may be creating alternative burden and standards of proof applicable to climate cases.

## V. Evolving Legal Principles for Alternative Burden of Proof

As foreshadowed in the section of 'Legal attributes of climate change loss and damage', a conundrum lies in the technical difficulties to establish a chain of causation before courts. It is because of the multifarious and synergetic effect of various pollutants and polluters involved; as well as the non-linearity of climate change. During climate-related litigations, the defendant(s) could exploit (i) a variety of contributory factors that may intervene in the climate system to affirm a potential break in the causation chain; and (ii) reasonable foreseeability of the changing climate for the plaintiff(s) and the risks of them falling into the proximity of such changes. For instance, by adopting the currently accepted standard of proof, the bench hearing a climate case should ask: It is reasonably foreseeable that the defendant's conduct, i.e.

41 Benoit Mayer, 'State Responsibility and Climate Change Governance: A Light through the Storm' (2014) 13 *Chinese Journal of International Law* 1.

42 Voight (n 40).

43 Mizan R Khan, 'Polluter-Pays-Principle: The Cardinal Instrument for Addressing Climate Change' (2015) 4 *Laws* 638.

44 Michael Faure and David Grimeaud, 'Financial Assurance Issues of Environmental Liability' in Michael Faure (ed), *Deterrence, Insurability and Compensation in Environmental Liability* (Springer 2003).

45 David Wrathall et al, 'Conceptual and Operational Problems for Loss and Damage' (2013).

46 Al-Dabbagh (n 28).

47 LSE, 'Lliuya v. RWE' (*Climate Change Laws of the World*, 2017) <<http://www.lse.ac.uk/GranthamInstitute/litigation/liuya-v-rwe/>> accessed 22 January 2019.

48 According to the IPCC AR4, 'detection' refers to the process of demonstrating that climate has changed in some defined statistical sense, without providing a reason for that change; 'attribution' refers to the process of establishing the most likely causes for the detected change with some defined level of confidence. (See IPCC AR4, WGI, Chapter 9.1.2 and the Glossary.)



emitting carbon by using fossil fuels in its territory, could (directly) result in any specific climate change-induced events such as higher frequency and magnitude of hurricane harming the human life and property, or ecosystem, in the plaintiff's territory? And when would that happen? What is the estimated monetary value of those economic and environmental damages (directly) caused by the defendant's carbon-emitting behaviour if plaintiff(s) ask(s) for compensation?

To decide the legality of such emitting behaviour, judges have to be reliant on credible scientific evidence about what kind of economic activities constitutes significant harm. A bench would not consider granting a climate claim against a defendant unless the plaintiff could demonstrate a clear causal linkage between factor A and result B, comparable with the manner in which the link was proven between the use of tobacco products and lung cancer in a precedent at WTO's arbitration regime.

In the strict sense of compensation for damage, the fault-based liability is immeasurably difficult to establish because, as discussed under 'transboundary damage', the seriousness of the damage or injuries are the prime conditions of legal relevance in any case which entails liability for compensation of harm caused by a wrongful act.<sup>49</sup> The complexities of addressing these issues, in the context of emissions, may make it almost impossible to establish an objective test to meet the conventional standards of proof in a court setting.

With regard to such deadlock for climate cases, the international jurisprudence has increasingly applied different tests, ranging from 'clear and convincing' to 'on the balance of probabilities' for evaluating the credibility of evidence presented. And the 'precautionary principle' has been used as a procedural tool to lower the standard of proof (or reverse the burden of proof) in circumstances where the convolution of scientific facts results in a degree of uncertainty. These tests or indeed the acceptability of alternative burden of proof are illustrated with the international and civil case law below.

## 1. Precautionary Principle

The crux of the precautionary principle has been reflected in Bergen Ministerial Declaration on Sustainable Development 1990 (BMDSD), and the Rio Dec-

laration 1992. In BMDSD 1990, it states that 'lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'. Principle 15 of the 1992 Rio Declaration makes precaution mandatory by stipulating that: 'Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.'<sup>50</sup>

It is interpreted that a State should regulate, and possibly prohibit, activities and substances which may be harmful to the environment even if no conclusive and overwhelming evidence is available to prove the likely harm they cause to the environment. For climate cases, the use of precautionary principle is appropriate for establishing causation as the interpretation approach could shift the burden of proof to the defendant(s) who is/are engaged in allegedly environmentally-degrading activity. That is, the polluting State(s) may be required to prove that such activity as discharge of certain substances will not or did not cause harm to the environment (in the global commons), as the case may be.<sup>51</sup> The precautionary principle has gained gradual support in international courts and tribunals for a range of decisions.

### a. Nuclear Test (New Zealand v. France) Case

Precautionary principle was first raised in 1995 at the International Court of Justice where New Zealand filed a case against France's nuclear testing. New Zealand and five 'intervening states' (Australia, Micronesia, Marshall Islands, Samoa and Solomon Islands) invoked this principle as 'a very widely accepted and operative principle of international law', which shifted the burden to France to prove that its proposed nuclear tests would cause no environmental damage. The ICJ did not rule on this principle, but in his dissent, Judge Weeramantry remarked that precautionary principle had 'evolved to meet [the] evidentiary difficulty caused by the fact [that] information required to prove a proposition' may be 'in the hands of the party causing or threatening the

49 Katak Malla, 'Climate Change Loss and Damage Compensation' (2013) Available at SSRN: <<https://ssrn.com/abstract=2251149>>

50 United Nations (n 23).

51 Emmanuel Onyeabor et al, 'Overcoming Barriers to Claims for Loss and Damage in Climate Change Litigation' (2016) 44 International Affairs and Global Strategy 62.

damage', and that it was 'gaining increasing support as part of the international law of the environment.'<sup>52</sup>

#### b. Southern Bluefin Tuna (Australia/New Zealand v. Japan) Case

In the Southern Bluefin Tuna case (1999), Australia and New Zealand requested the International Tribunal for the Law of the Sea (ITLOS) to order Japan to 'act consistently with the precautionary principle in fishing for Southern Bluefin Tuna pending a final settlement of the dispute'. ITLOS expressed in its order the viewpoint that 'Although it could not conclusively assess the scientific evidence presented by the parties, measures should be taken as a matter of urgency to preserve the rights of the parties and to avert further deterioration of the southern bluefin tuna stock.'<sup>53</sup>

#### c. MOX Plant (Ireland v. UK) case

In the MOX Plant case (2001), Ireland accused the United Kingdom of failing to apply a precautionary approach to protecting the Irish Sea whilst the UK exercised its decision-making authority regarding the consequences of the operation of the MOX Plant which discharged radioactive materials. Before ITLOS, Ireland invoked the principle that the UK had the burden of demonstrating that the Plant's discharges would cause no harm and to inform the Tribunal's assessment on the urgency of provisional measures the UK is required to undertake. Although the Tribunal did not order to suspend the operation of MOX Plant, it ordered the Parties to co-operate and exchange further information on possible consequences of MOX Plant operations for the marine en-

vironment in Irish Sea. In his separate opinion, Judge Wolfrum stated that 'There is no general agreement as to the consequences which flow from the implementation of this principle other than the fact that the burden of proof concerning the possible impact of a given activity is reversed. A State interested in undertaking or continuing a particular activity has to prove that such activities will not result in any harm, rather than the other side having to prove that it will result in harm.'<sup>54</sup> It is observed that the precautionary principle was to certain extent embedded in the Tribunal's considerations of prudence and caution.

The precedents above have demonstrated the evolution of the legal status of the precautionary principle in line with the Oslo Principles on global climate change obligations.<sup>55</sup> Gaining currency in increasing number of States and courts as an accepted principle of customary international law,<sup>56</sup> the precautionary principle is transferrable to be a procedural tool to shift the burden of proof for climate change loss and damage-related cases.

For example, the precautionary principle can be applied if State A files a lawsuit against neighbouring industrialised States B, C and D, or major corporations operating in these States, for climate change-induced loss of or damage to a huge area of rice-growing belt. In the application of the precautionary principle as a procedural tool that shifts the burden of proof, the (international) court, on the basis of the 1992 Rio Declaration, relevant law and precedents cited above, may require the defendants (i.e. States B, C and D or the major corporate emitters) to prove to the bench that their economic activities, which emit persistently greenhouse gases such as urbanisation (where grasslands have been gradually substituted with concrete grounds), do not result in average temperature rise and any harm to the weather pattern (e.g. declining rainfall) in State A (and the wider region) that undermine the growing condition of crops, which State A exports for major foreign income. If the defendants cannot conclusively prove with scientific evidence the absence of causation between their carbon-emitting behaviour and the declining crop yields in the plaintiff's territory, the court may in accordance with the precautionary principle require that defendants undertake at least qualifying emission-cutting measures as a matter of urgency to preserve the rights of State A to its natural resources for agricultural production and pre-

52 Nuclear Testing cases ICJ CR/95/20 at 20-1.

53 *Australia and New Zealand v Japan* 39 ILM 1359 (2000).

54 Ireland v UK, ITLOS Order of 3th December 2011.

55 Oslo Principles on Global Climate Change Obligations, released at a symposium at Kings College London on March 30, 2015 <<https://globaljustice.yale.edu/sites/default/files/files/OsloPrinciples.pdf>> accessed 1 April 2020.

56 Permanent Representative to the UN of Vanuatu, Robert van Lierop, iterated that: 'The precautionary principle is more than a semantic or theoretical exercise. It is an ecological and moral imperative. We do not have the luxury of waiting for conclusive proof, as some have suggested in the past. The proof, we fear, will kill us.' (Statement to the Plenary Session of the INC/FCCC, 5<sup>th</sup> February, 1991)

vent its further deterioration as part of the court's ruling.

## 2. Clear and Convincing, Balance of Probabilities and Polluter-Pays Principle

While the precautionary principle is supporting the shift of burden of proof for climate cases, the principles of 'clear and convincing', 'on the balance of probabilities' and 'polluter-pays principle', as seen in domestic case law, could create an alternative standard of proof against which the credibility of evidence in a lawsuit is evaluated. These will be illustrated in some civil environment cases in the US, India and China, which have been chosen as jurisdictions representing the practice of different legal doctrines. The point of analysing domestic precedents across jurisdictions practising different legal doctrines is that they are dots which would form a line for the development of vigorous climate change jurisprudence that addresses the difficulties of presenting causal links between emissions and climate harm. Together, these arguments increasingly adopted as common legal principles in a series of environment or climate change-related cases in courts across different jurisdictions would represent a repository of powerful precedents which would help determine the reasoning of international courts in dealing with international litigations. The three cases below are regarded as landmark environment cases in the US, India and China respectively.

### a. Connecticut v. American Electric Power Co.

In 2004, eight states, New York City plus three land trusts filed a lawsuit against the American Electric Power Co., which generated electricity with fossil-fuelled plants, for contributing to the public nuisance of global warming under federal common law. The plaintiffs demanded injunction (rather than compensation<sup>57</sup>) for damage that may have resulted from the defendants' share of greenhouse gas emissions. Given that the causation requirement of the US Constitution Article III standing inquiry is significantly fact-dependent, the Second Circuit finally ruled that the defendants' emissions sufficiently contributed to plaintiffs' damages, stating that they were, in fact, the largest utility emitters in the US.<sup>58</sup> This ruling

was apparently premised on the balance of probabilities.

### b. M.C. Mehta v. Union of India

After the oleum gas leak from Shriram Food and Fertilisers Ltd. complex in Delhi, in 1986, Mahesh Chandra Mehta, a public interest attorney in India, filed a case against the Indian Government for awarding compensation to the persons who had suffered harm on account of escape of oleum gas. In this case, India Supreme Court<sup>59</sup> defined absolute liability and acknowledged polluter-pays principle for an enterprise that is engaged in a hazardous and essentially dangerous activity such as emitting toxic gases.<sup>60</sup> The significance of this precedent is that if greenhouse gas emissions are scientifically proven to be toxic, the ruling of this landmark case, which forms part of the country's environmental law, could be highly relevant.

### c. All-China Environment Federation v. Zhenhua Corporation

In 2015, at Shandong Province Dezhou City Intermediate People's Court, All-China Environment Federation filed a public interest litigation case against Zhenhua Corporation of Dezhou Jinghua Group Co. Ltd for exceeding the statutory pollutant emission standard for a long period of time. Among other things, the plaintiff requested a court injunction against the defendant's continuing emitting excessive pollutants; and compensation for restoring municipal air quality, which were all granted. In this case, the judge referred to the data from the city's environmental protection authority and its file of previous administrative penalties against the defendant, coupled with the examination results of relevant research institutes and expert opinions. In accordance with the 'Interpretation of the Supreme People's Court on Several Issues concerning the Application

57 The standard of proof would have been higher if the plaintiffs had demanded compensation.

58 Author unknown, 'Causation in Environmental Law: Lessons from Toxic Torts' (2015) 128 *Harvard Law Review* 2256.

59 The Supreme Court of India is famous for its judicial activism and exercise of public interest litigations.

60 *MC Mehta And Anr v Union of India & Ors on 20th December, 1986.*

of Law in the Conduct of Environmental Civil Public Interest Litigations', the judge was 'convinced' that the defendant, whose emission of pollutants such as sulphur dioxide had been constantly exceeding the standard, was very likely to constitute 'behaviours detrimental or having major risks to social and public interests'; and satisfied that there was a causal link between the defendant's emitting behaviour and the deteriorating city-wide air quality.<sup>61</sup> The case of Zhenhua has affirmed all the legal principles being discussed— 'clear and convincing', 'on the balance of probabilities' and 'polluter-pays principle', plus 'precautionary principle', in Chinese environment law.

The highlights from these precedents are a collection of (generic) legal principles applied by domestic courts in the consideration of landmark environment cases: clear and convincing evidence, balance of probabilities and polluter-pay principles. In all the three cases above, absolute causal link between the polluting behaviour and the alleged economic and non-economic harm inflicted upon the victims was not required to be proven by the plaintiffs in a way expected for criminal cases. Instead, plaintiffs are apparently expected to meet an alternative standard of proof by presenting credible scientific evidence that proves a 'general' causal link between the polluting behaviour and the alleged harm on particular victims which may or may not be 'directly' caused by particular polluting behaviour by the defendant. After such causation on balance of probabilities is established, the court can then apply the polluter-pays principle in granting requests for compensation.

With regard to the aforementioned fictitious case of State A v States B, C and D pertaining to the climate change-induced loss of and damage to arable land in State A, if the same legal principles are applied in the international court even without the 'precautionary principle' (which could reverse the burden of proof from the plaintiff to the defendant), State A may only be required to provide scientific evidence demonstrating that carbon emissions, in gen-

eral, are responsible for rising temperatures and declining rainfall that deteriorate the soil quality for agricultural production in State A despite the fact that the impact of climate change is not territory-specific. This would already become a solid basis on which the court establishes the absolute liability of emitting States for compensating the climate-vulnerable victims for economic and/or non-economic loss and damage, although the methodology of determining the formalities and amounts of compensation is another subject for further research.

That said, success cannot be guaranteed for cases of this nature at the international level given that the international courts like the International Court of Justice have no power to enforce its judgement as in the infamous 'whaling' case. It is likely that ICJ's judgement, if not enforced by the States involved, can only serve as a major reference or guide for domestic courts hearing relevant cases. Hence, the States which suffer from climate change impacts might consider commissioning an 'agent' such as state-owned enterprises to bring a case against their counterparts in polluting States through the route of private law litigation to a domestic court which has the statutory power to enforce its judgement in its home jurisdiction. But the issue of standing and technicality of delivering any compensation granted, etcetera, is beyond the scope of this paper.

## VI. Informing the Development of a Loss and Damage Compensatory Response

Back to international climate change law, actually, the precautionary principle was key to the adoption of the UNFCCC, which is reflected in Article 3.3 of the Convention text. It states: 'The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost...'<sup>62</sup> Precaution is often invoked during climate negotiations, but Article 3.3 as a guiding principle only does not create a right for a Party to any specific measures. The evolution of the above-men-

61 L Zhu, XC Zhang and TB Qin, 'Analysis of the First Public Interest Litigation Case on Air Pollution since the Introduction of the New Environmental Protection Law (in Chinese)' (Environment Law Research Net, Zhongnan University of Economics & Law, 2016) <[http://www.environment.org/xsxx/NRY\\_ALFX/201611/20161130\\_48796.html](http://www.environment.org/xsxx/NRY_ALFX/201611/20161130_48796.html)> accessed 20 December 2017.

62 United Nations, 'United Nations Framework Convention on Climate Change' (1992).



tioned principles in international and domestic jurisprudence does shed some light in respect of climate change loss and damage claims.

Despite international negotiations on loss and damage being sluggish partly because of continuous political deadlock, the suite of evolving legal principles, if adopted by courts in different jurisdictions over time, could already function as a 'quasi-loss and damage compensatory response' that climate-vulnerable communities desperately need as it signifies reduced evidential difficulty and increased probability of success for the claimants.

## VII. Supporting the Implementation of the Sendai Framework

The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 to '[p]revent new and reduce existing disaster risk through...measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.' Moreover, it recommends regular disaster preparedness, response, and recovery exercises for 'ensuring rapid and effective response to disasters and related displacement, including access to safe shelter, essential food and non-food relief supplies.'<sup>63</sup> Also playing a part in international climate change law is the SFDRR, which is subject to the primacy of the UNFCCC when it comes to climate-related risks and possible implications for addressing loss and damage. In accordance with the UN International Strategy for Disaster Reduction, 'the climate change issues mentioned in the present framework remain within the mandate of the UNFCCC under the competences of the Parties to the Convention.'<sup>64</sup>

A series of guiding principles, SFDRR leaves the responsibility of risk prevention and management to affected States rather than the international community. Critics perceive that the Sendai Framework actually shifted the debate away from controversial concepts of causality, liability and compensation for extreme weather events induced by climate change to affected States which have not contributed historically.<sup>65</sup> Against this conundrum for climate-vulnerable States, the evolution of the legal principles discussed in this paper can certainly help synergise the implementation of Paris Agreement, Sustainable Development Goals and Sendai Framework, through de-

veloping a quasi-loss and damage compensatory response by ways of redefining court practices in hearing climate change-related cases. As per SFDRR, all States bear for their people the responsibility of risk prevention and management with an array of measures, which many least developed countries could not afford without financial aid from the international community. The compensation that courts can grant in individual cases would function as badly needed 'financial aid' for suffering States to cope with disaster risk.

With the general public in most countries demonstrating higher-than-ever awareness of climate change and sustainable development as well as demanding a fairer global climate change governance system, politicians and negotiators are increasingly pressurised to reach a consensus for the Paris Rulebook with real substances. By re-interpreting a set of legal principles differently, it is hopeful that globally, courts dealing with an increasing number of climate change cases, even in the absence of political will from States, can collaboratively develop a quasi-loss and damage compensatory response for climate litigation. The rulings of new precedents will eventually establish an extra financial and/or technical support route for channelling extra resources to help climate-vulnerable States fulfil their obligations under the SFDRR.

## VIII. Conclusion

The fact that loss and damage is incorporated in Paris Agreement as a standalone concept, additional to adaptation and mitigation, is an important milestone to recognise some adverse impacts of climate change to which develop-country Parties cannot adapt whatsoever. Given the complexity of the climatic system and non-linearity of climate change, the problem with lodging loss and damage-related claims lies in the difficulties of proving a causal link between historical accumulation of carbon emissions from State A and the losses of life, property and ecosystems to extreme weather events and slow onset events in

63 UNISDR, 'Sendai Framework for Disaster Risk Reduction 2015-2030' (2015).

64 *ibid.*

65 Vanhala and Hestbaek (n 21).

State B. As a solution to this problem, it is observed that international and domestic courts in the Germany, US, India and China have progressively (a) shifted the burden of proof with 'precautionary principle' as a procedural tool; and (b) applied alternative standard of proof, including 'clear and convincing', 'balance of probabilities' and 'polluter-pays principle', to establish causation in many climate cases, where the complexity of scientific facts results in a degree of uncertainty, even before a loss and damage regime is agreed under the UNFCCC. And Paragraph 51 of Paris Agreement's decision text cannot prevent

Parties from agreeing an international loss and damage compensation mechanism to be put in international law over time. At forthcoming climate conferences, the WIM's Executive Committee needs to carefully consider how best to weave this set of legal principles into a process that can effectively support climate-vulnerable States and synthesize the work of multiple programmes such as the Sendai Framework. While the negotiation on loss and damage is showing limited progress, the discussion on this controversial issue cannot be wished away forever because climate change will not stop in foreseeable future.

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