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**LOSS AND DAMAGE
AND CLIMATE LITIGATION:**

HOW CAN THE MALDIVES AND OTHER SMALL ISLAND DEVELOPING STATES (SIDS) POSITION FOR GREATER
CLIMATE ACTION?

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ABBREVIATIONS

AOSIS	Alliance of Small Island States
COP	Conference of the Parties
CRA	Credit Rating Agencies
ENSO	El Niño-Southern Oscillation
ESG	Environmental, Social, and Governance
FAR	First Assessment Report
FDI	Foreign Direct Investment
FP	Funding Proposal
GBF	Global Biodiversity Framework
GCF	Green Climate Fund
GDP	Gross Domestic Product
GHG	Greenhouse Gas
ICT	Information, Communication, Technology
IISD	International Institute for Sustainable Development
INC	Intergovernmental Negotiating Committee
ICJ	International Court of Justice
IOD	Indian Ocean Dipole
JRC	Joint Research Centre
IPCC	Intergovernmental Panel on Climate Change
L&D	Loss and Damage
MoF	Ministry of Finance
NDC	Nationally Determined Contribution
NGO	Non-governmental organization
NYSE	New York Stock Exchange
PISFCC	Pacific Island Students Fighting Climate Change
SIDs	Small Island Developing States
SLR	Sea Level Rise
SROCC	Special Report on the Ocean and Cryosphere in a Changing Climate
UNCBD	United Nations Convention on Biodiversity Diversity
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	Nations Framework Convention for Climate Change
UNGA	United Nations General Assembly
V20	Group of Vulnerable Twenty
WIM	Warsaw International Mechanism
WYCJ	Worlds Youth for Climate Justice

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F O R E W O R D

The latest IPCC Report^[1] presents irrefutable evidence that human actions have been the primary catalysts for global warming. As the planet heats up, the consequences are far more acute for Small Island Developing States (SIDS), despite their negligible contributions to global emissions.

In the interconnected world that we inhabit, the compounding crises of socio-economic meltdowns, governance deficits, and health threats – exacerbated by the impacts of climate change – blanket the future with uncertainty, especially for the most vulnerable. The reality they face is not one of inconvenience but of existential peril.

So, the world must address the loss and damage inflicted on these small island nations. This is at the core of UNDP's Climate Promise, through which we work with countries to reduce their greenhouse gas emissions and meet the intensifying challenges of climate change.

Current global financing for adaptation does not come close to meeting current needs. This constrains the implementation of adaptation options, especially for countries like the Maldives. As climate-related damages mount, the quest for a just resolution becomes more urgent. Litigation is emerging as a potent tool, with climate justice increasingly finding its voice in courts across the world. People, communities, and nations turn to the law to urge governments and the corporate sector to take responsibility. To hear them, and to act.

On 29 March 2023, the United Nations General Assembly took the unprecedented step of adopting a resolution^[1] proposed by the island nation of Vanuatu to seek an opinion from the International Court of Justice on the legal obligations of nations to protect climate systems and people affected by the climate crisis.

Such litigation underscores a collective realization: that our shared future is non-negotiable and that we need accountability far beyond pledges of support. When the stakes are so high, and when entire cultures, histories, and futures of nations are at risk, the law is a powerful tool to ensure accountability.

The intersection of loss and damage and climate litigation paves the way for SIDS and other vulnerable states to advocate for more robust and just climate action. As this publication reveals, by May 2022, there were over 2,000 climate litigation cases, either ongoing or closed, filed across more than 43 countries, in international and regional courts.

This duality can trigger a pivotal shift in global climate discourse, positioning countries like the Maldives not as victims but as nations at the forefront of change. Their struggles and resilience offer invaluable lessons and strategies, pushing for a world that listens, learns, and acts.

When faced with adversity, humanity has the tenacity to rally, innovate, and adapt. Through policy dialogues and exchange platforms, facilitated by this publication, we can bridge knowledge gaps, foster discussions, and create alliances. I want to thank its authors, who provided practical, action-oriented recommendations. While primarily intended for the Maldives, their insights also hold relevance for other nations.

^[1]<https://www.ipcc.ch/report/sixth-assessment-report-cycle/>

^[2]<https://www.icjij.org/sites/default/files/case-related/187/187-20230419-PRE-01-00-EN.pdf>



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EXECUTIVE SUMMARY

The Maldives is no stranger to the challenges of the climate crisis. As the world edges closer to reaching 1.5°C before 2030, the Maldives and other Small Island Developing States (SIDs), are increasingly confronted with an alarming and imminent prospect of breaching a critical threshold beyond which adapting to climate change becomes impossible. The loss and damage from the collapse of their biomes and biodiversity, on which their subsistence depends, is increasingly becoming inevitable. Unpredictable weather events continue to increase in frequency and intensity: shorelines continue to erode at a sustained rate, and intense and widespread coral bleaching is leaving behind a trail of damage for communities and governments to address and recover from. Extreme and slow onset events are testing the resilience of small communities, straining their ability to recover.

As ecosystems crumble and livelihoods hang in the balance, SIDs are now at the forefront of a burgeoning movement, harnessing the power of international climate change litigation to address the profound loss and damage they have been experiencing.

The UN General Assembly's decision to seek an advisory opinion from the International Court of Justice (ICJ) on the responsibilities of developed countries to address climate change is a significant development for SIDs. The ICJ's opinion, and the recent CoP27 decision to create a specific fund for loss and damage and to establish a new stream of financing in support of climate vulnerable countries could provide much-needed impetus on the long-standing quest of developing countries to address the loss and damage caused by climate change. While the ICJ's decision and the establishment of a loss and damage fund and arrangements are poised to take several years, SIDs are already actively seeking consensus to formulate a strategic framework that could capitalize on a shared set of challenges and leverage these into pivotal development pathways that would help countries reimagine adaptation in an uncertain future.

This publication presents an overview of the inherent linkages of climate litigation and loss and damage in redressing climate change, while also presenting the latest global state of play on both issues relevant from a SIDs perspective. We find that while developing countries are exploring international treaties for financial compensation against loss and damage from developed countries, in different parts of the world, national laws are also being tested to initiate climate action. This has already energized an unprecedented movement to increase domestic climate accountability.

Governments and corporations are evaluating what this means for state and business conduct. Unsurprisingly, losses and damages are experienced differently by various groups of people. It affects people at increased and higher climate risk more than others and climate litigation is increasingly used by them as a tool to redress the issue. The fact that developing countries are testing the limits of international and national laws are a testament that losses and damages are not comprehensively addressed by current financial, governance and institutional arrangements, and future climate finance should support countries to develop internal frameworks to address climate justice while also strengthening adaptation and mitigation capabilities.

We hope the ideas presented in this report will be useful for further discussions on loss and damage and climate litigation for SIDs countries. As we navigate the crucial decade for climate action, it is vital that the international community, policymakers, and legal experts recognize the unique challenges faced by the Maldives with and other SIDs. We must collectively advocate for the integration of climate justice principles into international legal frameworks. Together, we can forge a path forward that drives ambitious climate action, accelerates resilience-building efforts, and secures a just and sustainable future for all.

1. INTRODUCTION

The climate emergency we live in confronts and threatens a variety of established individual and collective rights. As we gain clarity about the linkages between action and inaction on climate-related matters and the violation of those specific rights, we are also building expectations from different stakeholders. Individuals and communities from vulnerable and exposed countries are already experiencing harms to their human rights. The persistent disregard to such expectations has contributed to exacerbate our current crisis in the past decades, at least since the threat of climate change has been known to society. It has also contributed to the decrease in the global Human Development Index value for two years in a row and added in an interconnected manner to other crises such as the COVID-19 pandemic, the global financial crisis and the looming global food crisis (Conceição, 2022).

Back in 2015, liability risks were expected to materialise decades in the future. However, by 31 May 2022, there were already over 2,000 ongoing and closed cases linked to climate change (see figure 1). These have included both procedures to block or push for climate action, with the latter dominating the statistics (Setzer and Higham, 2022). Most of these cases were initiated in the US (1,426), with the remaining (576) filed in 43 other countries and before 15 regional or international courts.



Figure 1 Number of cases on the national, regional and international level referred to courts.



Note: In total 2,002 cases out of 44 countries have been formally registered. In the 576 cases outside the USA, 70% were against a government. Source: Setzer & Higham (2022).

With growing and more evident losses from climate change, expectations are quickly turning into responsibility in national legal systems to bring about climate action. The breach of such climate-related responsibilities and violation of various rights have been reaching national courts that require a decision in the civil, administrative or even criminal spheres (Setzer and Higham, 2022). As a result of legal practices developing through courts' precedents in favour of climate action, climate litigation risks – or climate liabilities – have become increasingly more material and the risks associated with ignoring such liabilities for companies and governments are now substantial (see Box 1: Definition of climate litigation and Box 2: Litigation Example).

The trend is expected to continue upward as the science behind the attribution of climate hazards to human-induced climate change advances and the interplay between climate and national laws establishes precedents globally. Thus, science is central to legal debates on the causal links between human activities, global climate change, and impacts on human and natural system. While linked to advances in international law and commitments at the climate Conference of the Parties (COP), trends in climate litigation are advancing as more accessible tools are made available to national courts to respond to one of the largest crises of our times.

BOX 1: DEFINITION OF CLIMATE LITIGATION

Climate litigation is an increasingly global phenomena within the area of environmental law. It is being used to hold countries and public corporations to account for their climate mitigation efforts and historical contributions to the problem of climate change. As climate change touches on a vast range of law and policy issues in the fields of environment, natural resources, energy, land use, as well as securities and financial regulation, to determine whether a case has climate relevance and can be considered as climate litigation.^[1]

“They [environmentalists, affected people & lawyers] request that the courts look beyond statutes and regulations to pile on additional climate duties that the elected branches of government have deliberately not imposed.”

*Prof. Donald J. Kochan
George Mason University in 2021*

^[1] <https://climate-laws.org/methodology-litigation> (Assessed online February 2023)

BOX 2: LITIGATION EXAMPLE AGAINST A CORPORATION: MILIEUDEFENSIE V ROYAL DUTCH SHELL

Formulated under the International Human Rights Law this case between the accused Shell plc. and the plaintiffs Friends of the Earth and others was heard by district court of The Hague in the Netherlands. In May 2021, the court ordered Shell plc. to decrease its global carbon emissions by 45% by 2030 compared to 2019 levels. This litigation case is considered as the first major climate change litigation ruling against a corporation.

Facts:

-Following the signing of the Agreement, Shell issued a statement that it would address its emissions, releasing a plan that called for reductions of its carbon dioxide emissions by 30% by 2035, compared to 2016 levels, and by 65% by 2050.

-Environmental activists^[2] saw this plan as far slower than the requirements set out by the Paris Agreement.

- Plaintiffs arguing that Shell could change its business model to invest more in renewable energy, and reach an emissions reduction target of 45% by 2030.
- During the trial, Shell issued a pledge in February 2021 to be net-zero by 2050.
- Plaintiffs considered Shell's pledge to be inadequate as the company would fail to meet the Paris Agreement goals.

Judgements:

- The Hague District Court held Shell's current sustainability policy was insufficiently "concrete".
- The court ordered that Shell must reduce its global emissions by 45% by 2030 compared to 2019 levels; the reduction targets include emissions from its suppliers and buyers.

Significance:

- The case was considered a landmark ruling in environmental law related to climate change - the first major suit to hold a corporation to the tenets of the Paris Agreement.
- The impact of the court's decision was considered by legal experts to be strengthened due to its reliance on human rights standards and international measures on climate change.
- Shell stated it would appeal the ruling^[3].

^[2] Friends of the Earth, Greenpeace, Fossielvrij, Waddenvereniging, Both ENDS, Jongeren Milieu Actief, and ActionAid, and 17,379 individual

^[3] <https://www.shell.nl/media/persberichten/media-releases-2021/reactie-shell-op-uitspraak-klimaatzaak.html>

A similar idea of climate liability linked to climate attribution has been the basis of the international debate on loss and damage. Irresponsible action elsewhere has grounded the demands of negatively affected countries to institutionalise legal avenues for financial support, including compensation claims. At the international level, the liability debate must also account for demands for justice and equity in sharing the burden of negative climate impacts (Wallimann-Helmer et al., 2019; Garcia-Portela, 2020). The financial dimensions of this topic can easily explain its controversy and slow advancement in international negotiations (Pauw, 2022). For example, liability risks from losses and damages compensation were one of the three risks for financial stability identified by the Bank of England already in 2015 (Carney, 2015). The current lack of political clarity should not obscure the proportions that climate liabilities might take in the near future for governments and companies that continue to act irresponsibly in the face of our climate crisis. Furthermore, advances such as the recent agreement on a Loss & Damage Fund at COP27 indicate renewed optimism of additional financing for highly climate-vulnerable and impacted countries.

From the perspective of a small island state made vulnerable to climate displacements due to chronic and acute climate hazards, climate liability is a duty to act, but also a right for compensation and fair burden sharing.

That is particularly the case for the Maldives, which currently faces hard limits to adaptation (see section 3.1.4 Limits to adaptation) and may face risks such as the potential displacement of people due to sea level rise, with an enormous risk retention.

Science attribution is allowing to visualise how specific actions can threaten individual and collective rights, leading to increased climate litigation^[4] By elevating this protection of rights to the international level, the discussion around loss and damage, or short Loss and Damage (L&D) comes into play. Countries wishing to advance climate litigation nationally will not oppose loss and damage internationally as they build on the same grounds. Departing from this context, this document investigates financial risks from national climate litigation (Section 2), to then build on impacts associated with climate change (Section 3) and concludes with recommendations considering liability and losses and damage (Section 4).

[4] However, especially for SIDs, attributing loss of climate change impacts such as coastline loss and weather related damages is challenging due to lack of localized and chronological data available for policy makers (see also 3.1.4. Limits to adaptation)

2. FINANCIAL RISKS FROM NATIONAL CLIMATE LITIGATION

The reality of these litigation cases is that delay or lack of consistency to act on climate change will increase the risks of financial losses by governments and apparently also of national companies. Meanwhile, delay to act may prompt companies facing losses to fight governments due to historical inconsistency or mixed legislative signals. Failure to account at project design for climate and other environmental considerations may also lead to increased costs, as well as an obvious waste of taxpayers and private capital due to sunk costs when projects have to be abandoned mid-way through implementation. Litigation of financial risks can be derived from domestic and supranational law as well as international laws and commitments.

A relevant example from 2012, the environmental NGO Wahana Lingkungan Hidup, filed a lawsuit against the Governor of Bali for issuing a permit to establish tourist accommodation facilities in a mangrove ecosystem area. These facilities would be located in a forest park area (Taman Hutan Raya) which is supposed to be excluded from possible commercial use. It was argued that the logging of mangrove trees in the permit area can hinder the mangroves' function in mitigating climate change since mangrove forests have a much greater ability to absorb CO₂ than other tropical land forests.

Thus, the issuance of the permit was against national law and regulations (specifically Environmental Protection No. 32 of 2009[5] and Management and Government Regulation No. 36 of 2010 on Nature Tourism Business in Wildlife Sanctuaries, National Parks, Grand Forest Parks and Nature Tourism Parks[6]). The request was granted, and the court ordered the cancellation of the permit by the Governor of Bali.[7]

On the one hand, national laws formally recognise that decreasing environmental quality is a serious problem and that climate change presents further systemic threats. On the other hand, it enables the government itself to field claims against corporates in case they are violated. Another example from Indonesia back in 2018 highlights this. The Indonesian Ministry of Environment and Forestry filed a tort-based lawsuit[8] against a palm oil plantation corporate, PT Arjuna Utama Sawit (corporate) arguing that the firm deliberately burned the peatlands with the intention of using them for plantation purposes. The District Court of Palangkaraya and later in a second instance also the Palangkaraya Court of Appeal ruled in favour of the plaintiffs. PT Arjuna Utama Sawit was held liable for damages caused by wildfires inside its concessions.

[5] <https://www.elaw.org/node/5353> (Assessed online February 2023)

[6] *List of Business Fields Closed to Investment and Business Fields Open, with Conditions, to Invest with the Grace of God the Almighty, The President of the Republic of Indonesia.*

[7] https://climate-laws.org/geographies/indonesia/litigation_cases/yayasan-wahana-lingkungan-hidup-indonesia-v-governor-of-bali-and-others (Assessed online February 2023)

[8] *Tort lawsuits are the legal processes by which the plaintiff files a complaint, presents their case in court, and obtains compensation for their injuries.* <https://www.legalmatch.com/law-library/article/what-are-torts-cases.html> (Assessed online February 2023)

The Maldives has a modern legal system that is both aware and responsive to violations of individual and collective rights related to climate and natural degradation. This includes a constitutional duty of every citizen “to preserve and protect the natural environment [...] and abstain from all forms of pollution and ecological degradation” (Art. 67 (h) of the Constitution). National laws have been advanced through international commitments, such as the United Nations Framework Convention for Climate Change (UNFCCC), and the Paris Agreement and its related documents, including the country’s updated Nationally Determined Contribution (NDC). This advancement is not only related to climate change, but also to commitment with respect to biodiversity, such as the United Nations Convention on Biodiversity Diversity (CBD) and its Kunming-Montreal Global Biodiversity Framework (GBF), or the United Nations High Seas Treaty as an instrument of the United Nations Convention on the Law of the Sea (UNCLOS) agreed on March 2023.

Together, the national and international legal base build a comprehensive legal protection for current and future generations of Maldivians. In turn, all levels of governments must continue advancing on policies and in respect to citizens’ climate and environmental rights.

A recent case in the Maldives illustrates the legal challenge to an individual project due to environmental concerns. A law firm presented a legal case to stop removing trees in a road construction project in Ameenee Magu[9] justified with Art. 22 of the Constitution: Protection of the Environment[10] and Art. 23 of the Constitution: Economic and Social Rights.[11] Independent of the final court ruling, this case already sheds light on the materiality at the national level of legal risks associated with action on climate change.



[9] The lawsuit asks for an immediate stop to the felling, removal, and damage to the old trees on Ameenee Magu. It also sought an order against the Road Development Corporation (RDC) and the Ministry of National Planning, Housing and Infrastructure (MoNPHI) to continue the road construction work without removing the trees. <https://avas.mv/en/122971>

[10] Art. 22 of the Constitution: Protection of the Environment: “The State has a fundamental duty to protect and preserve the natural environment, biodiversity, resources and beauty of the country for the benefit of present and future generations. The State shall undertake and promote desirable economic and social goals through ecologically balanced sustainable development and shall take measures necessary to foster conservation, prevent pollution, the extinction of any species and ecological degradation from any such goals.” <https://presidency.gov.mv/Pages/Index/15>

[11] Art. 23 of the Constitution: Economic and social rights: “Every citizen the following rights pursuant to this Constitution, and the State undertakes to achieve the progressive realisation of these rights by reasonable measures within its ability and resources: (a) adequate and nutritious food and clean water; (b) clothing and housing; (c) good standards of health care, physical and mental; (d) a healthy and ecologically balanced environment; (e) equal access to means of communication, the State media, transportation facilities, and the natural resources of the country; (f) the establishment of a sewage system of a reasonably adequate standard on every inhabited island; (g) the establishment of an electricity system of a reasonably adequate standard on every inhabited island that is commensurate to that island. <https://presidency.gov.mv/Pages/Index/15>

The recent development of litigation cases reflects the climate emergency and the melting hope that traditional economic models can stand up to the current and projected multidimensional challenges related to climate change. In this regard, recent lawsuits (e.g., the road construction project in Ameenee Magu) in the Maldives indicate the first signs of litigation action. Especially relevant lawsuits examples from other countries are further illustrating the seriousness of financial and economic risks from national climate litigation. The referenced example from the recorded lawsuit against the Governor in Bali (Indonesia) highlights the power of enforcement towards a public actor against the interest of this public actor.

So, granting permits to new tourist accommodation facilities (land resorts) should not put pressure on natural capital and the ecosystems for tourism-based economies. Permits must be in line with legal grounds, including the government's constitutional duty to protect the environment. In sum, the need to manage and lower risks from climate-related litigation justifies early, clear and consistent climate action by the responsible governments. Action should focus on the national level while pushing the private sector to align, thus protecting national economic activities, including those of financial institutions. When approached from another lens, at the international level, climate litigation can also represent a financial opportunity for present and future generations in the most climate vulnerable countries.

3 . L O S S E S A N D D A M A G E S F O R A S M A L L I S L A N D S T A T E S

Advances in climate and environmental litigation across national legal systems are closely linked to international debates on losses and damages^[12], regarding financial compensation. Such developments are slowly paving the way for countries and third-country residents hit by negative climate impacts to seek compensation against historically high-emitters or current greenhouse gas (GHG) polluters. This creates climate liabilities to both public and private sectors around the globe.

^[12] Terminology: In the losses and damages debate, capital letters (L&D; Loss & Damage) refers to international political discussions within the UNFCCC, since the WIM is in place in 2013. Small letters losses and damages have a neutral meaning. If not used with the specific intention referring to the UNFCCC mechanism, this report uses the neutral language: losses and damages. See also Box 3.

Maldives has been continuously showing leadership in bringing attention to climate change. The sea level rise conference of 1989 hosted by President Maumoon Abdul Gayyoom in the Maldives, and the associated Male Declaration on Global Warming and Sea Level Rise,[13] flags the importance of international awareness of the particular vulnerability of SIDs (Statement 1.c), the establishment of climate programmes, monitoring networks (Statement 1.b), and call upon all States to take immediate and effective measures according to their capabilities to reduce GHGs (Statement 2.) and formulate plans and strategies to develop less environmentally harmful sources of energy (Statement 3.). In 1991, Vanuatu submitted in the name of the Alliance of Small Island States (AOSIS)[14] a proposal on the topics of insurance and compensation. So even before of the formation of the UNFCCC in 1992, serious concerns over the potential losses and damages from climate change impacts existed.

Concretely, Vanuatu proposed the establishment of both an international fund to support measures to address the impacts of climate change as well as an insurance pool to provide

insurance against sea level rise (INC, 1991). From the very beginning, compensation mechanisms were at the centre of the discussion, as the proposal suggested that the contributions for the insurance pool should come from developed countries, and the financial resources pooled should be used to “compensate small island states along with low lying developing countries for loss and damage resulting from the consequences of sea level rise”. So, the aim of the proposal was to establish a compensation fund that would redress direct damage from adverse effects of a rising sea level (Linnerooth-Bayer et al., 2003) already known by the scientific community through the IPCC’s First Assessment Report (FAR, 1990)[15] – and also by economic actors such as EXXON Mobile, which well understood the science before it became a public issue in the late 1970s.[16]

From then, the discussion has been intensified with different suggestions mostly complementing adaptation, with the aim to manage residual impacts and risks ‘beyond adaptation’ in vulnerable developing countries (IPCC 2022, Chapter 17, AR2).

[13] <https://digitallibrary.un.org/record/81035#record-files-collapse-header> (Assessed online: 30 May 2023)

[14] The Alliance of Small Island States (AOSIS) was established in 1990, ahead of the Second World Climate Conference. The main purpose of the alliance is to consolidate the voices of Small Island Developing States (SIDs) to address global warming.

[15] Published in 1990, the IPCC’s First Assessment Report (FAR) stated that it was certain that “human activities are substantially increasing atmospheric concentrations of greenhouse gases.” According to the FAR, greenhouse gas increases had caused temperature to increase by 0.3° to 0.6° Celsius (0.5 - 1.1° Fahrenheit) over the past century and would cause global average temperature to warm about 1°C (1.8°F) by 2025 and 3°C (5.4°F) by 2100.
<https://scied.ucar.edu/learning-zone/how-climate-works/history-climate-science-research>

[16] understand the science, the company actively engaged with it. In the 1970s and 1980s it employed top scientists to look into the issue and launched its own ambitious research program that empirically sampled carbon dioxide and built rigorous climate models.

The Maldives called for compensation and an official status of losses and damages in the UNFCCC architecture in 2010 for the first time. In 2013, losses and damages were formally recognized at the Conference of the Parties (COP19) via the Warsaw International Mechanism (WIM) on Loss and Damage (UNFCCC, 2013). The WIM aims to foster knowledge and dialogues as well as enhance action and support. Notably, the adoption of the Paris Agreement, provides a permanent legal basis for the WIM as formulated in Article 8 of the Paris Agreement (UNFCCC, 2015). A major reason why losses and damages have been so contentious historically is due to developed countries' concerns that compensating for losses and damages caused by adverse climate impacts may be construed as an admission of legal liability, triggering litigation and compensation claims on a major scale.

While the Green Climate Fund (GCF), the world's biggest climate fund, does not have an explicit mandate in relation to address loss and damages, around one quarter of the GCFs projects and programmes explicitly refer to loss and damages, while 16% of projects have thematic links to loss and damages across their main project activities (Kempa et al., 2021).

For the Maldives, the implemented US\$ 28 million project: "Support of vulnerable communities in Maldives to manage climate change-induced water shortages" directly addresses the consequences of losses and damages.

This clearly shows that loss and damages are largely considered on the project/programme level but is not always addressed at a wider and systemic level.

Yet, a sign in the right direction was reached by the end of the COP27, with formal plans to develop a new funding vehicle (fund) for loss and damage (Volcovici et al., 2022)[17], giving hope to many small islands and among other groups of most climate vulnerable populations (See last sub-section of this Section 2). Recently, on March, 30th 2023, the UN General Assembly (UNGA) adopted the proposal by the Pacific Island Students Fighting Climate Change (PISFCC) and the Worlds Youth for Climate Justice (WYCJ) to the International Court of Justice (ICJ), which will now conduct hearings on the obligations of states in respect to climate change.

The Republic of Vanuatu has led this global coalition of 133 co-sponsoring countries within a core drafting group of nations from developed and developing countries.[18] The hearings will correspond to the questions, including but not limited to: What are the obligations of States under international law to ensure the protection of the climate system, and what are the legal consequences under these obligations for States where they, by their acts and omissions, have caused significant harm to the climate system and other parts of the environment, with respect particular SIDs.

[17] <https://www.reuters.com/business/cop/countries-agree-loss-damage-fund-final-cop27-deal-elusive-2022-11-20/>.

[18] Vanuatu, Antigua & Barbuda, Costa Rica, Sierra Leone, Angola, Germany, Mozambique, Liechtenstein, Samoa, Federated States of Micronesia, Bangladesh, Morocco, Singapore, Uganda, New Zealand, Vietnam, Romania and Portugal.

BOX 3 : TYPES OF LOSS (ES) AND DAMAGE (S)

In the literature, there is a differentiation between ‘losses and damages’ and ‘Loss and Damage or (L&D)’. On Loss and Damage (or L&D), the IPCC AR6 glossary refers specifically to the “political debate under the UNFCCC following the establishment of the Warsaw Mechanism on Loss and Damage in 2013”. The term ‘losses and damages’ refers to political neutral economic or non-economic harm from (observed) impacts and (projected) risks.

Losses and damages refers to climate impacts which cannot be or have not been mitigated or adapted to. The “loss(es)” refers to things that are irreversibly lost such as lives, a way of living or historical site, while the “damage(s)” refers to things that can be repaired or recovered such as roads, buildings or crop yields. Loss and damage can refer to unavoidable impacts of climate change (in both, economic and non-economic terms) that occur despite, or in the absence of, mitigation adaptation efforts.[19]

Impacts can result in hardly quantifiable losses and damages, particularly for many communities and countries in the developing world. These losses and damages occur despite, or in the absence of, mitigation and adaptation. They include economic or non-economic negative impacts, such as economic loss of lives and livelihoods, degradation or loss of territory, farmland, cultural heritage, indigenous knowledge, societal and cultural identity, biodiversity, and ecosystem services. Negative impacts where monetary values can be assigned off fall under economic losses and damages, e.g. costs of rebuilding infrastructure that has been damaged due a flood, or the loss of revenue from agricultural products that were destroyed due to drought. Non-economic loss and damage are negative impacts where it is difficult or infeasible to assign a monetary value to, e.g., loss of community and culture due to displacement of people, loss of territory or biodiversity loss.



[19] <https://views-voices.oxfam.org.uk/2022/02/what-is-loss-and-damage-and-why-is-it-so-vital-for-climate-justice/> and UNDP Climate Promise 2022: <https://climatepromise.undp.org/what-we-do/areas-of-work/loss-and-damage>

3 . 1 I M P A C T S A S S O C I A T E D W I T H C L I M A T E C H A N G E

Understanding of physical impacts from climate change and the discussion on the limits to adaptation are key for the debate and for proposing actionable recommendations on losses and damages for the Maldives.

3 . 1 . 1 A T T R I B U T I O N S C I E N C E A N D I T S R E L E V A N C E F O R T H E M A L D I V E S

Important for these developments, attribution science[20] has continued to evolve to calculate to which extent human activities drive or have driven extreme weather events. With stronger scientific grounds, it becomes easier to link climate-derived impacts to frameworks for accounting for shared responsibility for emissions. As one of the most climate-vulnerable countries in the world, with ongoing losses already attributable and potential for much higher losses and damages in the future, the stakes are high for the Maldives. Recent research[21] predicts that Maldives will be the most climate vulnerable nation in South Asia, estimating the total economic loss to the Maldives' economy from climate change will be on average 2.3% of Gross Domestic Product (GDP) by 2050.

It is crucial to calculate its detailed adaptation needs, to plan and manage them consistently across all sectors, with an effective bottom-up integration of society. Understanding their limits in physical and financial terms represents an important argument for pushing developed countries to engage more strongly with (e.g., based on theory) measures to support national efforts to avert, minimise and address loss and damage. Meanwhile, a continuous international push to allow companies and governments to be sued for compensation by third-country and non-resident victims should represent an opportunity for future (and most relevant) liability. These underlying risks related to the polluter-pays principle and loss and damage, when well administered, may provide the Maldives with an additional advantage for leveraging demands for technical and financial support to support today's actions to increase resilience and pay for losses.

[20] A field of research, largely used in climate studies. It seeks to test whether — and by how much — climate change may be responsible for certain extreme weather events, such as droughts, extreme flooding, hurricanes, excessive heat or odd storm trajectories (ScienceNewsExplores, 2019).

[21] Maldives Climate Risk profile ADB-World Bank 2021.

3 . 1 . 2 P R E S E N T C L I M A T E A C T I O N A N D A W O R R I S O M E F U T U R E

The latest IPCC (2022) report indicates that the world is falling short on reducing GHG and in efforts to adapt to the changing climate. Actions and support to developing countries remain insufficient as physical climate risks grow and impacts increasingly devastate the lives and livelihoods of vulnerable countries and communities (For example, see Box 4). Meanwhile, for some people and in some places or ecosystems, it is too late to attempt to adapt to some climate impacts. Recent modelling is also demonstrating the possible consequences that climate change and associated biodiversity loss may have on national balance sheets.

B O X 4 : I N D I A N O C E A N B A S I N - W I D E W A R M I N G A N D C H A N G E S I N I N D I A N O C E A N D I P O L E

For SIDs specifically, the IPCC published in its Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC) in 2019 evidence on how the ocean and cryosphere have and are expected to change with ongoing global warming; the risks and opportunities these changes bring to ecosystems and people; and mitigation, adaptation and governance options for reducing future risks. The report discusses the Indian Ocean Basin-wide warming and Changes in Indian Ocean Dipole (IOD), to which the Maldives belongs.

Thus, the IOD has a significant impact on the climate and weather patterns in the Indian Ocean region, including the islands of the Maldives. The IOD can cause droughts, floods, and other extreme weather-related events, which can have significant economic impacts on the region. However, the report also notes that there are opportunities for adaptation and mitigation to reduce the risks associated with the IOD and other climate change impacts, such as improving water management, developing drought-resistant crops, and improving early warning systems for extreme weather events (IPCC, 2018).

In a study published in July 2022^[22], researchers from the University of London demonstrated that sovereign debt sustainability can deteriorate significantly leading to a partial collapse of ecosystem services in a sample of six countries – Bangladesh, Brazil, Canada, Indonesia, Nigeria and Vietnam. In the case of Bangladesh, a partial nature collapse would lead to a 15% point increase in debt-to-GDP, which is three to four times more damaging to Bangladesh’s debt sustainability than the COVID-19 pandemic has been.

^[22] University of London (2022): Nature Loss and Sovereign Credit Ratings.

The IPCC (2022) has warned that even with effective actions to limit global temperature increase to 1.5°C, losses and damages stemming from climate change are not preventable, as there is already a “locked-in” level of warming that will or already is causing unavoidable consequences.

The Maldives could be 80% uninhabitable by 2050s at current global warming rates, as a direct consequence of human-induced climate change and the corresponding sea level rise (SLR) (among others see Storlazzi et al., 2018).[23] This challenge requires actions “beyond adaptation” and its means. Alternative approaches are raising existing areas and advancing land to reduce risk, particularly where infrastructure is yet to be built, with the objective to concentrate the population on a limited number of islands. The extent to which financial compensation may be claimed from e.g., largest historical emitters is not yet agreed at the international level. Even against the strong evidence that emissions must peak before 2025 and that the GHG emissions must halve by around 2030 to keep the 1.5°C ceiling within reach, no concrete commitments and short-term targets been agreed on losses and damages. Reflecting the recent decades of international political discussions and negotiations, the losses and damages international agenda is unlikely to strive tight agreements in the short to medium terms.

3 . 1 . 3 C R I T I C A L C L I M A T E H A Z A R D S I N T H E M A L D I V E S

In the Maldives, around four-fifths of the islands are just about one metre above sea-level, and more than two-thirds of all critical infrastructure is less than 100 metres away from the shoreline. The combination of low elevation and high proximity to the shoreline makes infrastructure extremely vulnerable to the impacts of climate change, including storm surges and SLR. These infrastructures include 80% of the power plants, 90% of sewage systems, and 75% of Information, Communication, Technology (ICT). In addition, airports, hospitals, communication towers, and schools are also highly vulnerable to climate hazards (see STEM Maldives). The exposure and vulnerability of the Maldives are highlighted by four critical and interlinked areas (sea level rise, coastal erosion, freshwater systems, coral reefs) prone to losses due to a changing climate. With SLR, 80% of the Maldives could become inundated by mid-century if global warming continues with current pace, sometimes going beyond the economic rationale for reconstruction (Storlazzi et al., 2018 and IPCC, 2021)[24].

[23] See First National Communication of the Republic of Maldives, submitted by the Ministry of Home Affairs, Housing and Environment in 2001.

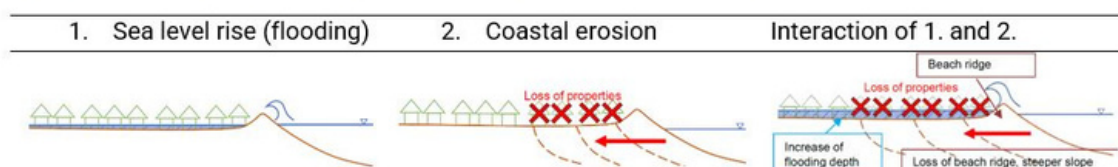
[24] <https://www.science.org/doi/epdf/10.1126/sciadv.aap9741>

With the likely increase of wave height due to SLR, coastal erosion is expected to accelerate, resulting in the loss of national lands and exposing coastal residential areas and important infrastructure to damage. Also linked to SLR are critical threats to the availability of freshwater systems on small islands, with reductions of fresh groundwater already tracked of around one third in small atoll islands with area < 0.6km² (Alsumaiei and Bailey, 2018). Finally, multiple events of coral bleaching and declines in coral abundance have been verified (IPCC, 2022), such as the reduction by three-quarters of coral cover in the Maldives in 2016, aggravated by the el Niño-Southern Oscillation (ENSO).

Importantly, whilst mitigation significantly reduces future SLR, some physical impacts cannot be avoided and pose already today a significant direct threat to the country’s main economic activities, such as the tourism industry. A UNDP study[25]conducted in 2015, which looked at the impact of climate change on the Maldivian tourism industry, projected that the country could experience a loss of tourism revenues equivalent to 14.4% to 18.2% due to climate change by 2050. Existing tourism development models in Maldives will need to undergo a review as tourism investments need to come to terms with the increasing cost of operating facilities that arise from disaster risk reduction to climate change and climate adaptation.

In the recent decades, shocks from critical climate hazards hit the Maldives significantly, and can be evidently attributed to human induced climate change. For example, the 1997–1998 and 2016 ENSO event, as well as a major flood event in 2007. In addition, the geological (tectonic) Indian Ocean tsunami in 2004 caused massive losses and damages to the Maldives (Morri et al., 2015). The climate shocks [events] are illustrative for cumulative and cascading natural and climate-specific risks and increasing vulnerability for the Maldives (simplified illustrated in the figure below) with regards to coastal floodings, that a series of events can cause in reef-dependent atoll countries.

Figure 2 Independent and cascading effects of climate hazards in the Maldives



Note: Flooding and coastal erosion leads to lost beach ridges, where beach slopes become steeper as coastal erosion progresses. This will weaken the protection function that the beach used to have and increase wave and overtopping at the hinterland. The wave force acting on the shore will increase and will increase the rate of coastal erosion (see Green Climate Fund, Funding Proposal 165).

[25] UNDP Maldives and Ministry of Tourism (2015): Economic costs and benefits of climate change impacts and adaptation to the Maldives Tourism Industry, Tourism Adaptation Project (TAP).

More droughts and shorter, but heavier rainfall, in combination with SLR will cause physical damage to infrastructure due to coastal erosion, as well as further welfare losses due to the reduction of freshwater systems. Climate change can cause brutal damage to the economy and impede serious concerns about the safety and security of local inhabitants (UNDP, 2015; World Bank, 2019).

3 . 1 . 4 L I M I T S T O A D A P T A T I O N

Limits to adaptation are the points at which adaptive measures cease to provide protection against climate impacts, escalating losses and damages. However, losses and damages can occur even before reaching adaptation limits.[26] The Special Report of 1.5°C by the IPCC (2018) confirmed strong evidence for increasing residual risks for rising temperatures leading to soft and hard limits of adaptation in different natural and human systems, including coral reefs, coastal livelihoods, or human wellbeing. Soft limits are those for which no further adaptation options to be implemented are currently feasible but might exist in the future. Hard limits are those where adaptation options are not effective today and no future options are available. Especially for SIDs, there is a growing strand of literature showing adaptation constraints that lead to soft and hard limits (Filho et al., 2021; Robinson, 2018; Thomas et al., 2021). Limited availability of ICT for community-based adaptation (e.g., early warning systems) represents key constraints for adaptation measures, as many SIDs suffer from lack of data and established routines to identify losses and damages. That is the case even if the world manages to remain below 1.5°C of average warming, as SIDs will still suffer risks of damages to ecosystems, infrastructure and properties.

The combination of poor monitoring of slow onset changes such as SLR, and the influence of non-climatic determinants makes it difficult to scientifically attribute shares of losses and damages to human action - including institutionalised, such as governments and corporates (Thomas and Benjamin, 2018). In the Maldives, key constraints associated with limits to soft adaptation can be in terms of finance, data governance, awareness, human resources, and technological.[27] The constraints of financial resources due to climate change impacts are highly evident in the Maldives. Island communities are considered as first victims of a changing climate by facing migration pressures and displacement, which can lead to political instability, and cultural loss (Wolsko and Marino, 2016).

[26] <https://www.un.org/en/climatechange/adelle-thomas-loss-and-damage>

[27] Second National Communication to the UNFCCC and the National Climate Finance Framework 2020-2024

Displacement after a natural hazard such a storm flood forces people to relocate and leave their place of residence. Oakes et al. (2016) shows e.g., for Kiribati, that forcibly displaced persons have tiny control over where, when, and how they move and as a result are more likely to be subject to losses and damages (since by being displaced they're already suffering from losses and damages). In Kiribati almost every household (94%) stated to be impacted by a natural hazard between 2005–15, with sea-level rise affecting 80% of households.

For the Maldives, it is increasingly clear that even many non-climate-specific challenges related to housing, land and property can only be effectively addressed if this is done within the context of a broader and near to longer-term climate risk reduction planning process. To address potential displacements, Maldivians are already experienced in land reclamation engineering practices. Reefs and lagoons are being reclaimed to provide land for both population settlement and economic activities. In recent years, more than 1,300 hectares of new land have been reclaimed in around 100 inhabited islands. Hulhumale is the largest land reclamation project with around 430 hectares were reclaimed to reduce population pressure in Male. Other large reclamation projects are Alifu Dhaalu Maamigili (73 hectare), and Gaafu Dhaalu Thinadhoo (71 hectare). Putting this in perspective, the around 30,000 hectares land mass, represents only less than 1% of the countries 9,000,000 hectare total size, making it one of the most geographically dispersed countries in the world. This new land is required to be elevated by between 1.5 and 1.75 meter above mean sea-level.[28],[29],[30] and more projects are planned or already under construction (Gussmann and Hinkel, 2021).[31] While land reclamation provides a technical solution to address sea level rise, any application must also address additional policy, human, physical, engineering and economic/financial challenges that are raised.

In sum, scientific evidence confirms: first, that with significant engineering investment and government support, the Maldivian population can remain in their country far into the future rather than be forced to migrate because of sea-level rise (Sally et al., 2023); and second, that environmental impact on reclamation are putting ecosystems at risk.[32] Thus, innovative funding and financing methods are needed (Hinkel et al 2018) to deal with limits of adaptation. As SIDs develop, their higher adaptation costs need to be continually recognised whilst noting the detrimental effect if adaptation is not fully financed. Economic implications are discussed below.

[28] <https://www.frontiersin.org/articles/10.3389/fmars.2021.665672/full>

[29] <https://www.theguardian.com/environment/2022/may/23/maldives-plan-to-reclaim-land-for-tourism-could-choke-the-ecosystem>

[30] <https://www.channelnewsasia.com/sustainability/maldives-sea-level-rise-land-reclamation-2578871>

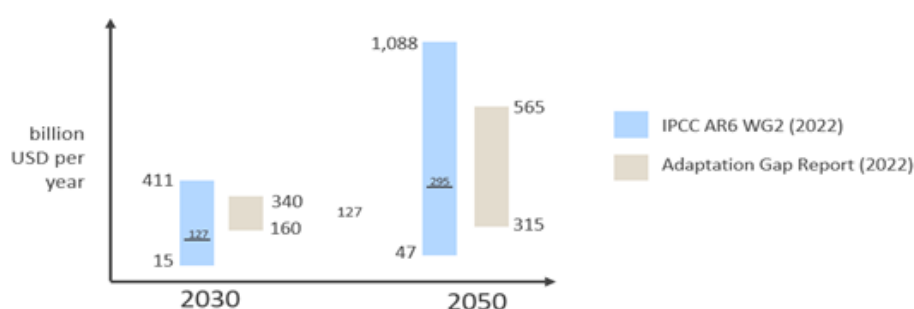
[31] <https://timesofaddu.com/2022/03/24/president-solih-to-sign-addu-land-reclamation-agreement-during-visit/>

[32] Land reclamation projects in the Maldives have been met with criticism due to their potential negative environmental impacts. For example, an environmental assessment of a project to reclaim land on Addu Atoll says it could bury 21 hectares of corals and 120 hectares of seagrass meadows. There are also concerns that such projects could “choke the ecosystem”.

3 . 1 . 5 E C O N O M I C I M P L I C A T I O N

While global and local economic growth continues since decades (figure 3, left chart), risks imposed by human-induced climate change are increasing as well. Recent evidence confirms that the costs for global adaptation are five to ten times higher than the current levels of finance flows to developing countries (UNEP, 2022). If the risk of climate change is not mitigated, economic costs in developing countries would be between \$15 and \$411 billion a year by 2030. This would rise to \$47 and \$1,088 billion a year by 2050 (figure 3, right chart). For instance, even though the share of total adaptation related climate finance for SIDs has doubled from 3% in 2019 to 6% in 2020, less than 10% of required basic weather and climate data are available for these countries.

Figure 3 Global annual cost of adaptation in 2030 and 2050.



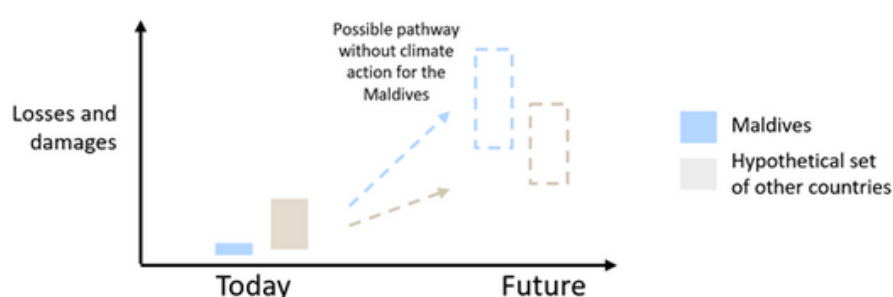
Note: IPCC estimates include median value (\$127 billion in 2030 and \$295 billion in 2050). Bars represent lower and upper bound estimates in \$billions per year.

Notably, the numbers in the figure are referring to nominal adaptation costs, without factoring in non-economic losses and damages (see Box 3), such as culture, or family and social connections which is not economically quantifiable. Research from the Group of Vulnerable Twenty (V20) (IISD, 2022) shows that almost all the nearly 1.5 billion people in the 58 [33] V20 countries do not have sufficient financial protection, and losses mount up to \$525 billion to climate impacts since the 2000s. However, a research paper on rapid onset events between 1997 and 2016 valued the economic losses for Maldives due to such events at only \$600,000. Only two countries were reported to have faced less damage, Palau (\$100,000) and Timor-Leste (\$300,000). These figures may not however show the complete picture of Maldives' vulnerability to climate change.

[33] Group of Finance Ministers from climate vulnerable economies. Currently, 58 states are members: Afghanistan, Bangladesh, Barbados, Benin, Bhutan, Burkina Faso, Cambodia, Chad, Colombia, Comoros, Costa Rica, Côte d'Ivoire, the Democratic Republic of the Congo, the Dominican Republic, Eswatini, Ethiopia, Fiji, The Gambia, Ghana, Grenada, Guatemala, Guinea, Guyana, Haiti, Honduras, Kenya, Kiribati, Kyrgyzstan, Lebanon, Liberia, Madagascar, Malawi, Maldives, the Marshall Islands, Mongolia, Morocco, Nepal, Nicaragua, Niger, Palau, Palestine, Papua New Guinea, the Philippines, Rwanda, Saint Lucia, Samoa, Senegal, South Sudan, Sri Lanka, the Sudan, Tanzania, Timor-Leste, Tunisia, Tuvalu, Uganda, Vanuatu, Viet Nam, and Yemen.

Most of the data available globally on climate related economic losses are for weather related rapid onset events such as wildfires and thunderstorms. As the Maldives is not geographically situated in a zone observed to encounter such disasters, data measuring the economic losses encountered by the country from such events are scarce. The Maldives' vulnerability to climate change stems from sea level rise, a slow onset event. This omnipresent disaster is expected to cause catastrophic damage to the Maldives with studies by the US Geological Survey [34] and NASA [35] showing that it could cause 80% of the islands to be made uninhabitable by 2050. Should these factors be considered and should the expected losses from forced displacement be appropriately weighted into calculations, the Maldives may face a comparatively sharp increase in climate related losses relative to other climate vulnerable countries that are less exposed to slow onset events and have a broader set of adaptation options. (see figure 4).

Figure 4 Hypothetical development of Maldives compared to other countries.



Note: Authors illustration. Non-exhaustive, only illustrative. Not based on quantitative estimates. Bars represent lower and upper bound estimates.

The hypothetical assumption can be illustrated and backed by an existing reference which highlights the consequences of economic impacts after a flooding event (e.g., surge flood). The Green Climate Fund Project (FP165)[36] estimates a steeper slope of the damage or impact function (figure 5, blue line) as compared with the conventional impact functions (figure 5, grey line). Due to the geographical context (highest elevation is around 3 meters across all 189 inhabited islands), vulnerability to sea level rise and over-wash events are illustrated in the impact function in figure 5. The steep curve of the damage function highlights, that incremental increases in the Hazard intensity (e.g., two meter surge flood, instead of 1.5-meter surge flood) results in more disastrous lost assets than in other regions with a less sharp damage function.

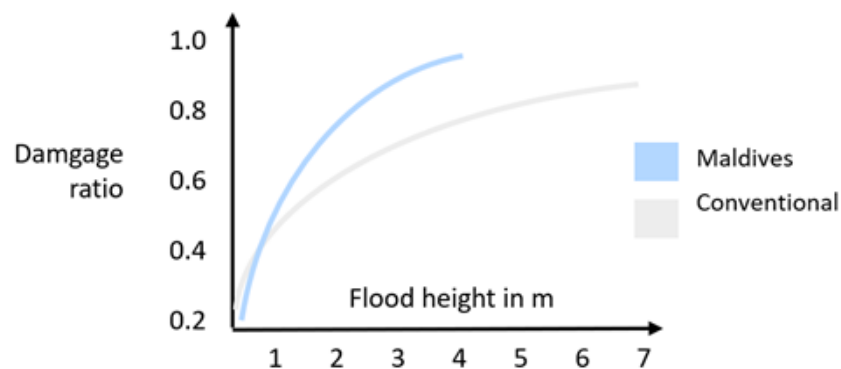
[34] <https://www.science.org/doi/10.1126/sciadv.aap9741#con3>

[35] <https://earthobservatory.nasa.gov/images/148158/preparing-for-rising-seas-in-the-maldives>

[36] Title of the Funding Proposal 165: Building Climate Resilient Safer Islands in the Maldives



Figure 5 Impact function of flood events – Maldives (blue) and Conventional (grey)



Note: Only illustrative, non-exhaustive. Not based on quantitative data. Maldives impact function visualized and building on the GCF-JICA study and conventional impact function (grey) as suggested by the Joint Research Centre (JRC). Reading example: A flood height of two meters, causes damages of 60% (80%) total loss per exposed asset in the Conventional (Maldives) impact function. Thus 0.6 means, that around 60% of the assets are fully destroyed. This is reached in the Maldives at around one meter, compared to two meters according to the conventional damage function.

3.1.6 EXPECTED RISING COST OF CAPITAL

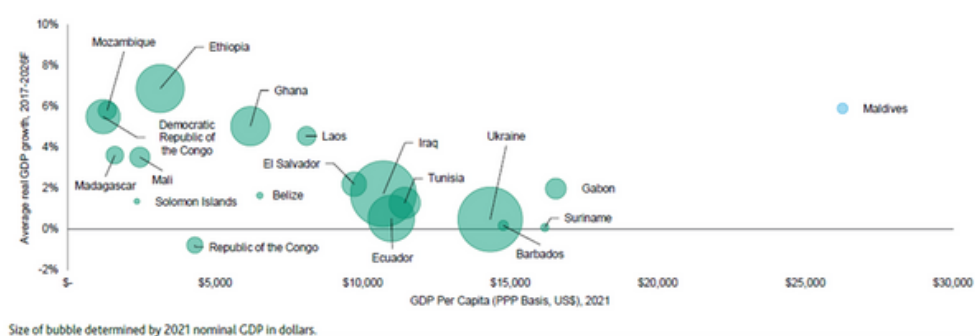
Economic shocks due to climate change are attracting more and more attention by credit ratings in developing countries, including SIDs. Credit rating agencies (CRA) started to broadly integrate vulnerability to climate change in their rating calculations, reducing the ability of climate-vulnerable countries to lend from external funds and reducing their attractiveness to foreign direct investment (FDI) (Buhr et al., 2018; Volz et al., 2020). In turn, this increases debt stress leading to SIDs struggling to repay their external debt). For instance, the Ministry of Finance (MoF) issued its inaugural international sovereign bonds in 2017, raising \$200 million from the sale of its debut sovereign bond issue in the international finance market. The \$-denominated five-year maturity bond was listed on the Singapore Stock Exchange and paid a 7% yield to investors.[37] The bond was issued pursuant to “Regulation S”[38] maturing in 2022. In 2021, after the biggest economic crisis of the Maldives, with economic a GDP contraction of -32% for 2020[39], the government needed to issue another \$500 million Sukuk on the New York Stock Exchange (NYSE) with a yield of 9.875%, due to the urgent need of cash to repay the so-called sunrise bond from 2017. In parallel, while sovereign Moody’s sovereign debt rating in 2017 had a stable outlook with B1 in 2017, Moody’s downgraded it to Caa1 with a negative outlook in 2020 due to the impact of COVID-19 on the country’s economy. Comparing the Maldives with other C-1 ranked countries illustrates the economic vulnerability and this example explicitly.

[37] <https://maldivesindependent.com/business/maldives-sells-debut-us200m-sovereign-bond-131012> and <https://www.finance.gov.mv/media/news/international-sovereign-bond-issuance-for-the-maldives>

[38] <https://conventuslaw.com/report/allen-overly-advises-the-maldives-sovereign-on-its/>

[39] <https://www.adb.org/news/features/adb-data-show-impact-covid-19-government-finance-developing-asia>

Figure 6 Caa1 - Credit rating by sovereign



Note: Size of bubbles determined by 2021 nominal GDP in \$. Source: Moody's Investors Services. Issuer in-depth: Government of Maldives – Caa1 stable. Annual credit analysis. Alternative measure: Caa1, GDP per capita, GAIN-Index

Rating agencies such as Moody's already integrate an ESG credit impact score for the Maldives since 2022, and the Maldives has received a highly negative overall ESG score (CIS-4) on its latest rating update. On the environmental score is particularly notable - very highly negative (E-5). Increasing relevance of re-financing opportunities and the macroeconomic outlook intensifies existing "poverty traps". Those factors put SIDs in situations where mounting costs of losses and damages lead to economic downturns that create climate investment traps or other unvirtuous cycles (see figure 7). Starting with the mere risk or the occurrence climate hazards, those factors lead to losses and damages on public accounts. They divert public funding to address the negative climate impacts accordingly. In the Maldives councils receive block grants allocations, the sizes of which, are calculated rather simplistically. The national government then fills any funding gaps. The allocated resources do not contain climate-resilience requirements and hence may not be preparing the country against future climate hazards, for example, with incentives for the development and uptake of insurance types (e.g. weather-indexed ones) that are adequate for the various sectors in the economy, including for micro, small and medium enterprises and households.

Figure 7 Climate traps and the un-vicious cycle



Figure based on Thomas and Benjamin (2017).

Such a cascading effect experienced by Pacific and Caribbean SIDs exemplify that those kinds of cycles, or traps, are already in place. For the Maldives and other SIDs, losses and damages already have negative implications for their sustainable development (Benjamin et al., 2018), with their costs helping to deplete national capital reserves (Noy and Edmonds, 2019).

3 . 2 I N T E R N A T I O N A L F I N A N C E A N D S U P P O R T

Financial compensation and support schemes are at the core of the losses and damages discussions and represented the first thematic topic from the early beginnings. While losses and damages or L&D is not specifically mentioned in the Paris Agreement general purpose under article 2, the sub-article 2.1.c in which countries agreed to “making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development” is applicable to all flows and, therefore, to all economic activities. A country that is not prepared to overcome or address the risks from climate change and to reconstruct after suffering losses and damages will be unlikely to withhold a sustained national development, particularly not a climate-resilient one. This strengthens the push for financial availability for areas such as planning and reconstruction before and after climate hazards, as per outlined in the sub-article 2.1.b[40] (“Increasing the ability to adapt to the adverse impacts of climate change”).

The lack of a broadly accepted definition of losses and damages has created undefined policy spaces, making it dependent on many other circumstances. In this regard, estimates of losses and damages financial needs are highly speculative because, for example, of its unclear relationship with adaptation investments (Markandya and González-Eguino, 2019). Yet, civil society engagements, dialogue, academia and policy discourses have normally focused on a finite number of topics, including risk management, limits to adaptation, existential risk, and finance and support (IPCC, 2022, Chapter 17, Section 8). SIDs are particularly active in advocating for progress on L&D within the UNFCCC, as increasing and irreversible risks of climate change to low-lying islands mount continuously (Adelman, 2016; Mace and Verheyen, 2016).

[40] Paris Agreement – Article 2.1b.: Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production.

3 . 2 . 1 J U S T I F I C A T I O N F O R L O S S E S A N D D A M A G E S

Besides solidarity-based donor contributions (including catastrophic and emergency relief,[41] donor-supported insurance systems with e.g., adaptive action modes, or technical assistance for insurance-related options[42]), only a marginal proportion of claimed financial compensation is covered. In fact, donor-related financial compensation for the impacts of climate change remains limited (Schäfer and Künzle, 2019; IPCC, 2022, Chapter 17, Section 2; Serdeczny, 2019). Attempts to address liability concerns are built on historical responsibilities and the polluter pays principle, the beneficiary-pays principle, or the ability-to-pay approach. Especially in low-income countries, financial constraints are important determinants, making compensation necessary and urgent, independently of any further discussion or definition. Ongoing impacts of climate change will only intensify those financial constraints. It is evident that losses and damages will continue to affect the most vulnerable across and within countries, fostering “poverty traps” (Tschakert et al., 2019; Thomas et al., 2020), as well as climate investment traps (Ameli et al., 2021) as climate impacts limit the availability of financial resources even more. This stunts national economic growth, which will result in higher levels of losses and damages and related further financing constraints (IPCC AR6, WG2, Chapter 16) as illustrated in the figure above (Figure 7: Climate traps and the un-vicious cycle).

3 . 2 . 2 O P P O R T U N I T I E S F R O M T H E U P C O M I N G U N F C C C L & D F U N D

Regarding the L&D, at the UN General Assembly in September 2022, Maldives’ officials described that “a mosaic of solutions to address loss and damage and finance it at scale” is needed. Concretely, the Maldives’ statement refers to three arguments in this context:

- First, a new fit-for-purpose multilateral fund designated as an operating entity of the Financial Mechanism of the UNFCCC with a specific focus on mobilising and dispersing finance to address loss and damage.
- Second, developed countries to step up and deliver concrete actions by providing propositions for innovative finance for L&D.
- Third, finance flows to address the needs on the ground both for addressing economic and non-economic loss and damage from slow onset climatic processes and extreme weather events.

[41]Gewirtzman et al., 2018; Mechler and Deubelli, 2021

[42] Insuresilience Global Partnership. <https://www.insuresilience.org/>

From a legal perspective all three arguments stand on solid grounds, as they can be linked to international treaties such as the Paris Agreement (Art. 2.1.c / Art. 4 / Art. 6 / Art. 8. / Art. 9). While current investment levels (yearly capital investments of around \$20,000 billion globally) have proven the financial ability to fund for extreme events (e.g., Germany approved a Federal Special Fund of EUR 100 billion as consequences of the Ukraine war), limited enthusiasm by traditional donor countries about additional funds, and inconsistent climate action (e.g., re-activation of fossil fuel reserves) are resulting in a large lack of political will. In addition, the refusal to see the climate crisis on a longer-term scale and as global emergency with national impacts are detrimental to national citizens in severe ways, including the multiplication of climate conflicts (e.g., food wars, migration), as well as ongoing incomprehension and frustration by the civil society.

Notably, no new goals that build on COP26 objectives, nor any short-term targets have been agreed at COP27. However, one of the key outcomes of the recent COP27 is the creation of a Loss and Damage Fund. The fund aims to provide financial assistance to nations most vulnerable and impacted by the effects of climate change. The “mosaic of approaches” outlined by the Maldives has been taken up, such as the possibility to strengthen social protection systems as safety nets against L&D. For example, resources for households and communities should be used for building resilience against climate impacts. For now, 24 countries^[43] will work together over the next year to decide what form the L&D fund will take, including the question of who should contribute, and where and how the money should be distributed. The Maldives applied for a chair at the Transition Committee, confirming once again its leadership in advocating for vulnerable countries.

Recommendations for operationalising the funding arrangement will be considered and adopted by COP28 in November 2023 in Dubai. Concretely, the Committee will recommend on:

- Establishing institutional arrangements, modalities, structure, governance and terms of reference for the fund,
- Defining the elements of the new funding arrangement,
- Identifying and expanding sources of funding, and
- Ensuring coordination and complementarity with existing funding arrangements.

[43] 10 members from developed countries and 14 from developing nations spread through Africa (3), Asia-Pacific (3), Latin America and the Caribbean (3), small island developing states (2), the least developed countries (2) and the developing countries not in any of the preceding categories (1)

4 . R E C O M M E N D A T I O N S

This recommendation section provides examples, best practices, and other action-oriented recommendations, that the Government of the Maldives, and its related ministries can prepare and position themselves to prevent climate litigation cases in the future, and position the country with climate leadership and advocating for cost compensation for future losses and damages covered under the (to be established L&D Fund).

It offers insights and general recommendations to set direction by integrating climate litigation in SIDs to identify and address financially relevant liability risks.

Overall, the governance of L&D has major implications for climate justice. So, approaches to L&D governance are emerging within and outside of the UNFCCC, including through litigation in domestic courts, supported by advancements in climate change attribution science and growing empirical data of L&D at individual, household, and community levels across the globe. Climate change is a matter of justice as those who suffer from its worst impacts contributed the least to this crisis. L&D is a very vital way to address the in-justice brought in about by the climate crisis. The recommendations provide strategies for the consideration of the Government of the Maldives.



4 . 1 G E N E R A L R E C O M M E N D A T I O N S

The following general set of recommendations provides development milestones for all stakeholders to help advance a pathway of integrated climate litigation addressing losses and damages for the Maldives.

1. Develop a disaster risk and loss and damage strategy as well as early warning systems, including cost analysis, financial needs and prioritisation for national and international levels. That includes continuing in the leadership of loss and damage negotiations and crafting partnerships with traditional and non-traditional climate finance donors to ensure success of the new L&D fund.
2. Develop early warning systems, preferably linked to co-financing opportunities from the private sector and implementation partnerships to ensure broader ownership and effective action in case of warnings – e.g., corporate beneficiaries, insurance sector, local associations etc.
3. Assess damages by broad and far-reaching monitoring and data collection with linkages to climate models for appropriate scientific exercises of climate attribution. This may also involve existing private sector or be coupled with incentives to develop and address national gaps, such as in the insurance sector. Specific insurance products as well as technology adapted in partnership with national actors create knowledge and other high value-added services that may be exported later to neighbouring countries, SIDs and other low-lying coastal countries.
4. Conduct a study to identify the potential of weather-indexed insurance system and support to the development of appropriate types of insurance for different sectors of the economy, including micro, small and medium enterprises and climate-vulnerable households.
5. Develop structured plans to finance from public national and international sources to support migration and relocation of people who are permanently displaced, and/or help to diversify skills if their original livelihoods are no longer available.
6. Build consensus and agree common messages across SIDs, ensuring Maldivian leadership in the design and development of the new L&D fund. For example, on the restructuring of vulnerable countries' debt through state-contingent debt instruments (SCDIs) and by ensuring access for climate- vulnerable countries to financial markets.
7. Ensure and increase the understanding of local island level and sectoral (e.g. tourism, fishery, energy and transport systems) adaptation needs as foundation for the development of effective response mechanisms.

8. Ensure that climate risks, including liability risks, are taught in the national economic and legal curricula, covering from national to supranational aspects and associated discussions on climate attribution. While global gaps persist in the understanding and fair and equitable addressing of these risks, it is important that the interests of small islands and most climate-vulnerable countries figure centrally in theoretical debates and their evolving application to real cases in national jurisdictions around the world.
9. Create, among the private sector, awareness-raising programmes to capacitate and foster peer-learning (and innovation-driven competition) on the three types of climate-related risks and local solutions to address them. Ensure the government's compliance with its climate policies, strategies, and other regulations, in line with the Constitution. Consider respective updates in alignment with the latest scientific evidence and the country's needs.
10. Improve frameworks for systemic and then project-level integration of climate risks. These will enable the country to identify and address the different types of financially relevant climate risks, including liability risks.
11. Ensure that the development of these frameworks will also create incentives, directly and indirectly, as benchmarks for the private sector.
12. Advance the country's national regulation on corporate responsibility and environmental due diligence requirements.
13. Support NGOs and civil society groups to join other climate vulnerable countries and trigger national jurisdictions to protect the rights of citizens and national residents from climate-attributed violations. In this regard, the inability of citizens to sue violating companies in their headquarters' jurisdictions can be linked as an argument against the lack of will of highly emitting nations to address their historical and current responsibilities in exacerbating climate change and their respective duty to address their provoked loss and damage.



REFERENCES

- Adelman, S. (2016). Climate justice, loss and damage and compensation for small island developing states. *Journal of Human Rights and the Environment*, 7(1), 32–53. <https://doi.org/10.4337/jhre.2016.01.02>
- Alsumaiei, A. A., & Bailey, R. T. (2018). Quantifying threats to groundwater resources in the Republic of Maldives Part I: Future rainfall patterns and sea-level rise. *Hydrological Processes*, 32(9), 1137–1153. <https://doi.org/10.1002/hyp.11480>
- Ameli, N., Dessens, O., Winning, M., Cronin, J., Chenet, H., Drummond, P., Calzadilla, A., Anandarajah, G., & Grubb, M. (2021). Higher cost of finance exacerbates a climate investment trap in developing economies. *Nature Communications*, 12(1). <https://doi.org/10.1038/s41467-021-24305-3>
- Arena, Matteo P. and Ferris, Stephen P. (2018). A Global Analysis of Corporate Litigation Risk and Costs. *International Review of Law and Economics*, Vol. 56, 2018, Available at SSRN: <https://ssrn.com/abstract=3287905>
- Assyaukanie et al. (2009). Indonesia - Environmental Protection and Management (Law No. 32/2009). <https://www.elaw.org/node/5353>
- Bank of England. (2017). “Climate Change: What Are the Risks to Financial Stability?” Knowledge Bank: 2–4. [https://www.bankofengland.co.uk/knowledgebank/climate-change-what-are-the-risks-to-financial-stability?](https://www.bankofengland.co.uk/knowledgebank/climate-change-what-are-the-risks-to-financial-stability?fbclid=IwAR3vuFfpTZO70wvBbkdsttgz2VL0_7s1L_MR2fajD24_hp5IRSYPjPx6iDY)
[fbclid=IwAR3vuFfpTZO70wvBbkdsttgz2VL0_7s1L_MR2fajD24_hp5IRSYPjPx6iDY](https://www.bankofengland.co.uk/knowledgebank/climate-change-what-are-the-risks-to-financial-stability?fbclid=IwAR3vuFfpTZO70wvBbkdsttgz2VL0_7s1L_MR2fajD24_hp5IRSYPjPx6iDY)
(February 7, 2019).
- Brown, S., Nicholls, R., Bloodworth, A., Bragg, O., Claus, A., Field, S., Gibbons, L., Pladaite, M., Szuplewski, M., Watling, J. (2023). Pathways to sustain atolls under rising sea levels through land claim and island raising. *Environmental Research* (2), Number 1
- Benjamin, L. & Thomas, A., (2018). Management of loss and damage in small island developing states: implications for a 1.5 °C or warmer world. *Reg Environ Change* 18, 2369–2378. <https://doi.org/10.1007/s10113-017-1184-7>
- Buhr, B., Volz, U., Donovan, C., Kling, G., Lo, C., Murinde, V and Pullin, N. (2018). *Climate Change and the Cost of Capital in Developing Countries*. London and Geneva: Imperial College London; SOAS University of London; UN Environment. <https://eprints.soas.ac.uk/id/eprint/26038>
- Carney, M. (2015). “Breaking the Tragedy of the Horizon – Climate Change and Financial Stability.” (September): 1–16. <https://www.bis.org/review/r151009a.pdf>
- Conceição, Pedro. (2022). *Human Development Report 2021/2022: Uncertain Times, Unsettled Lives: Shaping Our Future in a Transforming World*. New York.
- Connell, J. (2016). Last days in the Carteret Islands? Climate change, livelihoods and migration on coral atolls. *Asia Pacific Viewpoint*, 57(1), 3-15. <https://doi.org/10.1111/apv.12118>

European Coalition for Corporate Justice (ECCJ). (2021). *Suing Goliath: An Analysis of Civil Proceedings Brought against EU Companies for Human Rights Abuses and Environmental Harm in Their Global Operations and Value Chains, and Key Recommendations to Improve Access to Judicial Remedy*.

<https://corporatejustice.org/publications/suing-goliath/>

Filho, Walter Leal et al. (2021). "Climate Change Adaptation on Small Island States: An Assessment of Limits and Constraints." *Journal of Marine Science and Engineering* 9(6).

García-Portela, L. (2020). Moral Responsibility for Climate Change Loss and Damage: A Response to the Excusable Ignorance Objection. *Teorema: Revista Internacional de Filosofía*, 39(1), 7–24. <https://www.jstor.org/stable/26909365>

Green Climate Fund. FP165: Building Climate Resilient Safer Islands in the Maldives. <https://www.greenclimate.fund/project/fp165>

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

<https://doi.org/10.1080/14693062.2018.1450724>

Gussmann, G., and Hinkel, J. (2021). A framework for assessing the potential effectiveness of adaptation policies: coastal risks and sea-level rise in the maldives. *Environ. Sci. Policy* 115, 35–42. doi: 10.1016/j.envsci.2020.09.028

Samira, Idllalene. (2021). Rediscovery and Revival in Islamic Environmental Law: Back to the Future of Nature's Trust. <https://doi.org/10.1017/9781108772082>

IISD. (2022). Press release: V20, G7 Launch Initiative to Address Climate Risks in Vulnerable Countries (23 November 2022). <https://sdg.iisd.org/news/v20-g7-launch-initiative-to-address-climate-risks-in-vulnerable-countries>.

INC. (1991). First meeting of the Intergovernmental Negotiating Committee (INC) InsuResilience Global Partnership. <https://www.insuresilience.org/>

International Bar Association. (2020). *Model Statute for Proceedings Challenging Government Failure to Act on Climate Change*. London.

IPCC. (2021). Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis*. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. In Press.

IPCC. (2022). Summary for Policymakers. In: *Climate Change 2022: Mitigation of Climate Change*. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.001.

IPCC. (2018). Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, 616 pp. <https://doi.org/10.1017/9781009157940>.

IPCC. (2022). New, M., D. Reckien, D. Viner, C. Adler, S.-M. Cheong, C. Conde, A. Constable, E. Coughlan de Perez, A. Lammel, R. Mechler, B. Orlove, and W. Solecki. (2022). Decision-Making Options for Managing Risk. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 2539–2654, doi:10.1017/9781009325844.026.

Kempa, L., Zamarioli, L., Pauw, W.P. & Çevik, C. (2021). Financing Loss and Damage: Options for the Green Climate Fund. 10.13140/RG.2.2.26829.77285

London School of Economics. (2019). Urgenda v State of the Netherlands: Lessons for international law and climate change litigants. Grantham Research Institute on Climate Change and the Environment. <https://www.lse.ac.uk/granthaminstitute/news/urgenda-v-state-of-the-netherlands-lessons-for-international-law-and-climate-change-litigants/>

Mace, Mj & Verheyen, Roda. (2016). Loss, Damage and Responsibility after COP21: All Options Open for the Paris Agreement. Review of European, Comparative & International Environmental Law. 25. 197-214. <https://doi.org/10.1111/reel.12172>.

Markandya, A., González-Eguino, M. (2019). Integrated Assessment for Identifying Climate Finance Needs for Loss and Damage: A Critical Review. In: Mechler, R., Bouwer, L., Schinko, T., Surminski, S., Linnerooth-Bayer, J. (eds) Loss and Damage from Climate Change. Climate Risk Management, Policy and Governance. Springer, Cham. https://doi.org/10.1007/978-3-319-72026-5_14

Mechler, R., & Deubelli, T. M. (2021). Finance for Loss and Damage: a comprehensive risk analytical approach. Current Opinion in Environmental Sustainability, 50, 185–196. <https://doi.org/10.1016/j.cosust.2021.03.012>

Morri, C., Montefalcone, M., Lasagna, R., Gatti, G., Rovere, A., Parravicini, V., Baldelli, G., Colantoni, P., & Bianchi, C. N. (2015). Through bleaching and tsunamis: Coral reef recovery in the Maldives. Marine Pollution Bulletin, 98(1–2), 188–200. <https://doi.org/10.1016/j.marpolbul.2015.06.050>

Mührel, J. (2021). "All That Glitters Is Not Gold: The German Constitutional Court's Climate Ruling and the Protection of Persons Beyond German Territory Against Climate Change Impacts." *Völkerrechtsblog*. <https://voelkerrechtsblog.org/all-that-glitters-is-not-gold/>

Noy, I., & Edmonds, C. (2019). Increasing fiscal resilience to disasters in the Pacific. *Natural Hazards*, 97(3), 1375–1393. <https://doi.org/10.1007/s11069-019-03719-9>

Oakes R, Milan A, Campbell J. (2016). Kiribati: climate change and migration—relationships between household vulnerability, human mobility and climate change. Report No. 20. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS). <http://collections.unu.edu/view/UNU:5903Return>

Ornes, S. (2020). Explainer: What is attribution science? *Science News Explores*. <https://www.snexplores.org/article/explainer-what-attribution-science>

Pauw, Pieter (2022). Pieter Pauw on how rich countries should approach "loss and damage" finance. The climate-finance expert says clear definitions will be critically important <https://www.economist.com/by-invitation/2022/11/17/pieter-pauw-on-how-rich-countries-should-approach-loss-and-damage-finance>

Robinson, Stacy-ann. (2018). "Climate Change Adaptation Limits in Small Island States." In *Limits to Climate Change Adaptation*, eds. Walter Leal Filho and Johanna Nalau. Springer. <http://www.springer.com/series/8740>

Schäfer, L., & Künzel, V. (2019). Steps towards closing the Loss & Damage finance gap: Recommendations for COP25. Germanwatch e.V. https://www.germanwatch.org/sites/default/files/Policy%20Briefing_Steps%20towards%20closing%20the%20Loss%26Damage%20finance%20gap_0.pdf

Serdeczny, O. (2019). Non-economic loss and damage and the Warsaw International Mechanism. In R. Mechler, L. Bouwer, T. Schinko, S. Surminski, & J. Linnerooth-Bayer (Eds.), *Loss and damage from climate change. Climate risk management, policy and governance* (pp. 205–220). Springer. https://doi.org/10.1007/978-3-319-72026-5_8

Setzer, J., & Higham, C. (2022) *Global Trends in Climate Change Litigation: 2022 Snapshot*. London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science.

Storlazzi, C. D., Gingerich, S. B., van Dongeren, A., Cheriton, O. M., Swarzenski, P. W., Quataert, E., Voss, C. I., Field, D. W., Annamalai, H., Piniak, G. A., & McCall, R. (2018). Most atolls will be uninhabitable by the mid-21st century because of sea-level rise exacerbating wave-driven flooding. *Science Advances*, 4(4). <https://doi.org/10.1126/sciadv.aap9741>

Thomas, A., & Benjamin, L. (2018). Management of loss and damage in small island developing states: implications for a 1.5 °C or warmer world. *Regional Environmental Change*, 18(8), 2369–2378. <https://doi.org/10.1007/s10113-017-1184-7>

Thomas, A., & Benjamin, L. (2018). Management of loss and damage in small island developing states: implications for a 1.5 °C or warmer world. *Regional Environmental Change*, 18(8), 2369–2378. <https://doi.org/10.1007/s10113-017-1184-7>

Thomas, A., Baptiste, A., Martyr-Koller, R., Pringle, P., & Rhiney, K. (2020). Climate Change and Small Island Developing States. *Annual Review of Environment and Resources*, 45(1), 1–27. <https://doi.org/10.1146/annurev-environ-012320-083355>

Thomas, A. et al. (2021). “Global Evidence of Constraints and Limits to Human Adaptation.” *Regional Environmental Change* 21(85). <https://doi.org/10.1007/s10113-021-01808-9>.

Tschakert, P., Ellis, N., Anderson, C., Kelly, A., & Obeng, J. (2019). One thousand ways to experience loss: A systematic analysis of climate-related intangible harm from around the world. *Global Environmental Change*, 55, 58–72. <https://doi.org/10.1016/j.gloenvcha.2018.11.006>

Universal Declaration of the Rights of Peoples (1976). Wikipedia. [https://en.wikipedia.org/wiki/Universal_Declaration_of_the_Rights_of_Peoples_\(1976\)](https://en.wikipedia.org/wiki/Universal_Declaration_of_the_Rights_of_Peoples_(1976))

UNEP Sabin Center for Climate Change Law. (2020). Global Climate Litigation Report: 2020 Status Review. UNEP. <https://wedocs.unep.org/bitstream/handle/20.500.11822/34818/GCLR.pdf?sequence=1&isAllowed=y>

UNEP. (2022). Adaptation Gap Report 2022: Too Little, Too Slow – Climate adaptation failure puts world at risk. Nairobi. <https://www.unep.org/adaptation-gap-report-2022>

UNFCCC. (2013). Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013. <https://unfccc.int/documents/8106>

Volcovici, V., Evans, D., & James, W. (2022). COP27 delivers climate fund breakthrough at cost of progress on emissions. Reuters. <https://www.reuters.com/business/cop/countries-agree-loss-damage-fund-final-cop27-deal-elusive-2022-11-20/>

Volz, U., J. Beirne, N. Ambrosio Preudhomme, A. Fenton, E. Mazzacurati, N. Renzhi and J. Stampe. (2020). Climate Change and Sovereign Risk. London, Tokyo, Singapore, and Berkeley, CA: SOAS University of London, Asian Development Bank Institute, World Wide Fund for Nature Singapore, and Four Twenty Seven. <https://doi.org/10.25501/SOAS.00033524>

Wallimann-Helmer, I. (2019). Justice in managing global climate change. *Managing Global Warming*, 751–768. <https://doi.org/10.1016/b978-0-12-814104-5.00026-0>

Warix, S., L. Rademacher and M. Stege, (2017). Groundwater Resource Vulnerability to Climate Change: Outer Atolls of the Republic of the Marshall Islands. <https://scholarlycommons.pacific.edu/purcc/2017/events/50/>

Wolsko, C., & Marino, E. (2016). Disasters, migrations, and the unintended consequences of urbanization: What's the harm in getting out of harm's way? *Population and Environment*, 37(4), 411–428. <https://doi.org/10.1007/s11111-015-0248-1>

Yasir, M. and A. Jala Zuhury. (2022). Government of Maldives, UNICEF and young people urge climate action now. UNICEF. <https://www.unicef.org/rosa/press-releases/government-maldives-unicef-and-young-people-urge-climate-action-now>

Integrating Climate Change Risks into Resilient Island Planning in the Maldives. (2015). <https://www.adaptation-undp.org/projects/ldcf-resilient-island-planning-maldives>

UNFCCC. (2015). Report of the Conference of the Parties on its Twenty-first Session, held in Paris from 30 November to 13 December 2015 (Conference of the Parties, 2015). Adoption of the Paris Agreement

Schafer, H. (2019). Bracing for climate change is a matter of survival for the Maldives. World Bank Blogs. <https://blogs.worldbank.org/endpovertyinsouthasia/bracing-climate-change-matter-survival-maldives>





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