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ADDRESSING LOSS AND DAMAGE: LEGAL CHALLENGES AND OPPORTUNITIES IN INTERNATIONAL CLIMATE LAW

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ABSTRACT

Climate change is one of the most prominent challenges humanity faces today, especially for poorer countries, which are the most impacted by the consequences of climate change. Despite various efforts under international frameworks like UNFCCC, the current mechanisms for addressing Loss and Damage (L&D) have proven to be largely inadequate. This paper attempts to explore the journey of L&D as a concept and how it has evolved. We analyse the gaps in the existing system, such as the lack of legally binding commitments, the absence of enforcement mechanisms, and fragmented governance structures. Such shortcomings have significantly lowered the effectiveness of L&D mechanisms, leaving the vulnerable nations grappling with rising sea levels, biodiversity loss and displacement without adequate support. This paper also examines the issues of ascertaining the accountability and responsibility of states for the impact of climate change, highlighting the tensions between the developed and developing nations over such liability. To strengthen the institutional framework and effectiveness of L&D regimes, we propose several measures, such as a dedicated L&D legal framework, climate-specific migration treaties, and a global reparations system. This study seeks to foster impactful conversations and drive action to support the communities most affected. Enhancing the L&D framework will bring us closer to realising climate justice and creating a resilient, fair future for everyone.

INTRODUCTION

Climate change could displace more than 216 million[2] people globally, making it one of the most pressing issues of the 21st century. It not only has the potential to disrupt the natural ecosystem balance but also threatens human lives by limiting access to clean air, safe drinking water, nutritious food supply and safe shelter. It could also lead to increased frequency of extreme weather events like hurricanes, typhoons and droughts causing loss of lives and property. The impact of disasters like Cyclone Idai[3] (2019), which caused USD 2 billion in damages and displaced over 100,000 people in Zimbabwe and Mozambique, underscores the economic vulnerability of developing nations.

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[2] World Migration Report, 2024 - https://digitallibrary.in.one.un.org/TempPdfFiles/28519_1.pdf
[3] Nhundu, K., Sibanda, M., Chaminuka, P. (2021). Economic Losses from Cyclones Idai and Kenneth and Floods in Southern Africa: Implications on Sustainable Development Goals. In: Nhamo, G., Chikodzi, D. (eds) Cyclones in Southern Africa. Sustainable Development Goals Series. Springer, Cham.

A 2024 study[4] projects that by 2050, climate change could lower average global incomes by nearly 20%, resulting in annual economic losses of USD 38 trillion. Similarly, the International Labour Organization[5] (ILO) estimates that by 2030, heat stress could result in a 2.2% reduction in total working hours worldwide, equivalent to economic losses of USD 2.4 trillion. Sectors like agriculture and construction would be the most affected. Due to their limited economic resilience, such losses would primarily impact smaller and less developed nations, particularly in South Asia and sub-Saharan Africa.

In response to these economic vulnerabilities, developing nations under the United Nations Framework Convention on Climate Change (UNFCCC) have increasingly called for financial transfers to address loss and damage (L&D)—the irreversible economic and non-economic harms caused by climate change and associated events such as floods, droughts, and rising sea levels. These nations have argued that the developed world should bear the liability for the L&D incurred by the developing world due to their alleged historical contribution to greenhouse gas (GHG) emissions. This would enable them to adapt and incorporate climate resilience in their growth and development strategies. Following years of negotiations, the Conference of Parties (COP-27)[6] of UNFCCC held in Egypt in 2022 established the L&D fund, later operationalized in COP-28[7]. Similarly, during COP-29[8] held in November 2024, a major breakthrough was achieved with the announcement of the New Collective Quantified Goal on Climate Finance (NCQG). This initiative aims to triple climate finance for developing countries to USD 300 billion annually by 2035, up from the previous goal of USD 100 billion annually. However, despite such measures, climate experts have called them largely inadequate, with minimal commitments translating into actual on-ground funding. These gaps raise crucial questions regarding the efficacy and adequacy of the current legal framework surrounding L&D.

In light of ongoing climate finance negotiations, it becomes necessary to analyse the international legal framework governing climate finance and the deficiencies in the existing framework. Against this backdrop, this article pursues three primary objectives. First, it critically examines the evolution of the L&D concept and its legal foundations within international climate agreements like UNFCCC. Second, it identifies the legal and structural gaps in existing financing mechanisms, particularly in assigning liability and ensuring adequate financial commitments. Finally, it proposes measures to enhance the effectiveness of the L&D regime to address climate-induced challenges better.

The article is structured as follows: Section 2 reviews the present conceptual understanding of the L&D framework and its evolution over the years. Section 3 analyses the legal challenges in the existing L&D regime, focusing on issues related to liability and compensation mechanisms. Section 4 provides various measures to strengthen the legal and institutional

[4] Kotz, M., Levermann, A. & Wenz, L. The economic commitment of climate change. *Nature* **628**, 551–557 (2024)
[5]https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_711919.pdf
[6] UNFCCC Decision -/CP.27, Sharm el Sheikh Implementation Plan, https://unfccc.int/sites/default/files/resource/cop27_auv_2_cover%20decision.pdf
[7] UNFCCC Decision -/CP.28, Summary of Global Climate Action at COP 28, https://unfccc.int/sites/default/files/resource/Summary_GCA_COP28.pdf
[8] UNFCCC Decision -/CP.29, Summary of Global Climate Action at COP 29, https://unfccc.int/sites/default/files/resource/Summary_Global_Climate_Action_at_COP_29.pdf

framework of the L&D regime. The article concludes with a summary of findings and future directions for research and policy.

CONCEPTUAL FRAMEWORK OF L&D

Before examining the legal implications of the existing L&D regime, it is essential to first understand its conceptual framework and the evolution of the regime.

Understanding L&D

The term "Loss and Damage" has become increasingly important in recent years due to the unprecedented impacts of climate change. These impacts include frequent climate-related disruptions and rising surface temperatures that threaten life and society worldwide. L&D first appeared in a negotiated outcome of the Bali Action Plan[9] in 2007. However, it gained traction after the establishment of the Warsaw International Mechanism[10] for L&D (WIM) in 2013. Since then, scholars have widened its interpretation, culminating in the establishment of the L&D Fund in UNFCCC COP-27 held in Egypt in 2022.

To fully comprehend the meaning of L&D, it becomes essential to distinguish some key climate-related terms – mitigation, adaptation and resilience. Climate change mitigation refers to mechanisms and processes aimed at reducing the impact of climate change by curbing the concentration of GHG in the atmosphere. It includes measures like renewable energy transition, protection of natural carbon sinks like forests and oceans, use of locally sourced materials, and development of environment-friendly public transit systems. On the other hand, climate change adaptation refers to mechanisms and processes aimed towards adjusting to the effects of climate change. It includes actions like adoption of cooling systems, crop diversification adjusting to modified climatic conditions and constructing defences against sea level rise. Finally, climate change resilience refers to the ability of a society or a community to foresee impacts of climate change and thereby undertake measures to recover from those quickly. Together, these three expressions help a society in assessing their capabilities and minimize the loss and damages emerging from climatic risks.

Having distinguished these key climatic terms, we can now proceed to analyse the interpretation of L&D. Although, there exists no agreed upon definition within UNFCCC, it is typically understood to be the adverse effects of climate change that occur despite adaptation and mitigation measures. While mitigation deals with the causes of climate change and adaptation deals with the impacts of climate change, L&D deals with unavoidable and irreversible impacts of climate change. For example, some of the Small Island Developing States (SIDS) like Maldives, Kiribati, Tuvalu and Marshall Islands face a high risk of submergence due to the rise in sea levels. A new study [11] shows that nearly 20% of inhabitants of SIDS are exposed to coastal and inland flooding, highlighting the scale of irreversible impacts.

[9] UNFCCC Decision -/CP.13, Bali Action Plan, https://unfccc.int/files/meetings/cop_13/application/pdf/cp_bali_action.pdf

[10] Gewirtzman, J., Natson, S., Richards, J.A., Hoffmeister, V., Durand, A., Weikmans, R., Huq, S. and Roberts, J.T., 2018. Financing loss and damage: reviewing options under the Warsaw International Mechanism. *Climate Policy*, *18*(8), pp.1076-1086.

[11] Leanne Archer *et al* 2024 *Environ. Res. Lett.* 19 124020

L&D can classified into two categories: economic and non-economic. While economic L&D refers to negative impacts where the costs are quantifiable such as damage to infrastructure, non-economic L&D refers to impacts which cannot be easily quantified like loss of culture, forced displacement etc. The recognition of L&D as a core component of climate change mitigation and adaptation marked a pivotal moment in the field. This has enabled countries to assess their vulnerabilities and accordingly cooperate and coordinate with each other, thereby leading to constructive mechanisms under the aegis of United Nations aimed towards combating climate change.

Evolution of L&D in International Law

The cause of L&D was first championed by the Alliance of Small Island States (AOSIS)[12] in 1991, in the run up to the negotiations establishing the UNFCCC. The group, at the time, proposed the establishment of an international insurance pool to support vulnerable and low-lying coastal developing nations, like Mauritius, Seychelles, and the Maldives, in addressing the adverse impacts of climate change.

Subsequently, L&D was first referred to in the Bali Action Plan of 2007, which highlighted the need for the implementation of disaster risk reduction strategies and the means to address L&D resulting from climate change impacts, particularly for countries vulnerable to such impacts. The AOSIS consequently, continued to raise demands for an effective climate finance mechanism that would possess the ability to compensate countries affected by rising sea levels.

The growing demand for an L&D mechanism led to the recognition of the L&D principle as part of Cancun Adaptation Framework[13] (2010) under COP16 of UNFCCC. For this purpose, a work program was also agreed upon, which specifically functioned with the objective of assessing L&D risks and striving towards undertaking a range of approaches to address L&D. Climate finance measures were also undertaken in the form of Green Climate Fund and the Fast Start Finance.

The Work Program constituted under Cancun Adaptation Framework led to the establishment of the WIM[14] under COP 19 of UNFCCC in 2013. The WIM is the main vehicle under UNFCCC to address L&D impacts. In the interest of climate justice, the WIM recognizes the need to support developing and underdeveloped countries which are most vulnerable to climate change impacts, particularly those impacts which have limited alternative mitigation and adaptation strategies. In this context, WIM has three primary functions, as stated by UNFCCC official COP19 report – i) enhance knowledge and understanding of risk management approaches to address L&D, ii) strengthening of dialogue, coordination, synergy among stakeholders, and iii) action and support, including finance, technology and capacity building to address L&D.

WIM has played a crucial role in catalysing the development of an array of diverse approaches, scalable solutions and financing mechanisms to minimize the L&D on society and biodiversity. The mechanism provided a forum for discussing key L&D issues, thereby integrating it into

[12] AOSIS Submission on Loss & Damage, https://unfccc.int/sites/default/files/aosis_submission_on_loss_and_damage_submission_2_october_2012.pdf
[13] UNFCCC Cancun Adaptation Framework, https://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf
[14] UNFCCC Warsaw International Mechanism, https://unfccc.int/sites/default/files/resource/WIM_Explainer_final.pdf

the broader climate negotiations. WIM also assisted in capacity-building initiatives like the formation of the Santiago Network in 2019. However, it has also been criticized on various fronts, especially its inability to ensure the timely availability of sustainable climate finance adequately.

The insertion of the principle of L&D in the Paris Climate Agreement at COP21 was a landmark milestone[15] for global climate negotiations after the operationalization of WIM. Article 8[16] of the Paris Agreement incorporates this principle and serves as the cornerstone of subsequent climate negotiations.

LEGAL DIMENSIONS AND SHORTCOMINGS OF THE L&D FRAMEWORK

The effectiveness of the L&D mechanism depends largely on the support it receives from international legal frameworks, as these frameworks provide the structure for implementation, funding, and accountability. Thus, it becomes essential to analyse the existing legal framework and the deficiencies within it to gauge the efficacy of current L&D mechanisms. Additionally, understanding these gaps is crucial for identifying reforms and ensuring equitable and timely compensation for vulnerable nations disproportionately affected by climate change.

Legal Gaps in the L&D Framework

The L&D framework aims to address climate-induced losses that go beyond adaptation measures, but it faces several legal gaps related to liability, enforcement mechanisms, and financial accountability, which hinder its effective implementation and equitable support for vulnerable nations, as discussed in this section.

a) Absence of Legally Binding Obligations

While Paragraph 8.1 of the Paris Agreement does recognize L&D as a genuine cause for worry, the phrasing suggests that the parties did not intend to create legally binding obligations on the member countries. This provision, when read with the liability and compensation clause as given under paragraph 51 of decision 1/CP.21[17] (Paris Agreement (2015)), makes the legal implications a bit ambiguous. The liability and compensation clause states that the article's provisions would not create a basis for any liability or compensation claims.

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Thus, no state can invoke this article to claim entitlement to compensation or assistance for losses or damages resulting from climate-related harm. This is exemplified by Pakistan's

[15] Broberg, M. and Romera, B.M., 2020. Loss and damage after Paris: more bark than bite?. *Climate Policy*, *20*(6), pp.661-668.
[16] Paris Agreement Text - https://unfccc.int/sites/default/files/english_paris_agreement.pdf
[17] Paragraph 51 of decision 1/CP.21 provides:
'Agrees that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation'.
[18] Paragraph 51 of decision 1/CP.21 provides:
'Agrees that Article 8 of the Agreement does not involve or provide a basis for any liability or compensation'.

struggle to secure legally enforceable compensation following the 2022 Pakistan floods, which inflicted USD 15.2 billion in economic losses[19], thereby exposing the structural gaps in international climate law.

However, in conjunction with other international legal regimes, this article may strengthen the case for entitlement to such compensation. For instance, the Trail Smelter Arbitration (1938)[20] set a legal precedent for state responsibility for transboundary environmental harm, which could potentially be used to argue for state liability in cases of climate-induced damage. Similarly, Vanuatu's International Court of Justice (ICJ) plea (2023), which seeks legal clarification on state obligations under international law regarding climate change, signals growing efforts to reinterpret existing legal norms to address the accountability gap left by the Paris Agreement.

b) Absence of Universal Definition of L&D

Another major legal gap surrounding L&D discussions is the absence of an agreed-upon definition of L&D in the article or the accompanying decision text. Ambiguity in the understanding[21] and interpretation of L&D gives rise to disagreements among parties regarding the components it encompasses. For instance, SIDS have been arguing for a broader definition[22] of L&D to maximize their compensation claims, while developed countries prefer limiting the scope to avoid extensive liabilities. Additionally, such ambiguity hinders the clarity on whether such compensation from developed to developing countries constitutes a legal obligation or voluntary support. Undefined parameters also make it difficult to calculate or attribute specific L&D claims, especially for intangible losses like biodiversity or human rights. Finally, undefined L&D lack unenforceable standards under international law, making it challenging to implement decisions or resolve disputes.

The working definition[23] framed by the Subsidiary Body of Implementation (SBI), a subsidiary body of UNFCCC constituted under the Cancun Framework Arrangement, shows several differences with respect to the ones framed by AOSIS in 1991. This illustrates how the interpretation and scope of L&D have evolved, becoming both broader and less distinct over time. First, despite AOSIS raising issues with respect to compensation in multiple fora, the SBI literature review fails to consider compensation as a central element in the L&D theme. Second, while the AOSIS definition limited L&D to sea level rise, the SBI definition widened the scope to any climate change-related impact. Third, unlike the AOSIS definition, the SBI definition does not refer to "vulnerability" and does not limit L&D to certain vulnerable countries. Finally,

[19] World Bank Press Release: Pakistan: Flood Damages and Economic Losses Over USD 30 billion and Reconstruction Needs Over USD 16 billion - New Assessment , https://www.worldbank.org/en/news/press-release/2022/10/28/pakistan-flood-damages-and-economic-losses-over-usd-30-billion-and-reconstruction-needs-over-usd-16-billion-new-assessme

[20] Trail smelter case (United States, Canada), 3 UNRIAA, p. 1905, 1952.

[21] James, R., Otto, F., Parker, H., Boyd, E., Cornforth, R., Mitchell, D. and Allen, M., 2014. Characterizing loss and damage from climate change. *Nature Climate Change*, *4*(11), pp.938-939.

[22] Van der Geest, K. and Warner, K., 2015. Loss and damage from climate change: emerging perspectives. *International Journal of Global Warming*, *8*(2), pp.133-140.

[23] The Subsidiary Body of Implementation uses the following working definition for L&D: 'the actual and/or potential manifestation of impacts associated with climate change in developing countries that negatively affect human and natural systems.'.

the definition provided by the SBI[24] broadens the concept of L&D by incorporating "human and natural systems," suggesting that harm to natural systems, even without a direct or immediate impact on humans or human systems, can still qualify as L&D. Considering the absence of a concrete definition, such contradictions and blurring of lines poses challenges to the climate change discourse established by the global community.

The case of Tuvalu is an apt example that highlights these challenges. Tuvalu, a small island nation in the South Pacific, faces an existential threat from rising sea levels, which could render the island uninhabitable within decades. However, due to the lack of a clear definition of L&D, Tuvalu cannot claim binding compensation for relocation costs or loss of cultural heritage under international law. Instead, it has to rely on bilateral agreements like the Australia-Tuvalu Falepili Union Treaty (2023), highlighting gaps in legal protections for climate-vulnerable nations.

c) Insufficient Institutional Mechanism

WIM is the primary vehicle of UNFCCC to deal with issues associated with L&D emerging from climate change hazards. While it has strengthened the financing mechanism, WIM struggles with several issues and challenges.

WIM operates both under UNFCCC and the Paris Agreement which has led to fragmented governance structure. It has weakened coordinated action on L&D policies, as recently highlighted during the COP26[25] discussions. The lack of clarity in institutional frameworks also leads to varying interpretations of key provisions, complicating decision-making processes. Apart from issues present in its governance structure, challenges also persist in its implementation capacity, financial support and availability of technical assistance. Since its inception, there has been little progress in transforming these frameworks into actionable, country-level measures. For instance, the Santiago Network[26] which was designed to provide technical expertise remains underfunded and operationally constrained. The reliance of these institutions on ad-hoc donor funding also limits its autonomy and effectiveness in terms of assistance provided to vulnerable states. Additionally, the current institutional mechanisms emphasize on reactive[27] measures rather than proactive strategies such as disaster reduction or preventive measures for slow onset events like sea-level rise and desertification.

Thus, the need of the hour is to streamline institutional mechanisms while strengthening its financial, operational and technical processes.

Compensation Mechanisms

Climate finance, comprising financial assistance to developing and underdeveloped countries for adaptation and mitigation measures as well as to deal with the L&D impact of climate-related risks, forms the core of international environmental negotiations. The UNFCCC, Kyoto

[24] Gewirtzman, J., Natson, S., Richards, J.A., Hoffmeister, V., Durand, A., Weikmans, R., Huq, S. and Roberts, J.T., 2018. Financing loss and damage: reviewing options under the Warsaw International Mechanism. *Climate Policy*, *18*(8), pp.1076-1086.

[25] UNFCCC Decision -/CP.26, Glasgow Climate Pact, https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf

[26] Ruiz-Campillo, X., 2024. Post-Paris agreement negotiations: A commitment to multilateralism despite the lack of funding. *Environmental Science & Policy*, *156*, p.103754.

[27] Carvosso, R., 2021. The reactive model of disaster regulation in international law and its shortcomings. *Leiden Journal of International Law*, *34*(4), pp.957-976.

Protocol as well as the Paris Agreement call for financial assistance from the developed states to the more vulnerable states. Article 11[28] of the UNFCCC provides for equitable financial mechanism for sustainable climate finance. Similarly, Article 9[29] of the Paris Agreement advocates for the provision of financial resources by developed country parties with respect to mitigation and adaptation measures. The financial compensation framework comprises two specific components – liability & compensation and risk management & insurance.

In pursuant to these legal provisions, several financial mechanisms have been established. The Global Environment Facility (GEF), established in 1991, is a multilateral family of funds, including the Least Developed Countries Fund, Special Climate Change Fund, Global Biodiversity Framework Fund etc. Over the last three decades, GEF has provided USD 25 billion[30] in financing and mobilized over USD 145 billion for country driven priority projects. In 2010, at COP16, the Green Climate Fund was established with the objective of expanding collective human action to respond proactively to climate change. The primary function of the fund is to allocate resources for low-emission and climate-resilient projects to vulnerable developing countries. At COP27, the Parties agreed to establish a new 'Fund for Responding to Loss and Damage', which was operationalized in COP28. This fund particularly targets the issue of L&D by compensating vulnerable states for damages and losses arising from natural disasters caused by climate change. This fund is expected to fill the gap left by previously established financial mechanisms.

Apart from compensation mechanisms under the UNFCCC framework, several insurance[s][31] and risk management tools and mechanisms have also been developed to counter risks arising from L&D associated with climate change. Risk transfer mechanisms in the form of climate risk insurance pools have been developed which provides financial protection for member states against natural disasters. The Caribbean Catastrophe Risk Insurance Facility[32] (CCRIF), developed on similar lines, has played a crucial role in limiting risks emerging from hazards like hurricanes for the Caribbean islands. A similar role is played by African Risk Capacity in Africa. Sovereign Climate Insurance[33] is also an alternative insurance mechanism utilized by various countries to minimize climate-related risks. The Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) under the World Bank provides Pacific island countries with disaster risk assessment and financing tools, including sovereign risk insurance. Finally, community-based microinsurance schemes have also been initiated by countries which target segments of the population. The PM Fasal Bima Yojana in India is a crop insurance scheme which provides compensation to farmers in case of crop damage. Such initiatives enable financial assistance to reach the grass root level to the ones who need it the most.

[28] Article 11 of UNFCCC, https://unfccc.int/resource/docs/convkp/conveng.pdf
[29] Article 9(1) of Paris Agreement states: "Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation in continuation of their existing obligations under the Convention."
[30] GEF Financing and Fund Mobilization - https://www.thegef.org/who-we-are
[31] Collier, S.J., Elliott, R. and Lehtonen, T.K., 2021. Climate change and insurance. *Economy and Society*, *50*(2), pp.158-172.
[32] Joyette, A.R., Nurse, L.A. and Pulwarty, R.S., 2015. Disaster risk insurance and catastrophe models in risk-prone small Caribbean islands. *Disasters*, *39*(3), pp.467-492.
[33] Vincent, K., Besson, S., Cull, T. and Menzel, C., 2018. Sovereign insurance to incentivize the shift from disaster response to adaptation to climate change–African Risk Capacity's Extreme Climate Facility. *Climate and Development*, *10*(5), pp.385-388.

While the presence of such compensation mechanisms indeed strengthens the vulnerable countries' capabilities to combat climate change, certain limitations inherent within the structure of this mechanism hinder their effectiveness. The over-dependence of these financial mechanisms on non-binding, voluntary donations is one of the major hurdles in achieving a sustainable and equitable financial mechanism. The goal of mobilizing USD100 billion[34] per year as promised under the Copenhagen Climate Summit in 2009 and reaffirmed by the Paris Agreement (2015) depends completely upon voluntary contributions by developed countries, especially OECD nations. The language used in Article 4 (3) of the text of the UNFCCC (1992) that provides for the mobilization of financial resources is not strictly binding in nature, using terms like "shall" without suitable enforcement mechanisms in place. The absence of enforcement mechanisms undermines the essence of principles integral to climate finance frameworks, such as the principle of Common but Differentiated Responsibilities (CBDR) outlined in Article 3(1) of the UNFCCC (1992). The absence of penalties in case of withdrawal or violation also hamper its efficacy. The withdrawal of the US[35] from the Paris Agreement and the Green Climate Fund under the Trump administration is a case in point[36].

Another obstacle in achieving an equitable climate finance framework is the persisting ambiguity surrounding the contributions, as the legal frameworks remain silent on the specific contribution required to be made by developed member states. This leads to arbitrary and vague commitments which do not directly translate to on-ground funding. Additionally, several states have allegedly inflated their climate finance numbers by including private investments or re-labelled official development assistance (ODA). For instance, the European Court of Auditors found that some EU member states labelled projects with minimal environmental benefits as climate-friendly spending. Investments by countries like Slovakia and Croatia were flagged in this report. This highlights the need for a uniform and standardized accounting as well as accountability framework.

Such challenges in the financing framework lead to highly unpredictable funding patterns for developing countries, forcing them to resort to debt, which worsens their already high debt burden. Additionally, the delayed availability of climate finance disproportionately affects grassroots communities, often resulting in the emergence of climate refugees. While they are displaced, they technically do not get recognized as "refugees" under international law and, thus, do not get the benefits of a refugee, making their living conditions even worse. According to World Migration Report (2024)[37], more than 216 million people across six continents will be on the move within their countries by 2050 in large part due to climate change with poorer regions like South Asia and Sub-Saharan Africa being the worst affected. Given the current state, having a predictable financing regime is the need of the hour to enable the underprivileged sections of the population combat climate change.

[34] Climate Finance and the USD 100 billion goal, https://www.oecd.org/en/topics/sub-issues/climate-finance-and-the-usd-100-billion-goal.html#:~:text=Close-,About,actions%20and%20transparency%20on%20implementation.

[35] On the U.S. Withdrawal from the Paris Agreement, https://2017-2021.state.gov/on-the-u-s-withdrawal-from-the-paris-agreement/

[36] "Trump signs executive order directing US withdrawal from the Paris climate agreement — again"; https://apnews.com/article/trump-paris-agreement-climate-change-788907bb89fe307a964be757313cdfb0

[37] World Migration Report, 2024 - https://digitallibrary.in.one.un.org/TempPdfFiles/28519_1.pdf

International Legal Liability for L&D

International legal liability for L&D focuses on assigning responsibility to nations for the adverse impacts of climate change, particularly those affecting vulnerable countries. It seeks to establish compensation mechanisms and ensure accountability under international law for historical and ongoing emissions.

a) Historical Responsibility

The concept of historical responsibility[38] is a cornerstone in the discourse on climate finance, rooted in the recognition that industrialized nations have contributed disproportionately to historical GHG emissions. This principle underpins the CBDR framework. The CBDR framework, established in 1992, states that countries have a shared responsibility for climate change and environmental degradation, but the responsibility is distributed in proportion to their historical contribution to the current crisis.

The principle has been central to the contentions between developed and developing countries. Major developing countries, such as India and China, contend that developed nations, including the USA and the UK, should bear the primary responsibility for combating climate change by providing financial assistance to the developing world, given their significant contribution to GHG emissions during the Industrial Revolution and the subsequent centuries. This argument also aligns with the polluter pay's principle[39]. On the other hand, developed nations have been reluctant to commit financial assistance, fearing that it could establish legal liability for the impacts of climate change. Such liability could set a precedent in international courts, potentially requiring them to compensate developing countries for every disaster linked to climate change. Additionally, they argue that major developing countries like India and China have been one of significant polluters in recent times, and thus, they too should take up their share of responsibility.

Thus, disagreements around the establishment of legal liability and state responsibility[40] have delayed the successful establishment of climate finance mechanisms which ultimately increase the potential risks faced by the poorer nations from climate change.

b) State Responsibility under International Law

One of the reasons for discussions around L&D to be so contentious is the developed world's concern that compensation for L&D could be misconstrued as an admission of legal liability, which could further trigger litigations and compensation claims on a larger scale. This concern was addressed by the liability and compensation clause referred to earlier. In this context, climate change has been stretching the boundaries of tort law and it becomes crucial to understand the deficiencies in the current legal liability framework.

[38] Rocha, M., Krapp, M., Guetschow, J., Jeffery, L., Hare, B. and Schaeffer, M., 2015. Historical Responsibility for Climate Change–from countries emissions to contribution to temperature increase. *Climate Analytics and Potsdam Institute for Climate Impact Research: Potsdam, Germany*.

[39] Khan, M.R., 2015. Polluter-pays-principle: The cardinal instrument for addressing climate change. *Laws*, *4*(3), pp.638-653.

[40] Mayer, B., 2014. State responsibility and climate change governance: A light through the storm. *Chinese Journal of International Law*, *13*(3), pp.539-575.

Two legal principles need to be considered while formulating an ideal legal accountability framework to ensure climate justice prevails. These are the precautionary principle[41] and the no-harm principle[42].

The precautionary principle embedded in the Rio Declaration (1992), establishes a foundation for implementing conservation measures even when the extent and impact of environmental damage caused by a specific activity remain uncertain or not fully determined. It also facilitates in formulation of a liability paradigm. One of the major challenges in establishing a liability framework[43] is the argument given by the developed world that they cannot be held liable for their share of emissions, at least till 1990, as the link between GHG emissions and global warming had not been conclusively proven till then. Their second argument asserts that the challenge of differentiating the effects of anthropogenic emissions from natural emissions should limit the extent of polluter liability. The precautionary principle has been able counter such arguments successfully by effectively reversing the burden of proof requirements. According to the principle, an economic agent is liable unless they can prove that their activities do not have adverse environmental implications.[44] The European Court of Justice upheld this interpretation of the principle.[45]

The other principle, called the 'no-harm' principle, can also be used to establish a legal foundation for state responsibility. According to the principle, in the context of environmental law, the states are required to prevent their activities from causing environmental damage to other states. This principle has been actively incorporated in various legal and policy instruments, especially the Stockholm Declaration (1972) and the Rio Declaration (1992). This principle forms the legal basis for the principle of state responsibility. Apriandi et al. (2022) have developed a framework which links the no-harm principle to the liability of states for climate change. They compare the legal governance of the global atmosphere with that of the high seas[46] and thereby attempt to extend the applicability of the no-harm principle to climate change issues. The high seas, governed under the principle of the common heritage of mankind, ensure that their resources and benefits are equitably shared and not monopolized, with states bearing obligations such as environmental preservation and equitable resource use. Similarly, the global atmosphere is a common concern of humankind, as stipulated by the United Nations General Assembly through Resolution 43/53, the Vienna Convention for the Protection of the Ozone Layer[47] (1985), and the UNFCCC (1992). By broadly interpreting the concept of the atmosphere, it can be analogized to the protection of common areas, similar to the approach applied to the high seas. Drawing this parallel, the preamble of the 1985 Vienna Convention on the Protection of the Ozone Layer, which incorporates Principle 21 of the 1972 Stockholm

[41] Fisher, E.C., Jones, J.S. and von Schomberg, R. eds., 2006. Implementing the precautionary principle: perspectives and prospects.
[42] Mayer, B., 2016. The relevance of the no-harm principle to climate change law and politics. *Asia Pacific Journal of Environmental Law*, *19*(1), pp.79-104.
[43] Faure, M. and Peeters, M. eds., 2011. *Climate change liability*. Edward Elgar Publishing.
[44] Cf. Cf. RODA VERHEYEN, CLIMATE CHANGE DAMAGE AND INTERNATIONAL LAW—PREVENTION DUTIES AND STATE RESPONSIBILITY 75 (2005)
[45] Case C-127/02, Landelijke Vereniging tot Behoud van de Waddenzee v. Staatssecretaris Van Landbouw, Natuurbeheer en Visserij, 2004 E.C.R. I-7405, 2 C.M.L.R. 31.
[46] Pendleton, G.D., 2005. State responsibility and the high seas marine environment: a legal theory for the protection of seamounts in the global commons. *Pac. Rim L. & Pol'y J.*, *14*, p.485.
[47] Text of Vienna Convention – https://ozone.unep.org/sites/default/files/2019-12/The%20Ozone%20Treaties%20EN%20-%20WEB_final.pdf

Declaration, along with the intrinsic rules outlined in the preamble of the UNFCCC, can serve as a legal foundation for applying the no harm principle to climate change and atmospheric issues more generally. Thus, the application of this principle can therefore make states liable for their contribution to global environmental damage.

Despite incorporating such principles in legal frameworks, the global community have failed to address the issue of ascertaining legal liability and responsibility thereby hindering effective L&D resolutions. This is on account of various challenges that surface while determining legal liability. First, climate change is a very complex phenomenon, and as a result, establishing a direct causal link between economic activities and global warming and, consequently, to a specific climate-induced loss becomes difficult. This, coupled with the inability to identify specific sources of harm due to multiple contributors' involvement in global warming, makes determining liability highly challenging. Second, the absence of a legal framework with explicit liability mechanisms in international agreements such as the UNFCCC and the Paris Agreement further complicates the attribution of responsibilities. Additionally, the absence of a universal definition of L&D due to contentions by several parties have continued to hinder the process of establishing a liability framework. Third, legal frameworks like the Stockholm Declaration (1972) or Rio Declaration (1992) fail to clarify whether the state responsibility outlined in them constitutes absolute or strict liability. International practices such as the Trail Smelter Arbitration, Corfu Channel, and Gut Dam Arbitration have not provided clarity on this matter either. These cases show that responsibility is often determined by specific circumstances. For example, Canada accepted responsibility for pollution in the Trail Smelter case without setting a precedent for absolute liability, and Albania’s failure to warn British ships of mines in the Corfu Channel case was not treated as strict liability.

However, several scholars like Voigt (2008), argue that the fundamental responsibility theory, as applied to cases of nuclear activity and damage in space to hold states absolutely liable, could be extended to GHG emissions.[48] The 1972 Liability Convention holds states absolutely liable for damage caused by space objects, and nuclear tests often result in harm, even when conducted legally. Similarly, these consequences could also be applied to GHG emissions that have been legally emitted. However, in issues like global warming and climate change, the imposition of absolute liability will lead to severe resistance from states, especially without the backing of any existing legal framework. Finally, the existing international environmental laws primarily aim to regulate state actions, emphasizing on obligations to mitigate emissions or prevent harm rather than address broader consequences of their actions. This narrow approach limits the applicability of strict liability in climate cases. For instance, agreements like Kyoto Protocol or Paris Agreement fail to address liabilities for unintended consequences such as biodiversity loss or damage to cultural heritage or forced displacement.

Such issues have hindered the process of determining state responsibility, and developed countries have made use of such legal loopholes and vagueness to evade legal liability and protect themselves from countless litigation. This has also impacted the poorer and vulnerable nations pushing them towards an existential crisis in light of climate change.

[48] Christina Voigt, “State Responsibility for Climate Change Damages,” Nordic Journal of International Law 77, no. 1 (2008): 8

L&D outside UNFCCC Framework

Various initiatives, mechanisms and legal actions have been undertaken outside the UNFCCC framework by various parties across the world. These have emerged due to the inherent limitations of the mechanisms under the UNFCCC framework, including non-binding commitments, funding constraints and exclusion of liability clauses, as highlighted in previous sections.

Legal mechanisms include independent climate litigation against governments, corporations and other entities and the crucial role played by international courts in providing climate justice and shaping international environmental law. According to the Global Climate Litigation Report[49] (2023), the number of climate change cases have more than doubled from 884 in 2017 to 2,180 in 2022. Cases like the Exxon Valdez Oil Spill[50] (1989) and the Volkswagen Dieselgate Scandal (2015) highlight the importance of climate litigation in L&D. These cases demonstrate the evolving landscape of climate litigation and environmental accountability. They highlight the application of principles like polluter pays, corporate liability, and transboundary harm in ensuring compensation for L&D. Most of these cases involve corporations and private entities that have been declared guilty and were made to provide compensation for their actions. In such cases, negligence[51] or nuisance[52] doctrines or provisions for corporate liability[53] were suitably invoked. However, there have been very limited cases involving the government and the state, primarily due to the ongoing debate about determining the culpability of the state, as discussed earlier.

Apart from legal mechanisms, regional frameworks[54] have been put in place to combat climate change. Such frameworks have an important function in enhancing individual country's climate resilience. First, they assist in strengthening disaster risk reduction measures by providing financial and technical assistance to member countries. For example, the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) establishes regional coordination for managing disasters like typhoons, floods, etc., in southeast Asia. This framework enabled the ASEAN states to facilitate cross-border disaster response and relief efforts during Typhoon Haiyan (2013), thereby quickly recovering from the disaster. Second, they play a crucial role in the mobilization of climate finance. This is evident in the various recent initiatives launched like the EU Green Deal[55] or the EU Carbon Border Adjustment Mechanism[56] (CBAM). Funds established for resource pooling, like the CARICOM Development Fund for the Caribbean nations, also play a similar role. Third, they develop legal and policy frameworks to protect populations displaced by climate-related events. The Kampala Convention of the African Union provides legal protection to internally displaced persons (IDP) due to environmental disasters like desertification. Finally, these regional

[49] Global Climate Litigation Report, 2023, https://www.unep.org/resources/report/global-climate-litigation-report-2023-status-review
[50] In Re the Exxon Valdez, 296 F. Supp. 2d 1071 (D. Alaska 2004)
[51] Weisbach, D., 2011. Negligence, strict liability, and responsibility for climate change. *Iowa L. Rev.*, *97*, p.521.
[52] Lin, A.C. and Burger, M., 2018. State public nuisance claims and climate change adaptation. *Pace Envtl. L. Rev.*, *36*, p.49.
[53] Chua, J.F., 2016. Corporate liability and risk in respect of climate change. *NZJ Envtl. L.*, *20*, p.167.
[54] Biswas, R.R. and Rahman, A., 2023. Adaptation to climate change: A study on regional climate change adaptation policy and practice framework. *Journal of Environmental Management*, *336*, p.117666.
[55] Fetting, C., 2020. The European green deal. *ESDN Report, December*, *2*(9).
[56] Völler, P., 2023. *Can CBAM solve the EU ETS carbon leakages?-A Stakeholder Perspective* (Bachelor's thesis, University of Twente).

groupings and organizations further the cause of vulnerable nations by advocating for climate justice. For instance, advocacy by groups like AOSIS, CARICOM and PIF have contributed to the establishment of the L&D Fund in COP27. However, these regional frameworks too suffer from the typical deficiencies including dependence on external and voluntary donations, fragmented approach to climate risk mitigation and lack of legal mechanisms to enforce compliance among member states.

Another pillar of support for the fight against climate change arises from aid[57] and philanthropy. While many developed countries provide climate finance through bilateral agreements to developing countries executed via existing development agencies, multilateral institutions like the World Bank and the International Monetary Fund (IMF) provide various financial mechanisms to deal with risks arising from climate change. Internationale Klimaschutzinitiative[58], a German climate initiative has provided over Euro 4.5 billion for more than 750+ mitigation and adaptation projects since its establishment in 2008. Similarly, the International Climate and Finance Initiative, a Norwegian initiative, has pledged USD 350 million yearly towards reversing the damage to tropical rainforests. On the multilateral front, the IMF using its Resilience and Sustainability Facility[59] (RSF) provides long-term financing to countries undertaking reforms to mitigate climate-related risks. For example, in June 2024, the IMF approved a USD 321 million RSF arrangement for Madagascar to enable them to strengthen their climate change adaptation and resilience. The World Bank too has similar mechanisms like the Climate Support Facility which was launched in 2020 with an aim to integrate climate change with long term development planning. These are also closely aligned with the priorities of the World Bank Group's Climate Change Action Plan 2021-2025 and its approach to Green, Resilient and Inclusive Development (GRID).

Despite the presence of such multitude of alternative forum and financial mechanisms, their fragmented approach towards dealing with climate-related risks hinder their efficacy. Such fragmented governance suffers from inconsistencies in recognizing and redressing climate-related issues. Additionally, such non-UNFCCC frameworks often focus on immediate economic and humanitarian losses and fail to provide for non-economic losses. For instance, the Sendai Framework for Disaster Risk Reduction focuses on economic and physical resilience but does not explicitly cover cultural or psychological damages. Indigenous tribes in regions like Arctic and Amazon have been losing their tribal knowledge systems however, they have received limited attention. Such frameworks are also reactive in nature and work towards recovering from specific climate-related hazards like cyclones, hurricanes or droughts. However, they fail to adopt a holistic approach wherein emphasis needs to be given to global warming and climate change as a global crisis with implications for the entire world instead of reacting to specific events. Finally, such an approach lacks integration with the human rights framework as treaties related to human rights, like the International Covenant on Civil and Political Rights (ICCPR), do not explicitly recognize climate-related claims. Their involvement in displacement-related cases caused by climate change has also been limited. Courts and

[57] Eyckmans, J., Fankhauser, S. and Kverndokk, S., 2016. Development aid and climate finance. *Environmental and resource economics*, *63*, pp.429-450.

[58] Butzengeiger-Geyer, S., Christensen, J., Poralla, M., Singh, A. and Schnurr, J., 2022. Experiences from the German International Climate Initiative (IKI). In *Handbook of International Climate Finance* (pp. 213-241). Edward Elgar Publishing.

[59] Hicklin, J., 2024. *The IMF's Resilience and Sustainability Trust: How Conditionality Can Help Countries Build Resilience* (No. 324). Center for Global Development.

tribunals have been reluctant to extend human rights obligations to cover L&D claims comprehensively. Thus, while such forums have addressed L&D-related concerns to an extent in the absence of a fully functional UNFCCC regime, they, too, suffer from several deficiencies which need course correction.

OPPORTUNITIES FOR STRENGTHENING LEGAL FRAMEWORK FOR L&D

While the existing L&D framework attempts to address the impacts of climate change, significant opportunities remain to strengthen it by enhancing accountability, improving financing mechanisms, and bolstering institutional support to ensure effective implementation and protection for vulnerable communities.

Establishment of a Dedicated International Legal Framework

The need of the hour in international climate discourse is to establish a strong, dedicated international legal framework without any ambiguity regarding definitions and provisions. Given that an L&D fund has been specifically operationalized for this purpose in COP28, it becomes essential to establish a universal definition of L&D which specifically outlines the key components of L&D in a precise manner. An L&D Protocol, on the lines of the Kyoto Protocol that outlines specific obligations for countries, funding commitments and mechanisms to address both economic and non-economic damages would certainly propel global efforts towards combating climate change.

While such a dedicated international legal framework is desirable, lack of consensus and political will among nations remain a key impediment. Additionally, the current legal framework suffers from multiplicity and duplicity of legislation, leading to biases, contradictions and ambiguity. For instance, while the "Reducing Emissions from Deforestation and Forest Degradation in Developing Countries" (REDD+) program under UNFCCC allows forests to be used for carbon offset credits, the Convention for Biological Diversity (CBD) opposes it as such practices may lead to monoculture that harm biodiversity. Another interesting example is the approach of the USA towards climate change. After signing the Kyoto Protocol in 1998, the USA refused to ratify it and withdrew in 2001. It later joined the Paris Agreement in 2015, withdrew in 2020 and rejoined in 2021. Again, in 2025, as part of one of the first moves of his second tenure, President Trump signed an executive order directing the nation's withdrawal from the agreement. This constant flux in the USA's position has led to policy inconsistencies and fragmented obligations, making climate negotiations complicated.

Thus, as highlighted, it is difficult to establish such a dedicated framework within the current regime. The overhaul of the existing international climate governance architecture is the need of the hour. While transitioning to such a system poses significant challenges, short-term strategies, which involve leveraging regional alliances such as the V20 Climate Vulnerable Forum and pooling resources via voluntary pledges, can assist in tiding over such challenges. Additionally, efforts should be aimed towards the consolidation of existing mechanisms and institutions like UNFCCC and Green Climate Fund and the creation of transient legal structures that gradually shift towards a unified system. The new regime must prioritize transparency, accountability and fairness backed by laws which are concise, precise and predictable. Such a legal system should have the capability to subsume regional and national laws and policies aimed towards combating climate change. It should also be ensured that such a framework

incorporates legally binding accountability tools, including financial penalties, arbitration mechanisms and compliance monitoring.

However, such a framework should be developed through consensus-driven negotiations where countries recognize their role and responsibility towards global commons. It is imperative for states to rise above their geopolitical interests and acknowledge the overarching need for such a framework as climate change transcends borders, and only collective action can ensure intra-generational and inter-generational sustainability.

Establishment of Specialized Dispute Resolution Mechanism

A robust dispute resolution mechanism is necessary for resolving disagreements associated with L&D, particularly related to funding obligations, liability claims, and equitable resource distribution. The growing demand for climate finance from developed to developing nations in the absence of any robust accountability mechanism has necessitated the establishment of such a specialized climate tribunal. Such a mechanism should have jurisdiction over member states, corporations, non-governmental organizations and affected communities. This could bridge the existing legal and procedural gaps created due to the existing patchwork and fragmented approach adopted in resolving climate-related disputes.

However, such a proposal is likely to face political resistance from countries due to fears of infringement on sovereignty. Additionally, independent and continuous financing of such mechanisms not based on voluntary contributions is necessary to prevent unnecessary politicization and bias in the system, thereby upholding climate justice.

Several confidence-building measures could be adopted to ensure support from countries for such a mechanism. First, a phased approach could be undertaken, starting with voluntary participation and transitioning to binding commitments once political trust is built. It could be modelled on the lines of existing institutions like the World Trade Organization Dispute Settlement Body which relies on consensus-driven enforcement, reducing opposition to compliance mechanisms. Second, regional coalitions like the African Union and V20 Climate Vulnerable Forum should be involved so that the vulnerable countries could have an equal voice in its functioning. Third, incentives could be provided for participating countries. For instance, providing priority access to L&D funds for states complying with dispute resolutions or provision of lower borrowing costs from international institutions like the World Bank or IMF. Finally, widespread multi-stakeholder representation in dispute settlement bodies should be ensured to eliminate the perception of bias to prevent deadlock-type situations as witnessed in the case of the WTO Appellate Body crisis.

Such an institution could also be supplemented by establishing a neutral Global Climate Ombudsman office to mediate disputes and provide recommendations in L&D cases. Its key functions could include investigating claims from affected countries or communities and advising on fund allocation and policy reforms. It could also recommend cases to be taken up by the climate tribunal. Establishing such an ombudsman could act as a bridge between various governments, international bodies and grassroots level organizations.

Global Climate Reparations Framework

The establishment of such a global climate reparations framework assists in addressing the historical responsibility of developed nations for their disproportionate contribution to climate

change. In international law, reparations comprise restitution, compensation, rehabilitation, satisfaction and guarantees of non-repetition. In this context, reparation programs are both backward-looking and forward-looking. While it enables developed countries to compensate for the L&D caused by their activities in the past, it also seeks to strengthen societies and communities to become resilient to climate-related shocks in the future.

The proposal of a reparations framework finds support within established principles of international law. Legal principles like the polluter-pays principle and no-harm rule already create implicit obligations on states to address transboundary harm caused by their actions. Cases like the Trail Smelter Arbitration (1938) and Nauru v. Australia (1992) indicate the possible feasibility of such reparations by establishing legal precedents for the creation of such a reparations framework. Thus, developing a binding treaty or protocol specifying liability and reparation mechanisms which incorporate such principles of international law is necessary. However, political resistance by developed countries could pose a risk to its smooth implementation and functioning. Such resistance arises from fears of unlimited liability and financial burden that could possibly arise.

Confidence building measures should be undertaken to ensure all countries participate in such a framework. Adoption of a phased approach for its implementation, which starts from voluntary pledges and transitions to binding commitments, could enable the gradual development of political trust. Incentives such as preferential trade norms, low-cost borrowing and access to technology transfer programs could encourage the participation of developed nations. Additionally, the framework should aim to incorporate innovative financing mechanisms like carbon taxes, reparation bonds for long-term financing or green funds pooled by multinational corporations. Utilization of non-monetary reparations—support for preservation of indigenous knowledge systems and cultural heritage, transfer of green technology and capacity building initiatives and natural restitution—could also enhance cooperation among nations, creating long-term partnerships. While such measures could gradually develop political trust among member states, limiting dependence on voluntary contributions would ensure the sustainability of the reparations framework.

Climate-specific Migration Treaties

An alternative to climate finance in the human-rights based discourse of climate change would be to implement climate-specific migration treaties especially for the most vulnerable nations like the SIDS. This is necessary as the 1951 United Nations Refugee Convention and its 1967 Protocol do not recognize environmental displacement as a valid basis for refugee status. However, creating and enforcing such treaties comes with several challenges. For instance, most countries are reluctant to expand refugee definitions, fearing it could lead to increased migration pressures and security concerns. Without a clear legal framework to define climate refugees, such treaties may face resistance or limited adoption at the international level.

The recently signed Australia-Tuvalu Falepili Union treaty exemplifies the manner in which climate-specific treaties could fructify. Under the treaty, Australia has committed to Tuvalu's safety – including through a special visa arrangement for Tuvalu citizens to migrate to Australia and by uplifting its development assistance and support for Tuvalu's climate adaptation efforts. Similar initiatives include New Zealand's "Pacific Access" visa category and Samoa quota resident visa which enable people from the Pacific to move to New Zealand permanently. While such agreements demonstrate practical progress, their scalability remains uncertain.

Replicating them globally may face hurdles, as wealthier nations might resist binding obligations to resettle climate migrants, citing concerns about domestic resources and social integration.

Such treaties and initiatives could help ensure that "climate refugees" receive legal recognition under international law. Establishing funding mechanisms for the resettlement of climate refugees may also provide a more acceptable form of climate reparations for developed nations. However, creating long-term financial mechanisms to sustain such programs may be difficult, as most migration initiatives rely on voluntary contributions rather than binding funding mandates. This could lead to underfunded programs and leave migrants vulnerable. Additionally, ensuring equitable burden-sharing among nations could be challenging, as some countries may refuse to take responsibility, leaving a disproportionate burden on a few nations.

Despite these challenges, such treaties remain a critical step toward addressing the humanitarian consequences of climate displacement. With careful negotiations, regional cooperation, and sustainable funding models, they have the potential to provide climate-vulnerable communities with legal protection and stable futures.

CONCLUSION

This article makes several key contributions to the discourse on L&D in international climate law. First, it provides a comprehensive legal analysis of the evolution of L&D frameworks, tracing its conceptual and institutional development from early proposals of the late 20th century to the latest COP decisions. Second, it identifies critical legal and structural deficiencies, including a lack of clear definitions, issues in assigning liability, enforcing financial commitments and establishing a robust international compensation regime. Third, the article proposes pragmatic and innovative solutions aimed at strengthening the L&D framework, including a dedicated legal protocol, human-rights-based approaches, and specialized dispute resolution mechanisms, offering actionable pathways for enhancing climate finance and accountability.

While these contributions provide a strong foundation for furthering L&D discourse, time remains the most critical factor. The accelerating impacts of climate change necessitate urgent policy response and globally coordinated action to address these challenges. Over the last few years, in response to repeated calls for action by various NGOs like Greenpeace International and Climate Action Network, some progress has been witnessed on this front. However, the current L&D framework within the Paris Agreement (2015) or otherwise contains numerous loopholes and shortcomings which call for strengthening international environmental laws. While this article highlights the progress made, it also underscores the need for further reforms to strengthen our fight against climate change. Building on the proposed reforms, further research should explore alternative legal frameworks which strengthen legal obligations, incorporate equitable and sustainable compensation mechanisms and integrate L&D framework with human rights and migration policies. It is also necessary to explore mechanisms, both within and outside the international judicial framework, to ensure adequate enforcement of accountability mechanisms.

As climate change accelerates, nations must move beyond debates and collectively undertake actionable, enforceable measures to protect vulnerable populations. The proposed reforms provide a solid foundation for climate justice. However, their success depends on political will

and global cooperation. By strengthening the L&D regime, it would be possible not only to mitigate climate-induced risks but also to secure a sustainable and equitable future for generations to come.

REFERENCES

Apriandi, M. e. a., 2022. Exercising No Harm Rule: Claims for Damage and Loss Due Climate Change Effects. *Sriwijaya Law Review,* pp. 174-188.

Voigt, C., 2008. State Responsibility for Climate Change DamagesN. *Nordic Journal of International Law,* pp. 1-22.

Eyckmans, J., Fankhauser, S. and Kverndokk, S., 2016. Development aid and climate finance. *Environmental and resource economics*, *63*, pp.429-450.

Butzengeiger-Geyer, S., Christensen, J., Poralla, M., Singh, A. and Schnurr, J., 2022. Experiences from the German International Climate Initiative (IKI). In *Handbook of International Climate Finance* (pp. 213-241). Edward Elgar Publishing.

Hicklin, J., 2024. *The IMF's Resilience and Sustainability Trust: How Conditionality Can Help Countries Build Resilience* (No. 324). Center for Global Development.

Biswas, R.R. and Rahman, A., 2023. Adaptation to climate change: A study on regional climate change adaptation policy and practice framework. *Journal of Environmental Management*, *336*, p.117666.

Fetting, C., 2020. The European green deal. *ESDN Report, December*, *2*(9).

Völler, P., 2023. *Can CBAM solve the EU ETS carbon leakages?-A Stakeholder Perspective* (Bachelor's thesis, University of Twente).

Weisbach, D., 2011. Negligence, strict liability, and responsibility for climate change. *Iowa L. Rev.*, *97*, p.521.

Lin, A.C. and Burger, M., 2018. State public nuisance claims and climate change adaptation. *Pace Envtl. L. Rev.*, *36*, p.49.

Chua, J.F., 2016. Corporate liability and risk in respect of climate change. *NZJ Envtl. L.*, *20*, p.167.

Christina Voigt, "State Responsibility for Climate Change Damages," Nordic Journal of International Law 77, no. 1 (2008): 8

Kotz, M., Levermann, A. & Wenz, L. The economic commitment of climate change. *Nature* **628**, 551–557 (2024)

Gewirtzman, J., Natson, S., Richards, J.A., Hoffmeister, V., Durand, A., Weikmans, R., Huq, S. and Roberts, J.T., 2018. Financing loss and damage: reviewing options under the Warsaw International Mechanism. *Climate Policy*, *18*(8), pp.1076-1086.

Broberg, M. and Romera, B.M., 2020. Loss and damage after Paris: more bark than bite?. *Climate Policy*, *20*(6), pp.661-668.

Tan, K.C., 2023. Climate reparations: Why the polluter pays principle is neither unfair nor unreasonable. Wiley Interdisciplinary Reviews: Climate Change, 14(4), p.e827.

Mayer, B., 2017. Climate change reparations and the law and practice of state responsibility. Asian journal of international law, 7(1), pp.185-216.

Miles, W.J. and Swan, N.K., 2017. Climate change and dispute resolution. Disp. Resol. INT'l, 11, p.117.

Osofsky, H.M., 2012. Climate change and dispute resolution processes. In *International Law in the Era of Climate Change*. Edward Elgar Publishing.

Berchin, I.I., Valduga, I.B., Garcia, J. and De Andrade, J.B.S.O., 2017. Climate change and forced migrations: An effort towards recognizing climate refugees. *Geoforum*, *84*, pp.147-150.

Ahmed, B., 2017. Who takes responsibility for the climate refugees?. *International Journal of Climate Change Strategies and Management*, *10*(1), pp.5-26.

Hovi, J., Skodvin, T. and Aakre, S., 2013. Can climate change negotiations succeed?. *Politics and Governance*, *1*(2), pp.138-150.

Bagozzi, B.E., 2015. The multifaceted nature of global climate change negotiations. *The Review of International Organizations*, *10*, pp.439-464.