



Report

What do we have to lose?

Understanding and responding to climate-induced loss of life and health

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Photo credit: Children play on the high ground above flood damage – Toto Santiko Budi

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About this publication

This report is part of an ODI series on non-economic loss and damage, which includes a report on losses to cultural heritage and a report on losses to biodiversity ecosystem services.

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Acronyms

CBD	Convention on Biological Diversity
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
CSM	United Nations Climate Security Mechanism
DRR	Disaster Risk Reduction
DALYs	Disability-adjusted life years
ExCom	Executive Committee of the WIM
FAO	Food and Agriculture Organization of the United Nations
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
NELD	Non-economic loss and damage
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
QALYs	Quality-adjusted life years
SDGs	Sustainable Development Goals
SIDS	Small island developing State
TC	Transitional Committee on the operationalization of the new loss and damage funding arrangements and fund
UNCC	United Nations Compensation Commission
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UNHCHR	United Nations High Commissioner for Human Rights
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
VSL	Value of a statistical life
VSLY	Value of a statistical life year
WFP	World Food Programme
WHO	World Health Organisation
WIM	Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts

Executive summary

Climate change poses an acute risk to many aspects of our lives. It threatens our livelihoods and assets, our cultural heritage and societies, the biodiversity of this planet and the valuable ecosystem services it provides. But there are few impacts so devastating to an individual, or with such wide-reaching economic as well as non-economic effects on society, as the loss of life and health.

Climate change increases the frequency and severity of extreme events, like cyclones and floods, and causes chronic environmental changes like rising temperatures and sea levels. Injury, illness and even death can accompany these direct effects of climate change. But good health depends on more than just the absence of disease and injury. It is also determined by our physical and social environments: by the quality of our air, water and food, by the security of our infrastructure at home and at work, by our social and financial status and many other factors. The impacts of climate change puts pressure on all of these determinants as well.

In the context of the climate accords, ‘loss and damage’ describes the negative impacts of climate change that cannot be avoided due to insufficient mitigation and limits to adaptation. Loss and damage can be economic, referring to the loss of resources, goods and services that can easily be monetised, and non-economic, referring to forms of loss and damage that are more difficult to measure solely in economic terms. This may include loss of cultural heritage, territory, biodiversity, knowledge and practices, ecosystems and health and life – the focus of this paper.

The impacts of these losses are immense and wide-ranging. Many effects of climate change will

lead to loss of life, whether through the spread of climate-sensitive diseases like malaria, through crop failures and food insecurity, or through the direct effects of extreme events like heatwaves or floods. Deaths may traumatise those who survive and cause other cascading losses for those who were dependent on the deceased. Disease and injury can temporarily or permanently affect quality of life for those afflicted, affecting economic stability and burdening others with duties of care. Climate change also impacts mental health – whether alongside other health effects or through exposure to extreme events, witnessing the slow demise of livelihoods and ways of life, or through the destruction of cultural heritage and other causes. Through its effects on infrastructure and demands on public budgets, climate change also impacts health services – which may be destroyed or experience acute capacity constraints.

Understanding the impacts of losses can help us value them, but there is no foolproof way of doing so. Various methods are used in health policy to compare health impacts, like the number of lives lost or the number of ‘disability-adjusted life years’. But these are difficult to extend beyond health policy, so sectors like insurance use other methods involving monetary valuation. This may help the process of decision-making by standardising comparisons of costs and benefits, and are especially useful in local contexts.

However, extending these methods to global contexts may be unethical. They use local currencies and standards of life to judge health effects; comparing across borders therefore makes a life in one part of the world worth less than a life in another. These complications make the precise

valuation of loss an impossible ambition for policy. But knowing the value of loss is not required to prevent and respond appropriately. To do this, only an understanding of the scale of the (potential) loss is necessary, which can be measured using less controversial methods.

The most effective way to avert or minimise further climate-induced loss and damage is to reach net-zero anthropogenic emissions as quickly as possible. This will have further benefits for public health since the transition away from fossil fuels will reduce air pollution and may also involve changing to healthier diets and cleaner fuel systems for cooking and heating. Focus on climate change mitigation is therefore critical. It is too late to completely avert climate change, though – the impacts are already here. Our response to climate change must therefore include adaptation: to minimise the impacts by adapting lives, communities and systems to new realities.

Threats to life and health are common, but they are exacerbated by climate change. Dozens of organisations and bodies already make it their mission, more or less explicitly, to avert and minimise loss and damage to human health. The challenges are to fully understand the risks of climate change and the impacts they will have on us and the systems we depend on; to learn the lessons of the past decades on how to respond to both acute and chronic stresses, through the likes of disaster risk reduction and resilience, health systems and security; and to respond systematically, both to prevent loss and damage and to recover what we can, by ensuring clear global, national and local structures that coordinate effectively.

Not all of the impacts of climate change can be avoided, however, and the current pace of transition suggests that even many that could

be avoided will not be. There is a lively debate around fair and appropriate ways to address non-economic loss and damage resulting from climate change, including both the means of addressing this and who should be responsible for doing so. International experience of transitional justice suggests that there are five options:

1. Restitution: restoring those affected to their original situation (or as close as possible) before the loss and damage occurred.
2. Rehabilitation: redressing or repairing the loss and damage through the provision of social services such as healthcare, education or legal support.
3. Satisfaction: symbolic measures to recognise loss and damage, such as truth-seeking, apologies, or memorialisation.
4. Material compensation: the provision of money or other benefits in compensation for loss and damage.
5. Guarantees of non-repetition: commitments and measures to prevent similar loss and damage in the future, such as codes of conduct, training or governance reform.

Not all of these are equally relevant for loss of life and health. Lives, clearly, cannot be restored. Nor can much loss of health. At the same time, compensation is a highly controversial subject in international negotiations and although a new fund for loss and damage was agreed in 2022, its final form is not yet clear. What's more, the language accompanying the Paris Agreement explicitly states that its mention of loss and damage does not provide a basis for liability or compensation.

It is clear, however, that responding to loss and damage will require coordination, cooperation, and funding – even if the primary value of life and health is not financial. Indeed, it is not necessarily

the value of the loss that should dictate the response; rather, responses should be galvanised and targeted according to the need of those who have lost. And they should build on the existing

systems and organisations across sectors that seek to avert and minimise loss and damage to life and health, while developing ways to properly address it. There is much to be done.

1 Introduction

Our health is our most essential asset. Good health can enable us to live happy and fulfilling lives, as well as being vital for economic productivity and essential for resilient societies. Poor health can prevent us from realising our potential or fully participating in our families and communities. If widespread, it can exact considerable societal costs due to reduced productivity and, as seen at the peak of the Covid-19 pandemic, even bring economies to a standstill. Many of us would make substantial sacrifices to guarantee ourselves and the people we love longer, healthier lives. The enjoyment of the highest attainable standard of health is therefore, according to the Constitution of the World Health Organization (WHO), one of the fundamental rights of every human being without distinction of race, religion, political belief or economic or social condition.¹ But now, we are faced with a growing threat to human lives and damage to human health: climate change.

While there is no established definition of ‘loss and damage’ in the Paris Agreement,² the concept has its origins in international climate negotiations under the UN Framework Convention on Climate Change (UNFCCC), and is now understood to refer to the impacts of climate change that occur due to inadequate mitigation and limits to adaptation.³ On its own, damage refers to climate change impacts that can potentially be restored, whereas loss refers to impacts that it is not possible to restore or repair.⁴ Loss and damage can further be categorised into *economic* loss and damage, which refers to the loss of resources, goods and services that can easily be monetised, and *non-economic* loss and damage (NELD), which refers to loss and damage which is far more difficult or less appropriate to measure solely in economic terms.⁵

Attention to non-economic loss and damage was prompted by the development and approval of a two-year workplan at the 20th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP20) in 2014, which included a focus on enhancing knowledge of NELD.⁶ At COP23, hosted by Fiji in Bonn, the five-year workplan of the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM) was finalised with five workstreams, one of which focused on non-economic losses. COP28 will feature the first Health Day at these conferences.⁷ This recognition of the importance of non-economic value, especially for developing countries,⁸ significantly increased the issue’s visibility.

Types of NELD include loss of life, health, human mobility, territory, biodiversity, indigenous knowledge, ecosystem services and cultural heritage.⁹ However, the range of NELD types is potentially endless, as they are based on lived experiences and individual perceptions.¹⁰ NELD is consequently more complex to value than economic loss and damage,¹¹ and the resulting exclusion from monetary assessments can lead to underestimates of – and inadequate responses to – climate change-induced loss and damage.¹²

This paper focuses on one subset of NELD that has considerable overlap with economic losses: loss and damage relating to human lives and health. Research on loss and damage so far has mostly been on economic loss and damage, which in this case might relate to rebuilding hospitals destroyed by extreme weather events, or lost productivity hours due to heat stress.¹³ Where NELD has been studied, loss and damage to

health and agency has received more attention than other dimensions, like cultural heritage¹⁴ or biodiversity and ecosystems,¹⁵ but there is still a need to explicitly draw out lessons from related sectors and develop taxonomies that can guide

decision-makers. Against this backdrop, this paper highlights the nature of loss and damage to human health and agency; some ways in which climate change may contribute to it; and potential responses to avert, minimise and address it.

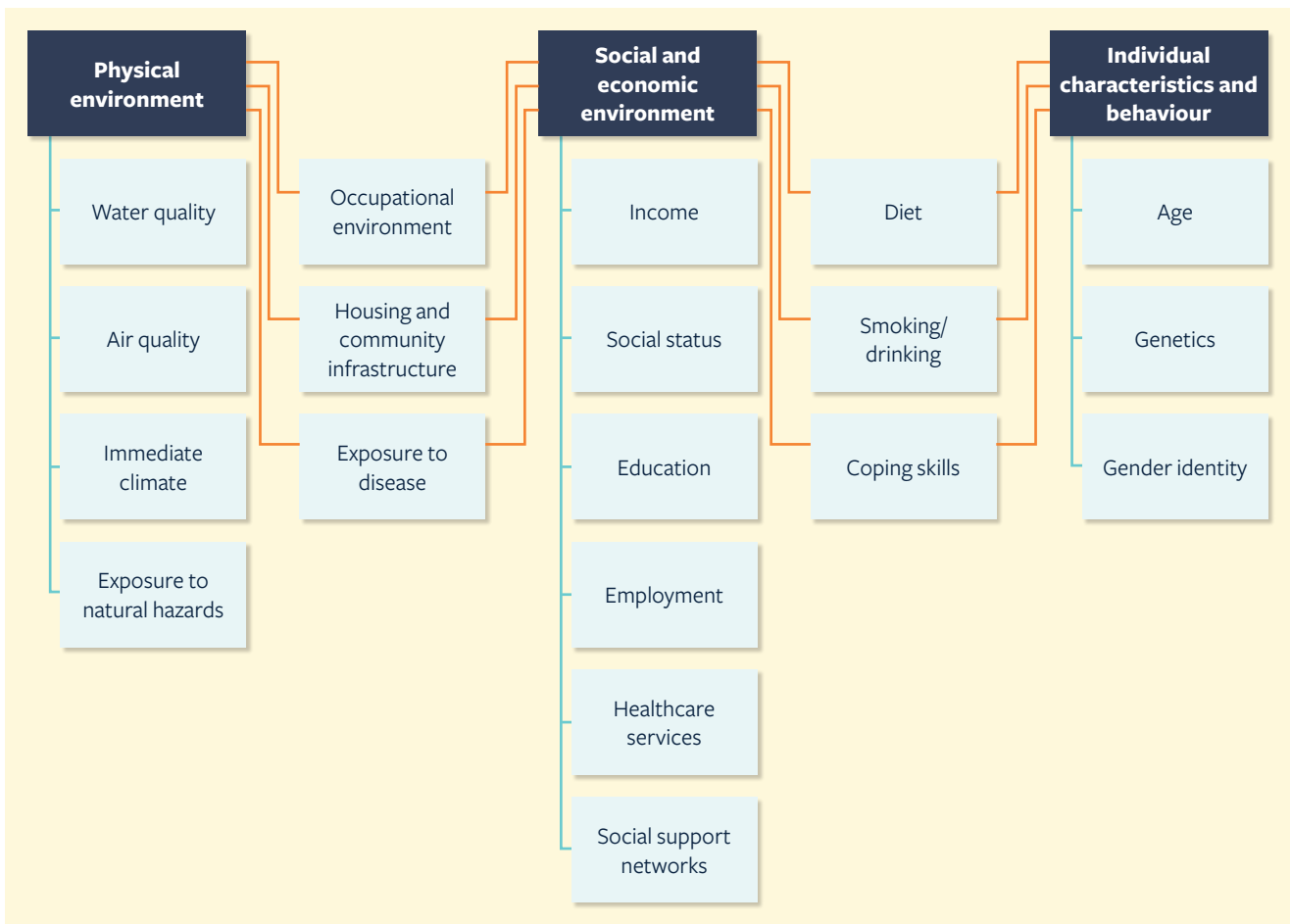
2 Understanding the nature and scale of loss and damage to individuals

2.1 Defining loss and damage to life and health

Physical and mental health contributes immensely to people’s happiness, social participation and economic productivity. Good health is more than the absence of adverse impacts on our bodies: it is ‘a state of complete physical, mental and social well-being’.¹⁶

Almost every aspect of our lives affects our health, from the environments in which we live, to the genetics we inherit, to our income, gender and education. Broadly, these determinants fall under three categories: the social and economic environment, the physical environment and the person’s individual characteristics and behaviours.¹⁷ Figure 1 gives examples of determinants of health from each category, to illustrate how broadly they range across all aspects of life.

Figure 1 Selected Determinants of Health



Source: Authors, adapted from Dahlgren, Whitehead and WHO (2006)

Individuals possess some characteristics that are more or less fixed and which may influence their health. Other characteristics are more malleable and may be affected by interventions at different levels: by their family and peers; by their community and work environment; and by the environmental, cultural and economic conditions under which their society operates.¹⁸

Of course, serious loss of health can result in death – arguably the most extreme form of loss a person can suffer. But this loss extends also to those who survive: the death of those we are close to has a profound effect on us, sometimes even causing lasting trauma. The impact of this loss is felt differently by different people and in different cultures – some ‘death systems’ engage with and process loss more systematically than others.¹⁹ The death of family or community members may also have material consequences for the dependants of the deceased.

Climate change is already causing loss and damage by negatively affecting all the determinants of health, as detailed in the next sub-section. As a result, the health of many people is suffering. Disease, injury and poor health – physical and mental – are affecting their quality of life and causing other losses, including to livelihoods and agency. These impacts will only get worse as average global temperatures continue to rise.

In the worst cases of loss and damage relating to health, people are dying years younger than they otherwise would, due to the impacts of climate change.²⁰ Expectations are central to the impact, and the acceptance, of loss of life, with unexpected or unnecessary deaths causing more trauma. Climate-related loss of health or life is thus significant because it could have been avoided – and the worst impacts may yet be avoided through ambitious action on mitigation and adaptation.

2.2 Causes of loss and damage to human life and health

Climate drivers can affect human life and health in varied and complex ways.²¹ Some causal pathways are relatively direct.²² Extreme weather events such as floods, storms, tropical cyclones, and wildfires can result in injury or death. Heatwaves can affect respiratory and cardiovascular health, particularly when high temperatures are combined with high humidity, and there is increasing evidence of a link between extreme heat and kidney disease.²³ As climate change causes these events to become more frequent and severe, a growing number of people will suffer loss of life and health as a direct consequence of global heating.

The effects of climate change can also indirectly lead to loss of life and health. Extreme weather events may trigger disease outbreaks, for example when flooding damages sanitation systems. Wildfires threaten health through burns and immediate loss of life, but also through health impacts of air pollution from smoke. Environmental disasters may also destroy health facilities, leading to loss and damage because people cannot access treatment, or damage natural and cultural heritage, leading to new, additional causes of emotional distress and affecting mental health. Changes in temperature and rainfall mean that disease vectors such as mosquitos can spread to new regions or lead to malnutrition due to reduced agricultural productivity. The climate change-induced event can be considered as the initial trigger, whereas the disease outbreak or deterioration of the determinants of health can be referred to as the mediating process which leads to loss of or damage to life or health.²⁴

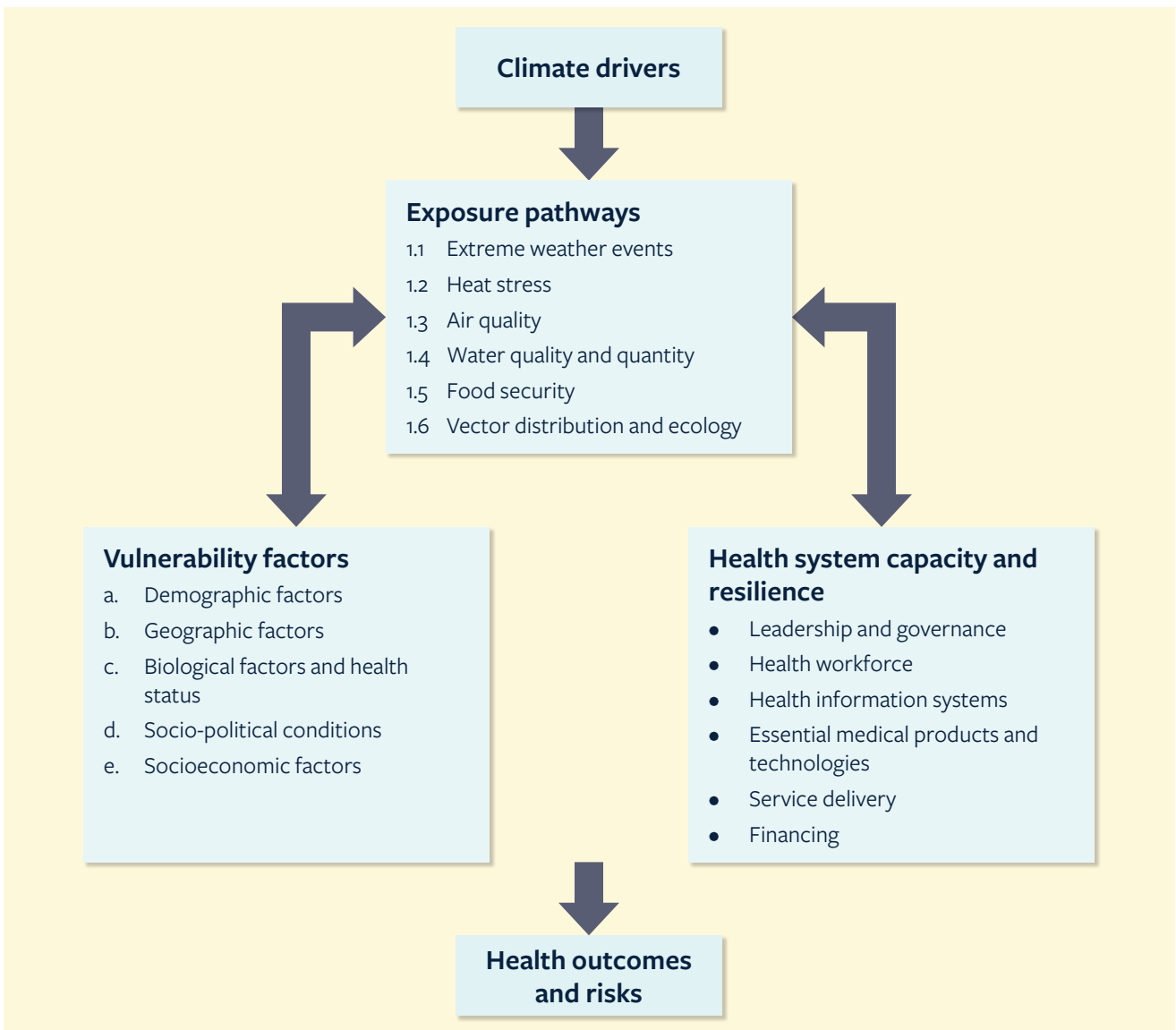
In addition to direct and indirect causal pathways, climate change can also interact with other stressors, such as conflict, pollution, poor service

provision and other risk factors to increase loss or damage to health.²⁵ These stressors exert powerful external pressure on communities by making vital resources scarcer, reducing productivity, worsening quality of life or even putting lives in danger. In the case of conflict, for example, powerful groups may seize or weaponise increasingly scarce resources, leading to increased violence, more extreme deprivation or reduced access to healthcare due to the destruction of

facilities. While the causal impact of climate change on conflict is disputed,²⁶ it seems clear that climate change can increase the pressure on society, fuelling fragility and violence, and may therefore contribute to loss of life and health.^{27 28}

WHO outlines some of the factors that increase vulnerability to climate-sensitive health risks.²⁹ Figure 2 highlights these pathways and factors, and how they interact with each other.

Figure 2 Pathways and factors that can lead to increased health risks



Source: Adapted from WHO (2021)

As shown in Figure 2, exposure pathways can interact with vulnerability factors and the health system's capacity and resilience to create compounding effects, which increase the risk of loss or damage to life or health. In fact, most health outcomes are a result of multiple drivers and factors which interact with each other, for example high temperatures due to heatwaves interacting with extensive hard surfaces in the built environment (which trap heat) and underlying health conditions (such as asthma or high blood pressure) leading to an increase in negative health outcomes.³⁰ Thus, the impact of climate-induced loss of health and life is typically compounded,

interconnected and cascading with other climatic events as well as other drivers of poor health.³¹ Many of these impacts were displayed in the 2022 floods in Pakistan, detailed in Box 1.

Given increased attention to climate-induced loss and damage, there are important questions to be asked about how robustly specific instances of loss of or damage to life or health can be attributed to climate change-induced events. Attribution science aims to calculate the extent to which specific shocks and stresses are driven by climate change, looking at the severity, duration and frequency of extreme weather and slow-onset climate events.

Box 1 Loss and damage in Pakistan

Between June and August 2022, over a third of Pakistan was submerged. The catastrophic floods caused not only economic damage to housing, agriculture and infrastructure, but also non-economic loss and damage to human life and health. The extreme event, referred to by the UN as an unprecedented climate change-induced disaster, led to over 1,600 deaths and injury to over 12,800 people.

In addition to the direct impacts on life and health during the floods themselves, the event continues to indirectly affect people through its impacts on determinants of health. Poor access to clean water and damage to sanitation systems triggered outbreaks of malaria, diarrhoea, skin infections and other vector- and water-borne diseases. Food security has been jeopardised due to damage to crops and livestock, which affected people's nutrition and incomes. The availability of health services was also eroded as 10% of health facilities were damaged and medical supplies were washed away. In the immediate aftermath of the floods, millions of people did not receive the immediate medical help they needed.

These exposure pathways interacted with existing vulnerabilities within Pakistan to further compound the negative effects on health. For example, prior to the flooding there were already high levels of malnutrition among low-income and other marginalised groups such as refugees, who then bore the brunt of food shortages and higher food prices after the flooding. Similarly, water- and vector-borne diseases were most rife in informal settlements, where marginalised urban residents are not served by basic infrastructure. Older individuals, children, pregnant women and others with physiological health risks then suffered greater health losses from malnutrition or disease than people without these risk factors.³²

The science of direct attribution of climate change to the loss and damage to life and health is still advancing. The attribution of loss of life due to extreme weather events may be clearer, whereas attribution may be more uncertain with slow-onset events.³³ Attribution to climate change may be more viable for some health outcomes over others. For example, there is robust attribution of heat-related deaths to heatwaves fuelled by climate change, whereas attribution is more difficult when extreme heat or changing pollination patterns exacerbate pre-existing conditions like asthma.³⁴

Since health outcomes can be the result of various pathways and vulnerabilities which can influence each other, attribution is very challenging. At the local and national level in developing countries, a lack of historical, granular data that can serve as a baseline further complicates the process. There is increasing recognition of the role of Indigenous and local knowledge in partially filling this gap.

This section has unpacked the complex and sometimes interconnected causes of climate change-induced loss and damage to life and health. The negative health outcomes and impacts that come about because of these drivers, pathways and vulnerabilities can take several forms, which will be discussed in Section 2.3.

2.3 Impacts of climate-induced loss and damage

The loss of health and human life invokes powerful and unique feelings. Loss of life or degradation of health directly affects the individual, but typically also has a wide-reaching, onward effect on their dependants as well as their society and economy. Since the early 1990s, the international scientific community has determined that climate change's

direct impact on human health is not merely 'likely', but 'unequivocal'.³⁵ Climate change is eroding over 50 years of public health gains.³⁶

WHO and The Lancet Countdown on Health and Climate Change recently took stock of climate-induced loss and damage relating to specific health outcomes.³⁷ Some of the most striking findings related to the effects of extreme heat, including over \$669 billion lost from heat-related reduction in labour capacity and an estimate of \$144 billion in heat-related years of life lost in 2021, based on the value of statistical life (discussed below).³⁸ While high, these figures are likely to be an underestimate given how extreme heat can cause longer-term physiological damage to respiratory and cardiovascular systems, as well as to mental health and social cohesion.³⁹ They also do not take into account indirect impacts associated with heat. For example, heatwaves can harm crops, affecting food security. The 2022 spring heatwave in India and Pakistan is estimated to have caused at least 90 deaths indirectly from malnutrition or hunger linked to reduced wheat yields. Extreme events are often difficult to attribute precisely to climate change, but in this case the heatwave was estimated to have been 30 times more likely to happen due to climate change.⁴⁰

While attributing health losses to climate change impacts beyond extreme weather events is harder, climate-sensitive diseases (e.g. water-, vector- or food-borne diseases or respiratory illnesses) account for roughly 70% of total annual deaths in 2019. This represents around 39.5 million deaths and 1.5 billion disability-adjusted life years (DALYs)⁴¹ – figures that are likely to get worse as average global temperatures rise. For example, increasing global temperatures expand the geographic areas suitable for transmission of vector-borne infectious diseases such as West Nile virus, dengue, yellow fever and malaria.⁴² Heavy precipitation events and

storm surge can damage sanitation infrastructure, leading to the contamination of water supplies. The destruction of transport and health infrastructure affect access to, or the provision of, health care.

It is harder again to quantify climate-related impacts on mental health and wellbeing (see Section 2.4 for more on the valuation of health degradation and loss of life). There are four main routes through which climate change can affect mental health:

1. Exposure to the impacts of climate change. The development of depression and post-traumatic stress disorder after living through one or more hurricanes is well-documented.⁴³ There is also evidence to suggest that high heat and humidity are associated with increased rates of suicide.⁴⁴
2. Observation of and exposure to slow-onset events or 'gradual environmental change', such as drought, sea-level rise or glacial retreat. Such events force people to confront difficult questions, including whether or not to leave their homes, and sometimes may offer no choice at all.
3. Public discourse on current and future climate-induced loss and damage, contributing to mental anxiety.

4. Other direct or indirect losses due to climate change, including cultural heritage and traditional ways of life, and loss to livelihoods and economic outcomes for individuals and societies.⁴⁵

These impacts are experienced on a continuum: individuals still recovering from an incident may also experience anxiety about the next one, which climate change means will happen more frequently and more intensely (see Box 2 for a related case study).⁴⁶ Responses to climate impacts therefore need to factor in and seek to address not only the immediate impacts on mental health, but also the medium- and long-term consequences to enhance people's resilience and address the loss and damage they have suffered.⁴⁷

In all cases, the health burden associated with climate change is likely to fall disproportionately on physiologically or socio-economically vulnerable groups such as children, the elderly, persons with pre-existing conditions and/or disabilities, Indigenous Peoples, women, low-income groups⁴⁸ and people working outdoors.⁴⁹

Box 2 Loss and damage related to mental health in Tuvalu

Tuvalu in the Pacific is already experiencing adverse effects from climate change including sea level rise, increased temperatures, ocean acidification, increased soil salinity and more intense and frequent tropical cyclones. Its small geographical size and population foster close-knit and strong community ties. Tuvaluans also primarily live a semi-subsistence lifestyle, so they are heavily dependent on their natural environment for livelihoods and wellbeing; decreasing yields lead to dependence on imported, processed foods.

A recent study sought to understand whether there were local and/or abstract climate change stressors on the mental health of the local population. Local stressors relate to environmental changes and events directly associated with climate change. Abstract stressors refer to geographically or temporally distant changes linked to climate change.

Box 2 Loss and damage related to mental health in Tuvalu continued

The authors interviewed approximately 11% of the households in the country's capital. It found that 95% of interviewees felt that climate stressors were a cause of mental distress, with 65% registering extreme distress manifesting in sadness, anxiety, poor health or anger. These findings presented themselves across gender, age group and income status. For example, a 63-year-old Tuvaluan female stated: 'I know I'll be leaving soon, but when news comes that Tuvalu is affected or will sink, it makes me cry. Because I was born here, I'm Tuvaluan'. An 18-year-old male spoke to climate anxiety affecting his education: 'Sometimes I want to sleep, but I can't because those thoughts about climate change keep popping up ... Thoughts about this distract me from studies'.

Lastly, the study reported that significantly greater levels of distress were felt in interviewees facing more financial hardship. This speaks to differing levels of vulnerability even within such a small country, reinforcing the importance of designing a response to loss and damage that meets the needs and priorities of those on the frontline of climate change.^{50, 51}

2.4 Measuring and valuing loss and damage

Estimating the scale and value of loss and damage to health can help make the case for measures to avert, minimise or address this loss and damage. In this section, we discuss some of the metrics and measurements that can be used to estimate the scale and value of health-related loss and damage. Each would require specific evidence, though it is important to note that there is some concern that waiting to gather the perfect evidence could be used as an excuse for inaction.

There are several metrics available to measure life and health, and any associated loss and damage to them. One clear and straightforward metric is to quantify the number of lives lost due to climate change-related impacts, where attribution is possible.⁵² There are also several metrics that can measure health impacts. One metric is DALYs. WHO defines one DALY as the loss of the equivalent of one year of full health.

If an individual has a disease or health condition, DALYs represents the sum of the years of their life lost due to premature mortality, plus the years lived with the disability. Quality-adjusted life years (QALYs) are an estimate of the length and quality of life that someone may gain after a medical intervention.⁵³ It is based on one year of an individual's health status, ranging from 0, which represents death, and 1, which represents perfect health during the year. Both of these metrics have drawbacks, but they are often used in health policy. Other metrics, such as measures of individual well-being and life satisfaction, are also suitable indicators of health.⁵⁴ Changes in well-being before and after an impact of climate change can potentially be used to reflect impacts to health.

While these metrics are used to measure how life or health has been impacted, they do not allow us to understand the value of what has been lost or damaged. Valuing and monetising loss and damage to life and health is a much more complex and

morally questionable task than measuring how life and health have been impacted. Nevertheless, some tools exist for this purpose and are frequently used in sectors like insurance. The value of a statistical life (VSL) is a concept which measures how people value a small reduction in mortality risk. The VSL can be estimated in several ways. Revealed preference studies, such as hedonic wage and averting costs methods, study observed behaviour, for example by estimating the risk premiums workers demand for engaging in dangerous occupations. Stated preference methods, such as contingent valuation surveys, are based on hypothetical questions where individuals are asked to place a monetary value on a reduction in the risk of mortality.⁵⁵ Based on these, an estimate can be derived that measures the dollar amount that a group of people would be willing to pay to save one statistical life.⁵⁶

Another similar concept, the value of a statistical life year (VSLY), measures the value of an additional year of life.⁵⁷ The concept is used in different policy areas to conduct cost-benefit analyses. Applying the VSLY to the number of deaths that a policy was expected to prevent that year can be used to estimate the benefit.⁵⁸ However, it is important to note that estimates for VSL can vary between countries and over time, and there may be differences due to different population and risk characteristics.⁵⁹ This makes the approach morally unacceptable to many, since applying the technique globally would value lives in some countries higher than in others.⁶⁰ This is therefore not compatible with the view that loss of life has equal significance around the world, and that all persons have an equal right to life.⁶¹

Although it is not usual to do so, loss or damage to health can also be valued and monetised using economic valuation techniques. Due to concerns about the ethics of assigning monetary values to

health conditions, it is recommended that health benefits are measured using the metrics discussed above, such as QALYs, rather than being valued.⁶² However, where monetary values are useful, for example for cost-benefit analyses in policy-making, several methods can be used.

Revealed preference methods can measure loss of health in terms of sick days or income lost due to poor health, or the cost of the illness in terms of the expenditure required to treat it.⁶³ Stated preference methods can also be used to measure how much people are willing to pay for medicines or treatments to cure health issues or avoid health risks. The well-being valuation method involves asking individuals to rate their well-being in terms of experiences such as life satisfaction, which is then used to estimate the additional income required to compensate for a loss in well-being due to a specific health condition.⁶⁴ This approach may be suitable for measuring mental health impacts, as mental health conditions have a large influence on overall well-being and life satisfaction.⁶⁵

There are some live examples of attempts to value and calculate the economic cost of climate change-induced health loss and damage. The World Bank has conducted pilots of climate and health economic valuations in Bangladesh, Egypt, Nepal and Pakistan.⁶⁶ Valuation is challenging as the value of many categories of NELD is context-dependent, suggesting that value is based on connections and interactions between people. Valuations may therefore vary between individuals and communities, which needs to be considered if these NELD items are being addressed on an international level.⁶⁷

Although valuation may be important for some aspects of decision-making, in the case of life and health it may not always be appropriate given the

limitations and ethical concerns. For example, in the aftermath of an extreme event that leads to injury, disease and even death among the affected population, it would be difficult and unethical to start the response process by attempting to value – especially in monetary terms – all the lives lost and all the negative health impacts. Preventing and addressing NELD may not always require monetisation and valuation: measuring the scale of the loss and damage by identifying how many lives were lost and how many people are experiencing negative health outcomes should be sufficient to

inform action to address the loss or damage to life or health. This would require on the ground engagement with affected communities, for example through emergency first responders in the case of extreme events, who can gain first-hand insights into the nature and scale of the loss and damage. Such engagement could provide a deeper understanding of why certain things are valued. Using these more locally determined concepts of value in assessments of loss and damage could provide a more contextual analysis and a more comprehensive view of climate impacts.⁶⁸

3 Responding to loss and damage to human health and life

To evaluate measures for responding to loss and damage, it is helpful to revisit the language of the UNFCCC, which speaks of ‘averting, minimising and addressing’ loss and damage. To ‘avert’ means to prevent or keep from happening. To ‘minimise’ means to reduce as much as possible. The most effective way to avert and minimise future climate-induced loss and damage is to reach net-zero anthropogenic emissions as quickly as possible. Earlier action to reduce greenhouse gases would have averted or at least minimised the extent of climate-induced loss and damage still further. In the absence of sufficient efforts to cut emissions, average global temperatures have increased by 1.1°C above pre-industrial levels and will continue to rise due to historic emissions,⁶⁹ even if humanity collectively achieved net-zero emissions tomorrow. A still hotter future is therefore locked in, but the worst can yet be avoided by concerted action now. Each incremental degree of warming prevented will avoid compounding impacts of climate change, and their effects on health.

The second most effective way to avert and minimise loss and damage is through actions to prepare for and adjust to the impacts of climate change. Thus, climate change mitigation and adaptation can be understood as strategies to avert and minimise potential or avoidable loss and damage.⁷⁰ ‘Address’ in this context means to deal with, respond to, act upon or treat. When adaptation efforts have failed or individuals and communities have reached the limits of adaptation (including due to soft limits such as lack of resources), it is necessary to address that unavoids or unavoidable loss and damage. Developing countries’ requests for loss and damage support typically fall into this category.⁷¹

The appropriate response to loss and damage depends on the point in time of the intervention. Organisations across sectors recognise the importance of preventing loss, including through numerous international agreements and frameworks, from the Sustainable Development Goals (SDGs) to the Paris Agreement, the Sendai Framework for Disaster Risk Reduction and the UN Climate Security Mechanism (CSM).⁷² But it is not just a case of prevention before, response after. Many of the most significant impacts of climate change are slow-onset, advancing over the course of decades, and are thus better seen as *processes* than events. Even for those sudden-onset impacts that occur as extreme events, the disaster itself – the impact on communities and ecosystems – is a process that includes the consequences of human action and inaction, and the aftermath of the event. During such a process, responses will include both addressing losses and minimising further loss by preventing the worst from happening – preventing loss of health from becoming loss of life, for example. In reality, then, unless losses are completely averted, responses must include all three perspectives: preparing to avert or minimise future losses, minimising current impacts and addressing unavoids losses.

3.1 Averting and minimising loss and damage

Climate change mitigation is important to loss and damage because if we can prevent climate change we can prevent the losses due to its impacts. Beyond this global need, two specific aspects of mitigation are pertinent to this paper. The first is that the global health sector accounted for 5.2%

of annual emissions in 2019;⁷³ it therefore has an important role to play in mitigation. Part of this may be achieved through transition to renewable energy sources and the reduction of waste. Another set of difficult public health questions that affect emissions in the sector is the approach to end-of-life treatment and care, especially in developed health systems. A Lancet Commission has summarised evidence of ‘excessive’ treatment at the end of life, which can “increase suffering and consume resources that could otherwise be used to meet other needs.” There is increasing recognition that these resources include the carbon emissions of treatment.⁷⁴

The reduction of GHG emissions is also relevant to health systems because the successful efforts of other sectors to decarbonise may indirectly benefit health. The transition away from fossil fuels in transport, for example, will reduce air pollution, which kills 6.7 million people each year.⁷⁵ Clean fuel systems for cooking and domestic heating will cut down on household pollution and consequently preventable deaths and illnesses. Reducing the consumption of meat will likely contribute to large reductions of emissions while also improving health by minimising non-communicable diseases. Clearly, therefore, climate change mitigation is not only vital to averting losses to life and health – our health systems also have an important role to play in reducing emissions.

Since it is too late to completely avert climate change our response must also include adaptation: to avert or minimise the impacts of climate change by adapting lives, communities and systems to be impervious or at least more resilient to those impacts. These are global, and adaptation is therefore needed everywhere, but it is particularly urgent in many developing countries, for two reasons. The first is that these

countries are historically not responsible for climate change, and often produce comparatively few emissions even today. Mitigation strategies in these countries, although important, will have relatively small effects on climate change and the moral imperative to transform their economies to carbon negative is also lesser. The second reason is that developing countries are often the most vulnerable to the effects of climate change.⁷⁶ Adaptation is all the more important in these countries to avert or minimise consequent loss and damage.

The first step in planning adaptation strategies is anticipation. Understanding the vulnerability of countries and regions to the impacts of climate change is vital to be able to prepare for those impacts: this is Priority 1 of the Sendai Framework – ‘understanding disaster risk’.⁷⁷ The significance of anticipation and prevention is increasingly recognised, not only by the four global agendas mentioned above, but also by countries themselves: 59 countries committed at COP26 to vulnerability assessments as part of the Health Programme Initiative on Climate Resilient Health Systems.⁷⁸ At the same conference, WHO launched the Alliance for Transformative Action on Climate and Health (ATACH).⁷⁹ In the same year WHO updated its guidelines for conducting vulnerability and adaptation assessments,⁸⁰ and the World Meteorological Organization launched the Early Warnings For All (EW4A) initiative with UNDRR.⁸¹ However, the need is still not sufficiently recognised or translated into concrete action: only 49 of 95 countries surveyed in 2021 had a national health and climate change plan.⁸² Before planning a response, policy-makers need to understand what the threats are, where they are threats and when they will become realised. Climate models are becoming more sophisticated, better predicting the direct impacts of climate change including extreme events, rising temperatures and rising sea

levels. Understanding local as well as national and global threats means that appropriate systems can be built to respond to them.

These systems range across different responsibilities and different scales, and building them is the second priority of the Sendai Framework: ‘strengthening disaster risk governance to manage disaster risk’.⁸³ The key is to build resilience and coping capacity in the face of adverse impacts, so reducing the vulnerability of communities to these effects.⁸⁴ Early warning systems are vital; predicting when an emergency will happen enables anticipatory action and preparation, like evacuation from flood zones or the early release of funds.⁸⁵ But adaptation measures must be much more far-sighted than early warning systems. Responding to disasters such as flooding will involve well-trained and well-resourced emergency services, which take time to build. Other adaptation measures might include making infrastructure – especially sanitation infrastructure – more resilient, for example by building flood defences, or providing universal health coverage (in itself a considerable challenge). Chronic impacts like rising temperatures as well as extreme events like heatwaves need adaptation systems too: these might include the widespread provision of air-conditioning units and establishing more urban green spaces, as well as measures to improve food security in the face of potential crop failures.⁸⁶ In the absence of sufficient funding for large-scale projects many communities may be forced into ‘cashless adaptation’, i.e. making bigger adaptation sacrifices that are cheaper, like moving a community to higher ground rather than building expensive coastal defences.⁸⁷ To cope with communicable diseases, societies need health information tools, like the high level like the WHO Health Emergency Dashboard,⁸⁸ to help anticipate outbreaks and track and halt their spread – a

lesson made clear by the Covid-19 pandemic.⁸⁹ At the national and sub-national level more granular tools like the Enhancing National Climate Services (ENACTS) initiative are important.⁹⁰ An important part of this system-building is understanding the scale of adaptation needed: whether it is reinforcing existing community coping capacity, or whether radical transformation, like planned relocation, is required. WHO has guidance for 10 components of adaptation in health systems, which range from vulnerability assessments, early warning systems and emergency preparedness to deeper reforms including sustainable technology and infrastructure, managing the environmental determinants of health and more active involvement of health departments in other sectors.⁹¹ Underpinning all of these systems is the need for finance; this is the third priority of the Sendai Framework, ‘investing in disaster risk for resilience’ – both public and private investment for widespread, structural and non-structural measures to build resilience.⁹²

Planning for indirect effects is also crucial but is more difficult because of the greater uncertainty involved. This is reflected in the less concrete action areas of the UN Climate Security Mechanism, which underlines the importance of systems to counter vulnerability as well, but which has not yet outlined detailed guidelines on how to do this.⁹³ Instead, it lists action areas for the UN system: emphasising prevention, informing peace and security actors and development agencies of the relevance of climate change, and promoting inter-sectoral partnerships.⁹⁴ Lessons can be learned from the study of direct climate impacts, however, which are often also highly uncertain: contingency plans can be based on different levels of scenario analysis so that systems are prepared for unpredicted outcomes. This approach is perhaps most clearly shown in the IPCC reports, which portray different scenarios of climate

change over the next few decades and extrapolate adaptation needs for each.⁹⁵ This is important because the indirect impacts of climate change – changes in the environment that may increase the vulnerability of communities through, for example, reducing stocks of natural resources like water – can increase the likelihood of conflict and so lead to loss of life and health.⁹⁶ Understanding this danger, peace, security and development agencies can act pre-emptively to equitably share or negotiate access to those resources. Meanwhile, health and disaster risk reduction (DRR) agencies should be prepared for migration as a response to climate change impacts, as poorly funded or managed refugee camps can lead to further health losses through communicable diseases like cholera or the breakdown of order and access to violence.^{97, 98}

When an impact has not been averted, part of the process of minimising loss and damage is responding to the event and preventing further losses. Emergency services drive the response in the immediate aftermath. International coordination and emergency services organisations deploy to disaster areas in the immediate aftermath to provide assistance, such as the United Nations Disaster Assessment and Coordination (UNDAC) system and the International Search and Rescue Advisory Group (INSARAG). These play an important role in coordinating international assistance especially in areas where disaster preparedness is not well-developed. Early warning systems can help to mobilise such help, as well as enabling anticipatory action. However, rescue is extremely time-dependent. This means that communities need access to local emergency services, or community defence teams, and should not rely exclusively on distant help from urban centres or foreign assistance – not least because bottlenecks quickly emerge around infrastructure like airports.⁹⁹ The

process of minimising loss and damage continues beyond the immediate aftermath if the impact has long-term consequences: communities may be displaced and need medium-term security, or the health impacts of the event may be chronic or otherwise require long-term care, so healthcare systems must build in capacity for non-emergency services as well.

Finally, adaptation is not just about responding directly to or coping with climate change impacts: it is also about building back better, about thriving as well as surviving. Crises can sometimes be opportunities to improve, as recognised by the Sendai Framework’s fourth priority for ‘enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction’.¹⁰⁰ But adaptation to avert and minimise loss and damage goes beyond coping, DRR and emergency services, not least because some adaptation strategies can be unsustainable. Transformative adaptation seeks to fundamentally change social-ecological systems to address root causes of vulnerability.¹⁰¹ There are lessons to be learned from broader mechanisms for development like the SDGs,¹⁰² the Healthy Islands vision which combines health systems, education, conservation and dignified employment,¹⁰³ and the One Health initiative, which recognises the links between good health in humans and thriving ecosystems.¹⁰⁴ Since good health is determined by so many aspects of our lives, averting and minimising loss and damage in the face of climate change implies the deep transformation of societies to build and maintain the conditions for good health.

3.2 Addressing loss and damage

Measures can be put in place to avert and minimise non-economic loss and damage to life and health. However, much loss and damage

cannot be averted or minimised, and this unavowed or unavoidable damage therefore needs to be addressed.¹⁰⁵ While it is possible that individuals may adapt to the changes brought about by the loss or damage, its impacts cannot be ignored. Measures to address loss and damage aim to respond to these socio-economic or human effects of unavowed losses.¹⁰⁶

There is a lively debate around fair and appropriate ways to address non-economic loss and damage and who should be responsible for doing so.¹⁰⁷ Klinsky (2018)¹⁰⁸ suggests that the issues of responsibility and repair are separated, so that a non-punitive approach could be taken to ameliorate climate-related harms. Klinsky also introduced five potential options to address loss and damage into the climate debate based on international experiences of and frameworks for transitional justice.¹⁰⁹ These options are (1) restitution; (2) rehabilitation; (3) satisfaction; (4) material compensation; and (5) guarantees of non-repetition. Subsequent work has proposed similar measures to address non-economic loss and damage, including recognition and repair of loss, remembrance, counselling and official apologies, which can all be used to provide some remedy and repair.^{110 111}

These options may be used on their own or in combination. While material compensation is a discrete measure, it is important to note that all the other measures require funding as they will all have their own separate costs, even though, as of now, activities to address loss and damage still remain unfunded to some extent, especially compared to activities to avert and minimise loss and damage.¹¹² In this section we discuss the five options and the ways in which they may be used to address non-economic loss and damage to life and health.

Restitution

The aim of restitution is to provide remedy to individuals by restoring them to their original situation before the loss and damage was experienced.¹¹³ When used in the context of international human rights, restitution can refer to the restoration of liberty, identity, citizenship and employment, following a violation of human rights law.¹¹⁴ In the context of climate change, this may be similar to the mechanism outlined in Shawoo et al. (2021)¹¹⁵ which refers to repair of loss.

The potential to repair or restore climate change-induced loss or damage to life or health depends on the nature and the impacts of the loss or damage. Clearly, life cannot be restored to the dead. Restitution is therefore not appropriate for loss of life since those who survived cannot be restored to their original situation either.

However, it may be possible to provide restitution for the loss of or damage to health, in the sense that the provision of healthcare may restore the injured or ill to good health. Since the impacts to health can take various forms, as discussed in Section 2.3, successful restitution of loss of health will depend on the type of impact, the severity of the affliction, the time to treatment and the sophistication of healthcare services. Addressing these impacts may also require measurements of how life or health has been impacted and how individuals are experiencing negative health outcomes, as outlined in Section 2.4, to determine the best course of action in providing restitution.

Types of treatment for health impacts may also vary by the time of the intervention. After an extreme event such as floods or hurricanes, individuals may experience traumatic injuries, and may be exposed to water- and vector-borne diseases. Therefore, addressing these effects and

helping individuals recover will require urgent and timely care so that the impacts do not eventually require more serious interventions.¹¹⁶ After an extreme event, individuals may also experience mental health issues, such as psychological distress, post-traumatic stress or anxiety. In the aftermath of the event effective responses can include psychological first-aid, basic clinical mental health care and other psychological interventions.¹¹⁷

It is also important to restore any physical, social or economic determinants of health impacted by climate change. For example, after a climate change-induced extreme event such as flooding, populations can be left without access to safe water and safe infrastructure and may have increased exposure to diseases. Therefore, restoring health requires the restoration of these key physical determinants of health. After the extreme flooding in Pakistan in 2022, UNICEF and others provided safe drinking water and hygiene kits to millions of families and supported the rehabilitation of water supply facilities to address outbreaks and cycles of water-borne diseases and malnutrition.ⁱ

Climate change impacts may also affect the capacity of healthcare services to respond to need, and thereby indirectly cause loss of health. Restitution of healthcare services is therefore also an important part of addressing loss and damage. After the 2022 Pakistan floods approximately 888 health facilities were damaged and millions of people were unable to access health care and medical treatment.ⁱⁱ With assistance from WHO, health authorities expanded access to essential health services to prevent and control disease outbreaks.¹¹⁸

In some cases it may not be possible for health to be fully restored. For example, for loss or damage to health due to long-term exposure to climate change impacts, such as worsened chronic conditions or mental health problems, individuals may never fully recover. Even if the individual returns to good health they may still be significantly affected. Different measures, such as rehabilitation, may be needed to address the loss or damage.

Rehabilitation

The aim of rehabilitation is to redress or repair harm through the provision of social services such as healthcare, education or legal support.¹¹⁹ However, unlike restitution these services are not intended to restore individuals to their original situation or fully repair loss or damage to their health. Instead, rehabilitation is intended to help individuals or communities recover economically and socially from the trauma of the loss or damage. Rehabilitation in relation to loss of life would aim to help family members or others affected by the death to recover from the loss, helplessness and grief that they may feel, especially in the aftermath of a climate-related hazard. One tool to help with social or emotional recovery involves the provision of mental health services such as trauma counselling, to facilitate grieving and boost emotional resilience.¹²⁰

In some cases individuals may need longer-term support to help them recover and maintain their quality of life even if they are not well. Support can include ongoing education and information about their disease, and its treatment and management. Individuals may also need economic support, for instance if health impacts prevent them

i More than 10 million people, including children, living in Pakistan's flood-affected areas still lack access to safe drinking water (unicef.org)

ii WHO EMRO | Major health risks unfolding amid floods in Pakistan | Pakistan-news | Pakistan

from working. If they can work but are unable to continue the same type of job as before, they may need support with reskilling or education through retraining schemes.

Others may require emotional support. Individuals' health conditions could cause emotional distress, as people with long-term physical health conditions commonly experience mental health problems, including depression and anxiety.¹²¹ The impacts of climate change on an individual's health could lead to feelings of loss of autonomy and control.¹²² Mental health support in the form of counselling or support groups, could help individuals recover emotionally from these mental health impacts.

Mental health tools can be used to help individuals and communities minimise their suffering and build resilience in the aftermath of a climate change-induced event.¹²³ Following Typhoon Haiyan in the Philippines in 2013, investments were made to train health workers to provide mental health care and improve access to quality care.¹²⁴

Satisfaction

Satisfaction refers to symbolic measures to recognise and address loss and damage that would not be sufficiently or appropriately addressed with financial or material solutions.¹²⁵ This includes actions such as recognition and official apologies that acknowledge the extent of the loss, truth-seeking and memorialisation. These actions are usually combined with the more tangible measures of compensation, restitution and rehabilitation.¹²⁶

Memorialisation refers to forms of collective remembrance, such as through museums, monuments or school curricula.¹²⁷ It consists of physical representations or commemorative activities, and aims to provide redress and enable

reflection.¹²⁸ While memorialisation is used to remember and honour the past, it also has benefits for present and future generations, such as helping with the healing process or raising awareness.¹²⁹ It helps with education and social learning, provides empathy for the victims as fellow human beings and helps in the prevention of future losses.

In relation to transactional justice, memorialisation is used to honour victims of human rights violations. The Memory and Human Rights Museum in Chile commemorates the victims of human rights violations during the military dictatorship. The museum consists of testimonies, documents and archives providing accounts of violations. In New Zealand, the Canterbury earthquake memorial commemorates the disaster and the lives lost during the 2011 earthquake.

Truth-seeking and apologies can also provide satisfaction,¹³⁰ and are widely used as part of transitional justice initiatives. Public apologies can acknowledge loss and damage that may not have been recognised at the time. It may also involve an acknowledgement of a wrong, a truthful admission, a public statement of remorse and a guarantee of non-recurrence.¹³¹

Material compensation

Material compensation refers to the use of financial resources to address the loss and damage being experienced and improve the well-being of those affected.¹³² In theory, individuals who experience loss or damage, for example the loss of a loved one, or negative impacts to their health can be financially compensated for these losses.

Compensation is a contentious subject because it is often confused with reparations, which imply liability for a fault. For this reason, the language accompanying the adoption of the

Paris Agreement does not provide a basis for any liability or compensation. But compensation for victims is possible without imputing responsibility for damage or demanding sanction of a ‘perpetrator’. Compensation can and should be given on the basis of need, not of liability, where it is an appropriate response based on some of the methods of calculation discussed above.

Even if compensation were out of the question, this would not mean that there can be no provision of finance for loss and damage to life and health. All the other measures discussed, such as the provision of healthcare and other support services, will require significant resources. Funding in various forms is therefore a key part of addressing loss and damage.

Guarantees of non-repetition

Guarantees of non-repetition aim to prevent similar loss and damage in the future. However, in the context of climate change it is difficult to implement this measure due to the time lag between the production of greenhouse gas emissions and the experience of the loss and damage. Guarantees of non-repetition of loss and damage can therefore temporally and technically be considered as the implementation of climate change mitigation and adaptation policies.

3.3 Responses within the UN system

Responding to loss and damage is not the explicit mandate of any UN agency, department or fund, but the body that discusses loss and damage most is the UNFCCC. Since its inception in 1992, Small Island Developing States (SIDS) have highlighted the need to address loss and damage due to climate change. However, it was not until the Bali Action Plan of 2007 that loss and damage was mentioned in decision text from its Conference

of the Parties (COP). And it was only in the 2010 Cancun Agreements that an official work programme on loss and damage was established.

NELD was first referenced in the decision text of the Doha COP in 2012.¹³³ This acknowledged that further work and understanding was needed on the topic and requested the Secretariat to publish a dedicated technical paper (2013), which is still one of the more detailed works on the subject.¹³⁴ At the establishment of the WIM in 2013 at COP19, NELD was included as an action area of the WIM’s Executive Committee (ExCom),¹³⁵ with a dedicated expert group for enhancing data and knowledge.¹³⁶

In 2015, loss and damage was explicitly codified in a treaty under the UNFCCC regime via Article 8 of the Paris Agreement. NELD was included under the loss and damage provision as an example of international cooperation areas for enhanced understanding, action and support.¹³⁷

The Santiago Network is the operational arm of the WIM. Established at COP25 in Madrid, its main function is to catalyse technical assistance in developing countries in preparation for their loss and damage responses.¹³⁸ To explore the outstanding question of potential funding arrangements, the Glasgow Dialogue was set up at COP26 in 2021. It was swiftly followed, at COP27, with an agreement to establish new funding arrangements to respond to loss and damage, including a fund with a mandate explicitly focused on ‘addressing loss and damage’. A Transitional Committee (TC) is considering recommendations on the operationalisation of the fund, and is due to report to the COP and CMA for their consideration and adoption at their 2023 session.

Figure 3 summarises key milestones for the incorporation of loss and damage within the UNFCCC.

Figure 3 Key loss and damage milestones within the UNFCCC

There are limitations to the UNFCCC, however. As an international treaty, its structure and secretariat are designed for intermediation between member countries, not action to respond to something like loss and damage. The WIM's functions are to enhance knowledge, strengthen dialogue and coordination and enhance action and support including finance, technology and capacity-building – not to deliver loss and damage responses itself.¹³⁹ Even the Santiago Network, the operational arm of the WIM, is only supposed to catalyse technical assistance. Moreover, loss and damage to climate change spreads to almost every facet of life and should not remain the preserve of only one body. Even the fund under discussion should not have a monopoly over the issue.

This is all the more true considering how much responding to loss and damage is implicitly mandated across many UN bodies – especially averting and minimising it. The UNDRR, as discussed above, seeks to manage risk and prepare communities for all hazard-related disasters, whether climate-related or not. WHO does the same for public health and health security. Others with a relevant mandate include UNICEF, UNHCR, UNDP, OCHA, FAO, UNFPA and WFP. All of these bodies, and many others, work in one way or another to prevent loss of life and health.

Addressing loss and damage is much less established within the UN system than averting and minimising it. Some organisations may have

implicit mandates that touch on relevant aspects – those that deal with victims of disasters, like UNHCR, have a hand in forms of reconstruction and rehabilitation. WHO, in its capacity as focus for global health systems, is relevant for addressing loss and damage through health services. UNHCHR, in defending human rights and calling out violations, also has a role to play, especially for responses around satisfaction.

There are two instances where the UN system has dealt more explicitly with addressing loss and damage. The first is through reparations: different to compensation, these tend to be in some way punitive and are forced on the offending party on the basis of their liability. Due to geopolitical considerations, instances have been rare indeed – the UN Security Council must agree that reparations are called for, as they did after the First Gulf War when the retreating Iraqi army set fire to Kuwaiti oil installations. The UN set up a Compensation Commission (UNCC) and an accompanying Fund to process claims to victims. Most of the financing came from a percentage lifted from Iraqi oil exports. This process is unlikely to be replicated for loss and damage due to uncertainties of attribution to climate change and political obstacles to accepting liability: the UN could only force reparations on a state with unanimous backing from the Security Council. Despite confusing parallels in terminology, as discussed in Section 3.2, reparations should be treated as a separate tool to compensation.

The UN has itself caused loss and damage, and without accepting liability has sometimes sought to address it. Two examples show a similarity of approach with manifestly different outcomes. In Haiti, UN peacekeepers introduced a strain of cholera that ravaged the country as it struggled with the aftermath of the 2010 earthquake. Years later, against pressure by legal teams not to open the UN to liabilities by accepting responsibility for the losses, the Secretary General apologised for the UN's role in the calamity and set up a trust fund for member state contributions. Projects

funded included material assistance to the communities of victims (see Box 3).

In Kosovo in 1999, the UN mission sited an IDP camp on an old lead mine, leading to cases of lead poisoning among minority groups including Roma. After years of activism, a UN quasi-judicial body finally accepted the possibility that human rights violations may have occurred, and recommended a trust fund for communities in the area. This was still not operational three years after its establishment due to lack of funds.¹⁴⁰

Box 3 Addressing loss and damage in Haiti

The earthquake in Haiti in 2010 killed an estimated 220,000 people. A UN mission mobilised to help included a Nepali peacekeeper who carried a virulent strain of cholera. The disease quickly spread among stricken communities in Haiti, where public health and services were limited at the best of times. Almost 10,000 died of the disease and 820,000 were affected – mostly between 2010 and 2011. After seemingly successful efforts to eradicate it, the disease reappeared in October 2022, and by the beginning of 2023 there were 22,365 suspected cases and 450 deaths.

UN Secretary-General Ban Ki Moon issued an apology – in Creole, French and English – in 2016:

‘On behalf of the United Nations, I want to say very clearly: we apologise to the Haitian people. We simply did not do enough with regard to the cholera outbreak and its spread in Haiti. We are profoundly sorry for our role’.

Whether this brought any satisfaction to aggrieved communities is hard to say, but the response seems to have been positive, if muted.

Ban also called for donations to the Haiti Cholera Response Multi-Partnership Trust Fund, set up the same year. Because the UN is an organisation of member states, they all have collective responsibility for its actions. Not all countries recognise this, however, and the trust fund could not therefore come from UN budget.

Box 3 Addressing loss and damage in Haiti continued

The fund's approach is split into two tracks. Track 1 oversees projects to combat cholera and improve health outcomes. Track 2 is described as 'a concrete expression of the regret of our Organization for the suffering so many Haitians have endured. On that basis, we propose to take a community approach that would provide a package of material assistance and support to those most severely impacted by cholera. The support would be based on priorities established in consultation with communities, victims and their families'. Assistance could be health-related, but it could also include local infrastructure, education, electricity or equipment, depending on community consultations. In the initial pilot, completed in 2020, six local infrastructure projects were built including a market, road development and water supply. Subsequent projects have been disrupted by civil unrest, political turmoil and fuel shortages. They are therefore incomplete, and work has been extended to March 2024 (almost eight years after the establishment of the fund).^{141, 142, 143}

Coordination

There are traditionally two approaches to building a new focus within the UN. The first is to set up a new body with an explicit mandate to deal with the issue at hand. For loss and damage this might be a coordinating office, with a small secretariat to liaise with other UN bodies. Various Offices – on Children and Armed Conflict, Sexual Violence in Conflict, Genocide Prevention and internal displacement – exist to build capacity within the UN on these issues and to advocate for progress. Other types of coordination are possible: the UNFCCC itself is a relatively new UN body, as are the UN Convention to Combat Desertification (UNCCD) and the Convention on Biological Diversity (CBD), together known as the Rio Conventions. These three international treaties have secretariats mandated to compile and transmit reports submitted to the convention, and to provide technical assistance to developing countries for their submissions.

There are various challenges to this approach for loss and damage. Since the term properly refers

to 'loss and damage caused by climate change', it is not clear that international mediation on the issue is beyond the mandate of the UNFCCC and warrants a separate treaty or body. A programme to deliver loss and damage responses, or an office to coordinate the responses of many programmes, seem more appropriate.

These, however, face their own issues. The mandates of different bodies do not always align,¹⁴⁴ and attempts at coordination may leave certain bodies out of decision-making or impact on their funding model.¹⁴⁵ There are, of course, many examples of UN programmes working together, especially at local levels. Indeed, plenty of coordination bodies exist, notably the UN Office for the Coordination of Humanitarian Affairs (UNOCHA). WHO maintains an office at the UN. More recently, the Humanitarian-Development-Peace Nexus, an initiative of the UN and the World Bank, hopes to approach these traditionally distinct categories together. But the reality at the top is that nobody likes to be coordinated.¹⁴⁶ Worse, different bodies may be in competition for funding or power. Which of the Offices above

should take charge where a victim of conflict-related sexual violence, or a child, is an IDP? Among these smaller ‘boutique mandates’ stand the established agencies and programmes, like UNICEF and UNHCHR. The complex interactions between climate change, societies and various forms of loss and damage make this area rife for competition.

The second approach is to ‘mainstream’ the issue within all bodies, or at least within all relevant ones, incorporating the concepts of loss and damage, and how to avert, minimise and address it, into all of their programmes and projects. This has happened in the past, notably with gender, human rights and the SDGs. By designing common strategies and indicators against which UN bodies can gauge mainstreaming progress, this approach can gradually have a considerable impact. But the process is not formalised and in some agencies – especially international finance institutions – is poorly understood or even rejected.¹⁴⁷

The more successful efforts to ‘mainstream’ issues, like gender and the SDGs, tend to focus on clear or at least well-defined issues and are more or less unanimously supported. Current understanding of loss and damage, particularly

NELD, and the political disagreements between UN member states over who should bear how much responsibility for climate change and how, are considerable obstacles to the mainstreaming of loss and damage. Moreover, even this approach requires the establishment of a coordinator to keep momentum, usually in the office of the Secretary-General. Sometimes both approaches are used simultaneously – see the recent creation of UN Women in 2010. Many of the coordination issues in the UN system would therefore remain relevant in an effort to mainstream loss and damage.

Nonetheless, especially for those aspects of loss and damage that are implicitly included in the mandates of many UN bodies, such as averting and minimising losses to life and health, mainstreaming seems to be most appropriate. Building on existing coordinating entities such as the Climate Security Mechanism, which brings together DPPA, UNDP, UNEP and DPO, may help to quickly embed this approach in the operations of relevant bodies. Meanwhile, given the lack of attention in the existing system to addressing loss and damage, this area could be housed within the new fund – given its ‘particular focus on addressing’ – or a new coordinating office.

4 Conclusions

Climate change is upon us. Its impacts are no longer just uncertain predictions; they are causing loss and damage to people, communities and the planet. The worst is yet to come, and much that could have been avoided will not be. The real extent of loss and damage due to climate change will be decided by the action we take to prevent it today.

This is why massively increasing mitigation measures must be the central response to avert and minimise loss and damage; it is also why mitigation is not enough. The impacts of climate change that are ‘baked in’ – that cannot be prevented because of the delayed effects of past emissions have yet to come to pass – must be dealt with in other ways: through adaptation, and where that is insufficient by addressing the unavoidable or unavailed loss.

This means improving our abilities to anticipate the impacts and working – by planning, building response systems and responding quickly enough and at a large enough scale – to avert and minimise them. Much more than for other forms of non-economic loss and damage, like losses to cultural heritage or biodiversity, the international system

is already doing so. The challenge here is to learn the lessons of the past decades of disaster risk reduction, health security, resilience and similar efforts, and to scale up efforts; to understand the mechanisms through which climate change impacts are felt by societies; and to coordinate among the legions of organisations dedicated explicitly to saving lives – of which this paper has only discussed a few. In other words, averting and minimising loss and damage due to climate change must be mainstreamed within the international system.

Addressing loss and damage needs particular attention. It needs scale, but it also needs to be better understood and agreed within the international system. It also needs a new body that can take responsibility for addressing loss and damage. It is part of the mandate of the Transition Committee to set up the new fund, and perhaps this will be a strong enough mechanism to field requests and manage responses: restitution, rehabilitation, compensation, satisfaction and guarantees of non-repetition. Together, these approaches can help to avert, minimise and address loss and damage for the sake of those who need it most.

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