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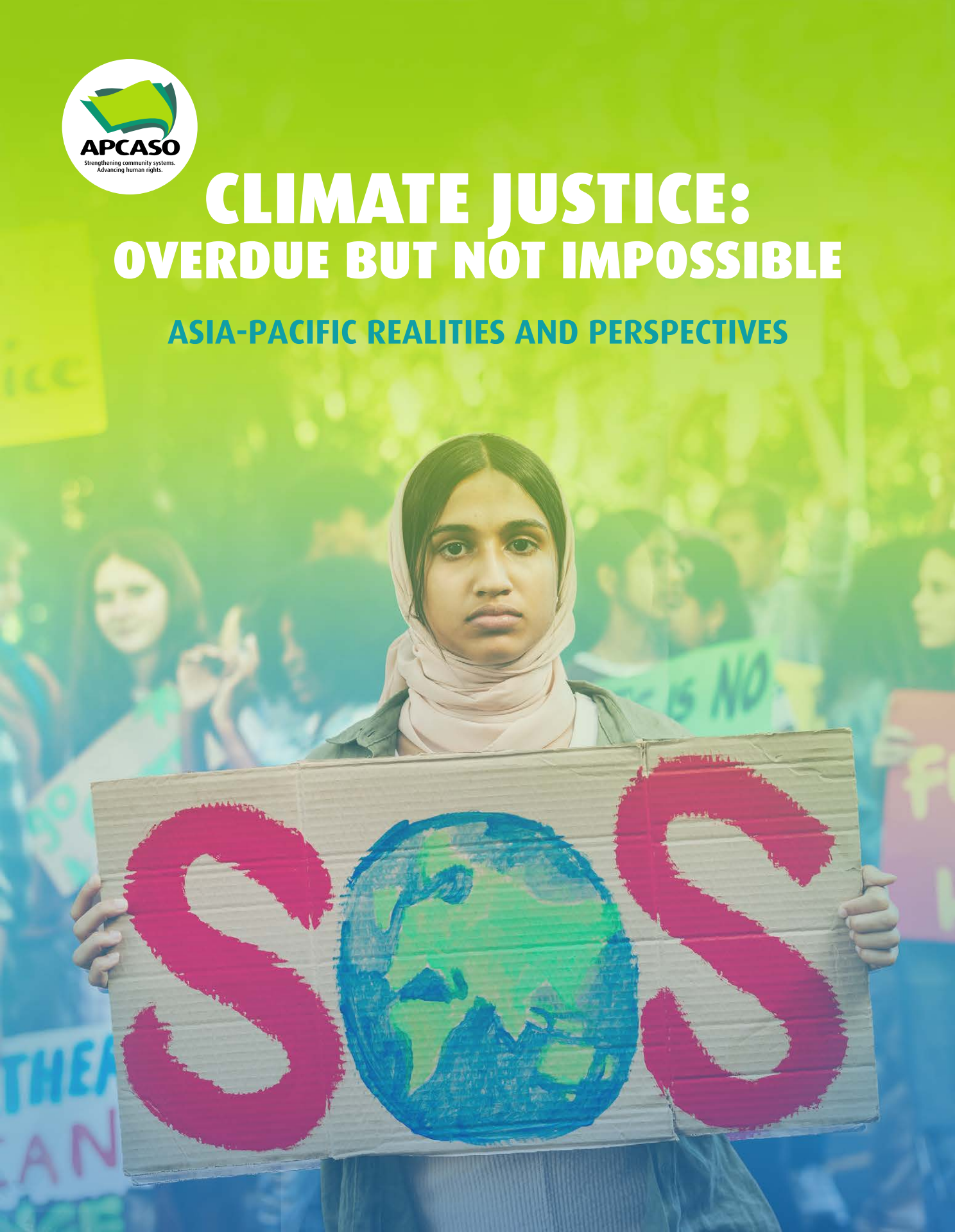
CLIMATE JUSTICE:
OVERDUE BUT NOT IMPOSSIBLE

ASIA-PACIFIC REALITIES AND PERSPECTIVES



CLIMATE JUSTICE: OVERDUE BUT NOT IMPOSSIBLE

Asia-Pacific Realities and Perspectives

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EXECUTIVE SUMMARY

Climate change poses a fundamental threat to human health, affecting both the physical environment as well as aspects of natural and human systems. According to the Intergovernmental Panel on Climate Change's (IPCC) 6th Assessment Report, up to 3.6 billion people live in areas that are extremely vulnerable to the impacts of climate change. The Asia-Pacific region is particularly vulnerable due to its geographic and climatic diversity, ecosystem variations, dependence on natural resources and agriculture sectors, high poverty rates, population density, susceptibility to natural disasters, and, most importantly, the lack of adaptive capacity to the impacts of climate change.

Climate change will continue to create new threats and uncertainties, disproportionately affecting the most vulnerable communities. Extreme weather events—including floods, droughts, storms, heatwaves, sea-level rise and wildfires—strain existing systems, increase disease spread and transmission, and hinder communities from adapting and absorbing the additional strain. Marginalized groups, including women and girls, children, people of diverse sexuality, Indigenous and tribal communities, forest dependent communities, ethnic minorities, low-income communities, people with disabilities, migrants and displaced persons, older populations, and those with underlying or existing health conditions, bear the greatest burden.

In recent years, the perception of climate change and the climate crisis has transformed considerably. It is no longer seen solely through a scientific or environmental lens but as a human crisis, where planetary health is inseparable from human health. With this paradigm shift, addressing the climate crisis requires not just scientific solutions but also political action. Responses must account for inequalities, inequities, vulnerabilities, power dynamics, access to resources and social justice.

3.6 billion people
live in areas that are extremely vulnerable to the impacts of climate change.

We strongly advocate for a climate justice approach to tackling climate change, one that moves beyond science and economics to address historic injustices and systemic inequalities. Therefore, our response to addressing the health impact of climate change underscores the importance of the equity imperative and climate justice at its core, ensuring that those most responsible bear the highest mitigation and adaptation costs. Recognizing the existing imbalance between causation and harm and the unequal historical responsibility that countries and communities bear in relation to the climate crisis, we must advocate for solutions that address systemic, socioeconomic, and intergenerational inequalities.

01

CLIMATE CHANGE

WHY DOES IT MATTER TO THE ASIA-PACIFIC REGION?

> A person living in Asia-Pacific is **6 times** more likely to be affected by disaster events than someone living outside the region.

The world is dangerously close to breaching its target of limiting global warming to 1.5°C. In 2023, the annual mean surface temperature reached a record high of 1.45°C above the pre-industrial baseline, with new temperature highs recorded throughout 2024. The 2024 Lancet Countdown[1] report paints a grim picture, showing that people around the world are facing unprecedented threats to their health, wellbeing, and survival due to the rapidly changing climate.

The Asia-Pacific region is vast and geographically diverse, spanning from the Himalayas to the tiny island states in the Pacific. Due to this diversity, the region encompasses all climate zones, resulting in a wide range of weather patterns from the monsoons in South and Southeast Asia, tropical cyclones in the Pacific and the extreme snowy winter in Siberia.

The Asia-Pacific region faces a daunting spectrum of natural disasters and stands at the forefront of the climate crisis. Its coastal regions are particularly threatened by rising sea-levels and cyclones, while its lowlands and the central dry zone are vulnerable to the impacts of floods and droughts. The World Meteorological Organization (WMO) report in 2023[2] highlights the Asia-Pacific as the world's most disaster-affected region due to weather, climate and water-related hazards, storms and floods. In addition, the population of the region has been growing, and it is home to around 60% of the world's population, reaching 4.7 billion as of 2022.[3] A person living in Asia-Pacific is six times more likely to be affected by disaster events than someone living outside the region.[4] While the region is home to some of the world's most climate-vulnerable economies, its rapid economic growth contributes to more than half of the global greenhouse gas emissions.

The 2024 Climate Report[5] from the Asian Development Bank projects that many climate change impacts in the region will be greater than indicated by global trends. It goes on to indicate that under a high emissions scenario, relative sea-level rise, and temperature increases in the region exceeding global averages, the destructive power of typhoons and cyclones will double, and flood losses will increase due to more concentrated rainfall and glacial melt. This in turn will have adverse consequences on climate-dependent sectors such as agriculture, forestry, and fisheries. Hotter temperatures will reduce labour productivity, erode human and social capital, and increase mortality and health risks. Additionally, the recent 2024 Regional Human Development report by UNDP[6] identifies natural disasters, forced migration, the risk of pandemics and worsening poverty as some of the threats that could further escalate as the climate crisis worsens, all of which could hinder human development.

Against this backdrop, it is pertinent to note that as the climate crisis intensifies, the Asia-Pacific region stands at the centre of both its worsening impacts and its most transformative potential solutions.

02

CLIMATE CHANGE

A BARRIER TO ACHIEVING THE SUSTAINABLE DEVELOPMENT GOALS?

> With just **five years** until the 2030 deadline, only **15%** of the SDG targets are on track.

In 2015, the world came together to adopt the Sustainable Development Goals[7] (SDGs) with 17 ambitious targets focused on eradicating poverty, protecting the environment, and promoting well-being for future generations. The SDGs were envisioned as a roadmap to a sustainable and peaceful future. The framing of the SDGs recognized that ending poverty and other deficiencies must go together with strategies that improve health and education, reduce inequality, and spur economic growth—all while tackling climate change and preserving our oceans and forests. With just five years until the 2030 deadline, only 15% of the SDG targets are on track, according to the United in Science 2023 report.[8]

Based on current trends, the latest projections suggest that the Asia-Pacific region is not on track to achieve any of the SDGs by 2030. UNDP[9] reports that progress has been slower than envisioned in most areas, and in some cases, such as climate action, the region has regressed. With each passing year, there is the risk that weak implementation will widen SDG disparities even further. It is now anticipated that the SDGs will not be realized in the region till 2064.

There is broad consensus that the increasing impacts of climate change and extreme weather events, along with other interlinking challenges, are reversing development gains and threatening SDG progress. Since the SDGs are inter-linked, climate change impacts are felt across all SDGs, but perhaps more so with the goals listed below:

SDG 1 – End Poverty
SDG 2 – Zero Hunger
SDG 3 – Good Health and Well-being
SDG 5 – Gender Equality
SDG 6 – Clean Water and Sanitation
SDG 7 – Affordable and Clean Energy
SDG 10 – Reduced Inequalities
SDG 11 – Sustainable Cities and Communities
SDG 13 – Climate Action
SDG 14 – Life Below Water
SDG 17 – Partnerships for the Goals

While all these goals are important, this paper will focus on health-related SDGs and their intersections with climate change in the following chapters.

SDG 1 – End Poverty

Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

The impacts of climate change intensify poverty by disrupting livelihoods, amplifying food and water scarcity, and fostering economic instability, presenting a significant challenge to achieving SDG 1. However, weather-, climate- and water-related sciences and services, particularly early warning systems, provide tangible benefits in poverty reduction by reducing the impacts of climate change on people's livelihoods and helping them to avoid damaging events and economic losses.

SDG 2 – Zero Hunger

Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

SDG 3 – Good Health and Wellbeing

SDG 3 aims to ensure healthy lives and promote well-being for all at all ages. The pathway to achieving many of the SDG 3 targets is influenced by various climatic and environmental conditions. As a result, overall progress towards achieving the targets of SDG 3 will be hindered if health impacts from climate change are not sufficiently addressed, specifically these targets.

Target 3.3: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, waterborne diseases and other communicable diseases.
Target 3.4: By 2030, reduce by one third premature mortality from noncommunicable diseases through prevention and treatment and promote mental health and well-being.
Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

SDG 5 – Gender Equality

SDG 5 aims to achieve gender equality and empower all women and girls. Climate change impacts are not gender neutral as they are experienced differently by women and men at the intersection of other social determinants like economic status, location, age, disability and marital status. Gender discrimination heightens climate-associated risks for women and girls, including the risk of food insecurity, poverty, gender-based violence, and early and forced marriage.

Target 5.1: End all forms of discrimination against all women and girls everywhere.
Target 5.2: Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.
Target 5.3: Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation.
Target 5.4: Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.
Target 5.a: Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.

Gender discrimination heightens climate-associated risks for women and girls, including the risk of food insecurity, poverty, gender-based violence, and early and forced marriage.

Existing inequalities
related to age, sex, disability, race, ethnicity, origin, religion, and economic or other status increase vulnerability to the impacts of climate change and extreme weather events.

SDG 10 – Reduced Inequalities

SDG 10 strives to reduce inequality within and among countries. Existing inequalities related to age, sex, disability, race, ethnicity, origin, religion, and economic or other status increase vulnerability to the impacts of climate change and extreme weather events. At the same time, these impacts also exacerbate existing inequalities—leading to a vicious cycle.

Target 10.7: Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies

SDG 13 – Climate Action

SDG 13 specifically targets action to combat climate change and its impacts, including mitigating GHG emissions, adapting to climate impacts and mobilizing climate finance. The goal aims to address the widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere, affecting many weather and climate extremes and leading to adverse impacts across the world resulting from climate change.

SDG target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.
SDG target 13.3: Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

The impacts of climate change intensify poverty by disrupting livelihoods, amplifying food and water scarcity, and fostering economic instability, presenting **significant challenge to achieving SDG 1.**

03

THE CLIMATE CRISIS IS A HEALTH CRISIS

HOW AND WHY?

Some years back, talking about climate change was seen as discussing an event that might take place in the distant future. Many nay-sayers and non-believers dismissed it as a hoax or an alarmist agenda. Since then, much has changed. Today, we recognize that climate change is real, and we are right in the middle of it—it is happening to us right here, right now.

In recent years, the ways in which we view climate change and the larger climate crisis has shifted considerably. But how did this paradigm shift happen? It occurred as the impact of climate change became more apparent and more personal for more people. It happened as people were confronted with the changing climate through their direct exposure to unusual and extreme weather patterns, eroding ecosystems, and an increased frequency of natural disasters. For some, this simply means changes in weather patterns—temperatures are a bit hotter, a bit colder, the seasons are a bit more uncertain. But for others, this realisation came when the impact became a matter of survival—too little or too much water, lack of food, loss of home or shelter, loss of income or livelihood, risks to safety and security.

Human health is inevitably connected to the health of our planet—through the planet's climate and biosphere. This interconnectedness means that our response must take into account humans, animals, and ecosystems through an integrated strategy known as One Health. This approach acknowledges the interdependence between human health, domestic and wild animals, plants, and the larger environment, including ecosystems.[10] It also recognizes the interconnectedness between the ecosystem, veterinary medicine, and public health, paving the way for us to tackle various health concerns, such as changes in microbe and vector demographics affecting epidemiology,

> The assessments conclude that climate variability and climate change are already affecting health worldwide, acting as a **'force multiplier'** exacerbating existing threats and undermining progress in development and global health.

food accessibility and safety, degradation of water quality standards, and alterations in the health of different species of mammals and plants. Antimicrobial resistance (AMR) is another critical aspect of One Health, as resistance can emerge in humans, animals, or the environment, necessitating a holistic approach to address this global challenge.[11]

The 2024 Lancet Countdown report[12] on health and climate change presents substantial evidence on the strong links between climate change and the social and environmental determinants of human health and wellbeing. The evidence has been assessed and summarized by a range of global bodies over the last 20 years, including the World Health Organization (WHO) and the IPCC. These assessments conclude that climate variability and climate change are already affecting health worldwide, with nearly all populations experiencing more negative than positive effects. This is likely to increase as climate change progresses, acting as a 'force multiplier,' exacerbating existing threats and undermining progress in development and global health. Health impacts are expected at any level of warming, but the more that climate change progresses unabated, the larger the effects, eventually overcoming the limits of adaptation, resulting in unrecoverable damage to the social, environmental and economic determinants of health.

The IPCC[13] identifies multiple connections between climate and health under these three main groups:

1. The direct impacts on human health, such as illness, injuries, etc. from increased frequency and severity of extreme weather events such as storms, draught and floods.
2. Impacts mediated through other environmental systems which include rising air pollution, and changing patterns of vector-, food- and water-borne diseases.
3. Socially mediated effects, which occur via climate change's interaction with social and human systems. These include health effects resulting from undernutrition, occupational heat stress and mental illness, as well as potential increases in population displacement and risks of violent conflict and slowing of economic growth and poverty reduction.

The Lancet Countdown report also shows that people all around the world are facing record-breaking threats to their wellbeing, health, and survival from the rapidly changing climate. Of the 15 indicators monitoring climate change-related health hazards, exposures, and impacts, 10 have reached concerning new records in their most recent year of data. The report raises the alarm on the decades of delay in climate action and emphasizes the urgent need for aligned, structural, and sustained changes across most human systems, including energy, transportation, agriculture, food, and healthcare. Most importantly, it emphasizes the need for urgency in putting people's health at the centre of climate change policymaking. This is essential to ensure that the transition to sustainable systems protects wellbeing, reduces health inequities, and maximises health gains.

According to WHO,[14] in the short- to medium-term, the health impacts of climate change will be determined primarily by the vulnerability of populations, their resilience to the current rate of climate change, and the extent and pace of adaptation. In the longer-term, the effects will increasingly depend on the extent to which transformational action is taken now to reduce emissions and avoid breaching dangerous temperature thresholds and potential irreversible tipping points. While no one is safe from these risks, the people whose health is being harmed first

and worst by the climate crisis are the people who contribute least to its causes, and who are least able to protect themselves and their families against it: people in low-income and disadvantaged countries and communities.

Taking all this into account, addressing the health burden of climate change underscores the importance of the equity imperative and climate justice at the core of it—those most responsible should bear the highest mitigation and adaptation costs, emphasizing health equity and vulnerable group prioritization and an intersectoral approach.

BOX 1

CLIMATE CHANGE AND MENTAL HEALTH

Climate change is impacting mental health by increasing the risk for new mental health problems and making those living with pre-existing mental health conditions more vulnerable.[15]

This is happening in various ways. Firstly, climate change is worsening mental health outcomes by exposing people to more frequent and extreme weather and climate events, such as floods and storms. These events can expose people to potentially traumatic events such as death and/or serious injuries and increase the risk of new mental health issues such as post-traumatic stress disorder, depression, anxiety, and substance misuse.Additionally, they can also negatively impact mental health by worsening the known social determinants of mental health, such as housing and economic status.[16]

> While climate change is impacting all of us, **it is not doing so equally.** Certain demographic characteristics are likely to make some people more vulnerable to the mental health impacts of climate change.

Heatwaves, which are becoming more frequent, long-lasting, and intense, can also have various detrimental impacts on mental health, including

1. higher rates of mortality among people living with certain mental health conditions
2. higher rates of hospital admissions among people living with certain mental health conditions
3. higher rates of suicide and suicidal behaviour[17, 18]

Awareness of climate change and the lack of response or action can lead some people to experience psychological distress; this is normal and adaptive for most people but can also contribute to worsening mental health problems in some people.[19]

While climate change is impacting all of us, it is not doing so equally. Certain demographic characteristics are likely to make some people more vulnerable to the mental health impacts of climate change. For example, as highlighted above, people living with mental health conditions may be at higher risk of various negative health outcomes in the context of extreme weather events. Children and young people also face unique challenges given particular risk factors

they may experience in the context of climate change, such as disruptions to education, social connections, and family support.[20]

Similarly, women's mental health may be particularly affected as climate change contributes to higher rates of gender-based violence and intimate partner violence.[21] Certain groups may also experience worse mental health outcomes due to higher degree of exposure and/or dependence on the weather and climate. This includes specific occupational groups such as farmers and fishers, or people who work outdoors.[22] People experiencing homelessness, by nature of their higher exposure to the elements, are also likely to be particularly at risk of poor mental health in the context of climate change,[23] as are individuals living in institutions that are not properly equipped to be climate resilient, such as certain prisons or long-term psychiatric facilities.[24] Finally, communities that are particularly reliant and/or connected to their environment, such as Indigenous communities, face unique challenges in the context of climate change and mental health.[25]

The need for specific attention to the link between climate and mental health is growing in international policy making. Mental health is now recognised as an essential component of health within high-level commitments on climate and health, such as the UAE COP28 Declaration on Climate & Health, signed by more than 150 countries,[26] and the 2024 WHO resolution on climate change and health.[27] However, there is still a long way to go to ensure mental health receives the same amount of attention as physical health in the context of climate and health. For example, only 3% of Nationally Determined Contributions (NDCs), countries' national pledges under the Paris Agreement, include reference to mental health (versus 28% that reference vector-borne diseases).[28] Even more concerning, out of adaptation policies across 160 countries, none refer to children's mental health.[29]

Nonetheless, successful examples of integrating mental health considerations in climate policies do exist. From the adaptation perspective, the heat warning system in South Australia mandates daily welfare check phone calls to patients registered as living with mental health problems and an in-person check in the absence of an answer. These policies have been found to lead to a reduction in negative health outcomes and to be cost-effective.[30] In the context of mitigation, a policy that aimed to support energy-efficient housing among people experiencing energy poverty in Ireland was found to contribute to reductions in symptoms of anxiety and depression and improvements in emotional wellbeing.[31] Given that the additional societal costs of mental disorders due to changes in climate-related hazards, air pollution, and inadequate access to green space are estimated to be almost $47 billion USD annually in 2030,[32] mental health considerations must be integrated across actions to respond to climate and environmental threats.

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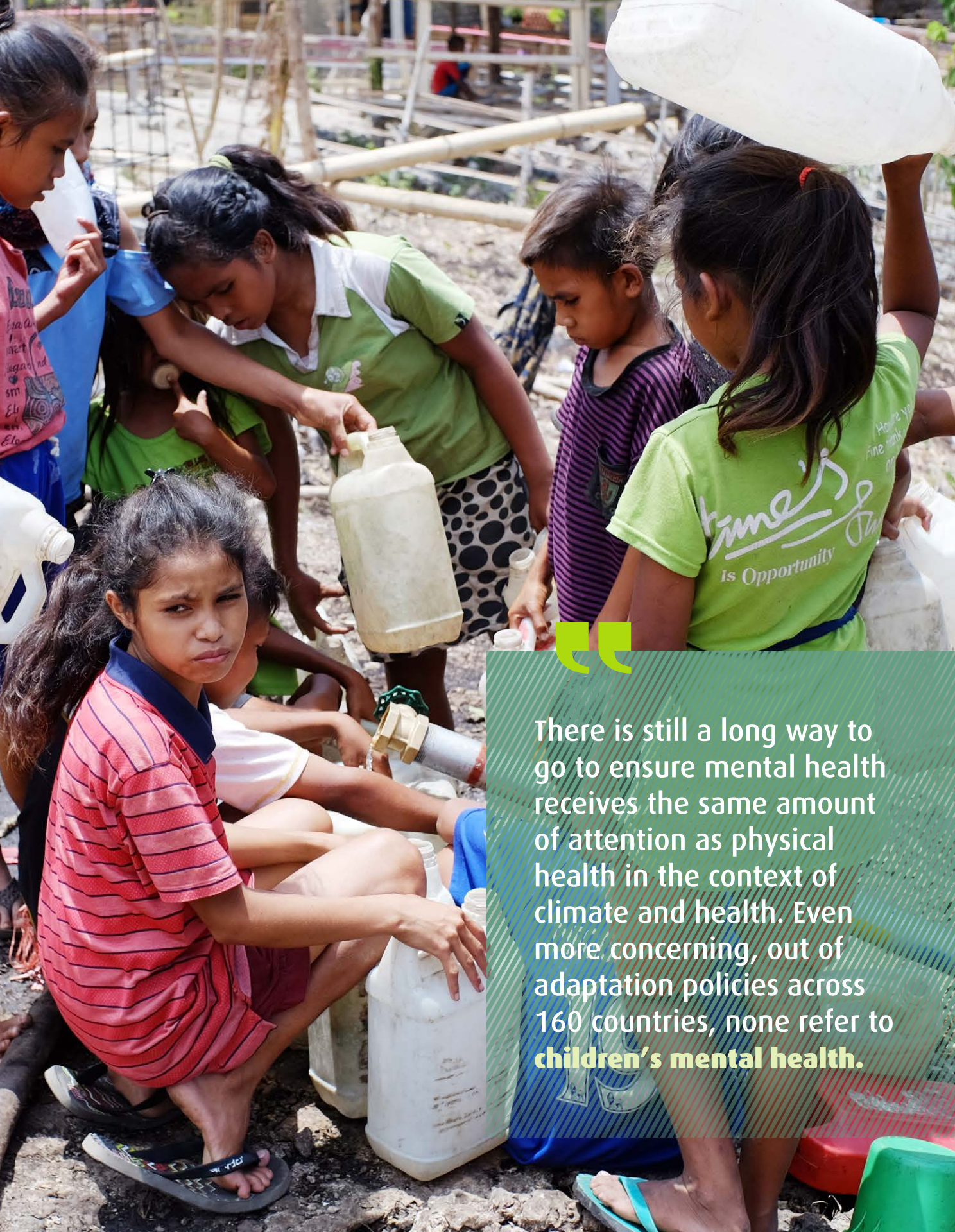

There is still a long way to go to ensure mental health receives the same amount of attention as physical health in the context of climate and health. Even more concerning, out of adaptation policies across 160 countries, none refer to **children's mental health.**

04

CLIMATE CHANGE

WHO DOES IT MATTER TO THE MOST?

While no one in the world is beyond the reach and impact of climate change, the poorest, most marginalised and most vulnerable will bear the biggest brunt. This is because climate change has a greater impact on sections of the population that are most reliant on natural resources for their livelihoods and/or who have the least capacity to respond to natural hazards, such as droughts, landslides, floods and hurricanes. It disproportionately affects the most vulnerable and disadvantaged, including but not limited to women and girls, children, people of diverse sexuality, Indigenous and tribal communities, forest-dependent communities, ethnic minorities, poor communities, people with disabilities, migrants and displaced persons, older populations, and those with underlying or existing health conditions.

A recent World Bank[33] analysis estimates that, over the current decade ending in 2030, an additional 132 million people could be living in extreme poverty due to climate change. More than half of these people live in South Asia and sub-Saharan Africa. The analysis, which considered the impacts of climate change on extreme poverty from five different channels (health, agriculture, labour, disasters, and food prices), concluded that the health impacts of climate change are the largest contributor to increases in the poverty headcount (44 million people).

Climate vulnerability, according to the IPCC,[34] is a function of:

- Exposure to climate variability and change: the degree of climate variability and change that an entity (either a country, community, population, individual or ecosystem) experiences.
- Sensitivity to climate shocks and stresses: an assessment of the amount of impact climate factors have on the entity.
- Adaptive capacity: the ability of the entity to manage the negative impacts and take advantage of any opportunities that arise.

Recent understanding of these differential vulnerabilities has brought to light the need for a differential approach to climate adaptation and mitigation across countries, within countries and even within communities based on socio-economic and political factors such as age, gender, and social, economic, geographic, or political marginalization.

In this paper, we attempt to look at the heightened vulnerabilities faced by certain populations due to various factors such as geography, existing vulnerabilities, gender, exposure and others. Do take note that this list is not exhaustive. We will focus on some of these populations while attempting to spotlight the work that is being done by our partners in the region to address these vulnerabilities.

> Vulnerability to climate change does not exist in isolation from the wider social, political, and economics of resource use. Vulnerability is driven by **inadvertent or deliberate human action** that reinforces self-interest and the distribution of power, in addition to interacting with physical and ecological systems.

HUMAN MOBILITY, DISPLACEMENT AND MIGRATION

As we discuss vulnerabilities, it is crucial to understand the impact of climate change on human mobility as well as on a population that is highly vulnerable—migrants—both climate and economic migrants.

There is a general lack of consensus on the terminology for those who migrate due to climate or environmental factors, as climate change interacts with other drivers of migration in complex ways. The impact of climate change, such as water scarcity, soil infertility, soil erosion, land degradation, and floods, often combines with other socio-economic factors like poverty and inequality to drive migration.[35] Therefore, determining the role of the environment and climate change in migration decisions is a challenging task. However, some level of consensus has been reached and the term "climate migrant" is now commonly used to emphasize how climate change exacerbates environmental issues and the associated migration, as well as the understanding that climate migration encompasses both migration or displacement and immobility, both voluntary and involuntary.[36]

According to the International Organization for Migration (IOM),[37] in 2022 alone, there were 32.6 million new internal displacements, the highest ever recorded, that were triggered mainly by weather-related hazards. In our region, this includes floods in Pakistan, and cyclones in Bangladesh and the Philippines. A majority of the climate-related human displacement recorded globally occurs in Asia and the Pacific. During 2010-2021, some 213.5 million displacements due to climate-related shocks such as floods, storms, droughts, wildfires, and extreme temperatures were recorded in the region. The largest displacements were observed in China, the Philippines, India, Pakistan, and Bangladesh. This is not only due to geography and high population density, but also social, political and economic factors that turn hazards such as floods and droughts into disasters.[38] Poverty makes it harder for people to cope with climate shocks or to adapt to changing conditions.

The IPCC Sixth Assessment Report[39] indicates that extreme climate events act as both direct drivers (e.g., destruction of homes by tropical cyclones) and as indirect drivers (e.g., rural income losses during prolonged droughts) of involuntary migration and displacement. Most documented examples of climate-related displacement occur within national boundaries, with international movements occurring primarily within regions, particularly between countries with contiguous borders. The largest absolute number of people displaced by extreme weather each year occurs in Asia (South, Southeast and East), followed by sub-Saharan Africa. Small island states in the Caribbean and South Pacific are disproportionately affected relative to their small population size.

Migrants and displaced populations, whether it is due to climate change or not, face additional vulnerabilities rooted in the conditions of migrations, such as discrimination, lack of access to health services, linguistic and cultural barriers, lack of proper documentation, and other challenges.

BOX 2

CLIMATE CHANGE AND MIGRANT WORKERS

The threat of climate change is felt most acutely by those in the Global South. They bear the brunt of its harmful consequences due to the region's existing and historically accumulated economic and social vulnerabilities. Migrants are considered one of the most vulnerable groups that will face negative health consequences due to climate change, as many migrants are exposed to climate hazards with fewer capacities to adapt and lower access to care.

Migrant workers in Asia, in particular workers who work outdoors, are among those who are heavily affected. Outdoor workers confront the harshest realities of climate change, including extreme summers and winters, as well as the adverse consequences of sandstorms and flash floods. In Southeast Asia, outdoor workers—plantation workers, street cleaners, and construction workers—are among those heavily affected. Unlike the Middle East, countries in Southeast Asia have not implemented midday work breaks or any other measures to address the extreme heat for outdoor workers. However, interviews conducted by Migrant Forum Asia (MFA) among migrant workers in the Middle East have shown that this response is not adequate. This means that outdoor workers continue to work in gruelling temperatures with little to no protection.[40]

In September 2023, the International Organization for Migration (IOM) and the Government of Kuwait organized the "Sub-regional Workshop on Climate Change Impacts on Migration and Health in Host Communities and on Temporary Contractual Workers in the Gulf".[41] The workshop was organized in preparation for the COP 28 and aimed to provide a platform for participants to deepen understanding of the health impacts of climate change both for host communities and temporary contractual workers in the sub-region.

Migrants are considered one of the most vulnerable groups that will face negative health consequences due to climate change, as many migrants are **exposed to climate hazards** with fewer capacities to adapt and lower access to care.

The workshop developed a set of recommendations to mitigate the health impacts of climate change on migrant workers. The regional meeting was followed by a discussion on the impact of climate change on the health of migrants at the Middle East and North Africa (MENA) climate week, where governments committed to raising the issue at COP 28. The Migrant Forum in Asia (MFA) network participated in both events to highlight the impact of climate change on the health of migrant workers.

MFA has organized and documented community discussions with workers who migrated due to climate change and those currently experiencing its impact in their work place in Countries of Destination (CoD). MFA used the results of the community discussions to organize capacity building programs and information education with migrant workers on the impact of climate change on their health. MFA is also a member of the Asian Peoples Movement on Debt and Development (APMDD), a climate justice network. MFA has worked with APMDD to integrate the issues faced by migrant workers in the global climate justice discussions. These initiatives are an initial step towards addressing a broader and a very urgent issue. Governments need to take action to proactively address this issue as climate change will continue to bring extreme weather conditions to the region.

For a holistic approach:

- There is need for concerted efforts from the governments, private sector, and other stakeholders to address the impact of climate change of the health of migrant workers.
- There is need for research and data to ensure better understanding of the situation and to the steps to address it. Policies and programs need to be evidence based.
- It will also be important to work with migrant workers and migrant communities to advance information education on climate change and migration.
- Access to social protection for migrant workers, including health care, should be facilitated to ensure that they do not bear the health costs of the climate crisis.
- Migrants require adequate preparation to face extreme weather conditions. In the past, migrants had ample time to acclimatize, but the quick changes in weather patterns now pose challenges for new workers. Therefore, establishing comprehensive orientation programs, perhaps as part of existing programs provided by countries of origin, is essential to ensure maximum preparedness

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Migrant Forum Asia

INDIGENOUS PEOPLES

The IPCC refers to Indigenous peoples as people who are self-identified and organised as Indigenous, according to the principles of the International Work Group for Indigenous Affairs (IWGIA), an international non-governmental organisation (NGO) with observer status at the United Nations (UN). Indigenous peoples[42] are described as 'distinct social and cultural groups that share collective ancestral ties to the lands and natural resources where they live, occupy or from which they have been displaced'.[43]

Evidence has shown that Indigenous peoples are being disproportionately affected by the impact of climate change on their ancestral lands and sources of livelihood. They often inhabit ecologically sensitive areas—coastlines, mountains, and forests—making them highly vulnerable to the impacts of climate change such as rising sea levels, rising temperatures, melting glaciers and extreme weather events. Their vulnerability to climate change is further compounded by their reliance on traditional practices and their often marginalised status, leaving them less equipped to adapt to the swift and harsh changes taking place in their surroundings.

Reports show that the primary health effects of climate change include the immediate physical effects on human health, such as health hazards due to high temperatures, extreme weather events, or accidents from exposure to climate-related hazards. Secondary effects are more closely related to ecosystem changes, for example, the increased risk of the acute spread of air-, soil-, vector-, food-, and waterborne infectious diseases.[44]

Tertiary effects relate to cultural changes, for example, all forms of malnutrition due to climate-driven changes in food systems and anxiety, mental illness, and suicidal thoughts related to cultural and spiritual losses. A wide range of tertiary, culture-related effects of climate change have been documented for Indigenous peoples. These include anxiety, distress, and other mental health impacts due to direct and indirect processes of dispossession of land and culture related to the combination of climate change and other factors. However, it is widely acknowledged that there is a lack of studies with a gender perspective on climate change as a determinant of Indigenous peoples' health along with the perspectives of Indigenous children and youth, displaced individuals, and communities in urban settings.[45]

> Indigenous peoples often inhabit **ecologically sensitive areas** —coastlines, mountains, and forests—making them highly vulnerable to the impacts of climate change.

BOX 3

THE FOREST IS OUR FATHER, THE LAND IS OUR MOTHER, THE WATER IS OUR BLOOD!

My name is Belai. I am a young climate activist and a planetary health practitioner, descending from the Indigenous *Dayak Ngaju* and Dayak *Ma'anyan* tribes of Borneo Island, Indonesia.

The phrase above comes from the *Dayak Iban* of *Sungai Utik* Longhouse community, an Indigenous group living in the heart of West Borneo. It is a community I have worked closely with for years, and who have welcomed me as one of their own—*"diangkat anak"* (adopted as a child). "The forest is our father, the land is our mother, the water is our blood" is a phrase that beautifully captures the deep relationship that Indigenous communities share with the planet. It is a reminder that everything we are, everything we do, and everything we believe in is tied to the ecosystems around us—our environment is our lifeline. This belief, rooted in Indigenous knowledge systems, offers a fundamental truth that we must all recognise—we are deeply interconnected with the Earth. Every aspect of our being—our work, our identity, our spirituality, and yes, our health—depends on the life-giving ecosystems around us. When these ecosystems are threatened, as they increasingly are now by climate change, so too is our health, our livelihoods, and our future.

In a world that often compartmentalises, Indigenous knowledge connects us. That is why we need to radically transform our understanding of health. We need a holistic approach to health; it cannot simply be measured by the absence of disease or access to healthcare. For too long, health has been viewed through a narrow, compartmentalised lens, focused on treating symptoms rather than addressing the root causes. Climate change, however, has shown us that health is fundamentally intertwined with the environment. The ecosystems that Indigenous peoples have depended on for centuries are not just sources of sustenance; they are the very foundation of our health and well-being.

We are already witnessing the direct physical health impacts of living on a planet in distress. But even more concerning are the less visible, interconnected health effects, many of which are being revealed through our work with populations that are most vulnerable to climate-related health impacts. These include:

- The link between health and sustainable livelihoods—as ecosystems collapse, traditional livelihoods that sustain Indigenous communities are disappearing and pushing them into extreme poverty and food-insecurity.
- Mental health effects due to changing and collapsing ecosystems—what happens when the very land, air, and water you depend on for your spiritual and physical well-being begins to disappear?
- The intersection of land rights and health—land-based communities' right to land, to healthy ecosystems, and the implications for their right to health, and vice versa.

These realities can only be understood when we engage directly with the most marginalised communities. We can no longer situate health in silos if we want to get to the root of what deprives us from enjoying health and well-being. Therefore, we have no choice but to ground our work in equity and justice. Climate change impacts

The solutions we create together need to be grounded in the right to self-determination, recognizing that communities must have the agency to **shape their own future.** This is not a linear process, and it requires redistribution of power and resources to communities that have been historically excluded.

people differently, and those with the fewest resources are often hit the hardest. As climate change intensifies, these disparities will worsen. How do we operationalize this relationship between climate change, health, and the broader determinants in a way that is grounded in justice? The answer is clear: we must go back to the communities that are most affected by these issues, and partner with them to co-design solutions that are holistic, community-based, and rooted in justice.

Listening to communities and partnering with them is not just about hearing their voices—it's about empowering them as leaders and solution-builders. Indigenous communities, and especially Indigenous youth, are not just victims of the crisis, they are vital actors in shaping the future. Their knowledge, cultural practices, and lived experiences are invaluable tools for driving climate solutions. The power of their storytelling puts a human face to the crisis, highlighting both their struggles and their resilience. However, this process must be centered in Indigenous rights and decoloniality. The solutions we create together need to be grounded in the right to self-determination, recognizing that communities must have the agency to shape their own future. This is not a linear process, and it requires redistribution of power and resources to communities that have been historically excluded.

Indigenous storytelling plays a vital role, as the stories of Indigenous communities are not just valuable, they are necessary. Our voices matter, and our advocacy space must amplify our work, not only as a means of highlighting injustice but as a call to action for all of us. We cannot continue to ignore the fundamental interdependence between global health, livelihoods, land rights, conservation, and climate. We must embrace an approach that recognizes that the health of the planet and the health of its people are intrinsically linked. The future of our health depends on the protection and restoration of ecosystems, and the future of our planet and the well-being of future generations depend on us listening to and acting alongside Indigenous communities.

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PACIFIC SMALL ISLAND DEVELOPING STATES

The Pacific Small Island Developing States (Pacific SIDS) are on the frontline of the climate crisis, facing severe and disproportionate impacts. Spanning 25,000 islands, it encompasses approximately 15% of the Earth's surface. This region faces compounding challenges from rising sea levels, ocean warming, acidification, coastal flooding, erosion, and water scarcity.[46] High temperatures and ocean acidification pose a serious threat to marine ecosystems, which are a lifeline for the economic survival of the islanders through fisheries and tourism. This ecosystem is also crucial as it provides valuable protection to coastlines from storm surges and acts as carbon sinks that absorb 30% of atmospheric carbon dioxide[47] and are essential to mitigate climate change.

The Pacific islands are uniquely exposed as their average elevation is just one to two meters above sea level; 90% of the population lives within five kilometres of the coast and half of their infrastructure is within 500 metres of the sea.[48] The greatest injustice in climate change is highly evident in the Pacific where, despite accounting for just 0.02% of global emissions, it is one of the first regions to experience the full brunt of climate change with growing threats to its socioeconomic viability and indeed its very existence.

BOX 4

OUR LAND, OUR RIGHT TO PROTECT IT!

Papua New Guinea (PNG) is among the top 20 countries that are most vulnerable to the impacts of climate change.[49] Located in the 'Pacific ring of fire', PNG is at high risk of natural disasters including cyclones, drought, floods and landslides, which are likely to intensify with continued climate change and are expected to be disproportionately affect the most vulnerable populations in the country, consistently affecting many key sectors of the economy such as agriculture, infrastructure and community livelihoods.

Forests play a major role in protecting biodiversity and combating climate change, and the forests of PNG represent one of the world's most vital carbon and biodiversity reserves. Covering 78% of the territory, they are a vital source of food security for many Papua New Guineans, 85% of whom live in rural areas, making up an essential part of the country's cultural, linguistic and spiritual fabric. However, various developments in the country have resulted in the destruction of biodiversity, further exacerbating the risks resulting from climate change.

One such example is the Frieda Mine project, with plans to build a large open pit mine and hydroelectric dam, spanning over 16,000 hectares on the Frieda River in PNG's Sepik region. The vast forests spanning the Sepik River basin in PNG are among the most biologically rich on Earth. Dozens of culturally diverse peoples live along the Sepik, one of the world's greatest, untrammelled river systems, measuring more than 1,100 kilometres in length and covering an area of 7.7 million hectares.[50]

> Beyond climate change, initiatives such as Project Sepik aim to **empower individuals and communities** to take ownership of their identities and narratives, as they contribute to building a Papua New Guinea that is self-determined, resilient and proud of its heritage.

The area at Frieda River has been described as "one of the largest known undeveloped copper and gold deposits in the world". However, this deposit is located in an area tentatively listed for World Heritage Status, in remote and mountainous terrain with extremely high rainfall and seismic activity. These factors, combined with PNG's history of damaging mining projects, could spell a catastrophic disaster for the Sepik River and its peoples, which could take decades, if not centuries, to recover.

In response, the people of Sepik have mobilised to establish Project Sepik,[51] a community organization representing Indigenous peoples along the Sepik River. In collaboration with Solwara Warriors PNG, Jubilee Australia Research Centre Australia, Environmental Defender Office Australia, and Centre for Environmental Law and Community Rights PNG, they are challenging the creation of the Frieda River mine. Project Sepik works to protect existing cultural and natural biodiversity. Protecting the oceans, shorelines, forests, lakes and rivers means that the natural biodiversity is conserved and sustained.

The following initiatives were developed through Project Sepik's trainings and community engagement efforts:[52]

- Education and curriculum development by creating resources that integrate Indigenous knowledge and decolonization principles into PNG's education systems.
- Community engagement by empowering communities through workshops and training to strengthen grassroots advocacy.
- Political representation by encouraging participation in governance to align decisions with cultural values and priorities.
- Cultural revitalization through promoting traditional practices and languages to foster a strong sense of identity.
- Environmental stewardship by strengthening the protection of ancestral lands as a cornerstone of identity and development.

These strategies aim to dismantle visible, invisible, and insidious remnants and newer forms of colonial influence while fostering a future rooted in self-reliance and Melanesia pride. Beyond climate change, initiatives such as Project Sepik aim to empower individuals and communities to take ownership of their identities and narratives, as they contribute to building a Papua New Guinea that is self-determined, resilient and proud of its heritage.

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Coordinator Project Sepik
Papua New Guinea (PNG)

The Pacific Small Island Developing States (Pacific SIDS) are on the frontline of the climate crisis, facing severe and disproportionate impacts. **High temperatures and ocean acidification pose a serious threat to marine ecosystems,** which are a lifeline for the economic survival of the islanders through fisheries and tourism.

FOOD SECURITY AND NUTRITION

Extreme climate events have immediate and long-term impacts on food security and malnutrition, therefore the two key risks posed by climate change are the number of people at risk of hunger and the number of people at risk of malnutrition. The climate change risk to food security refers to the breakdown of food systems, including crops, livestock, and fisheries, as well as disruptions in food distribution, linked to global warming, drought, flooding, and precipitation variability and extremes, particularly for populations already vulnerable to food insecurity due to lower income, lower physical access to nutritious food, social discrimination or other factors.[53] When looking at food security, the most vulnerable groups include smallholder farmers, pastoralists, agricultural labourers, poorer households, refugees, Indigenous groups, women, children, the elderly, and those who are socioeconomically marginalised.[54] Additionally, men, women, children, the elderly and the chronically ill have different nutritional needs and these vulnerabilities may be amplified by gendered norms and differential access to resources, information and power.[55]

The association between climate change and human nutrition extends beyond issues of caloric availability. A growing challenge by 2050 will be providing nutritious and affordable diets.[56] Climate change will also affect many determinants of micronutrient deficiency, particularly availability and access to fruits and vegetables, and will adversely affect child undernutrition, stunting, undernutrition-related childhood mortality, and diet-related morbidity and mortality. Higher concentrations of atmospheric CO2 reduce the protein and mineral content of cereals, reducing food quality and subsequently increasing the number of people affected by micronutrient deficiency. The concentration of many micronutrients in crops can decrease by 5-10% under atmospheric CO2 concentrations of 690 ppm (3.50C warming).[57]

The association between climate change and human nutrition extends beyond issues of caloric availability. A growing challenge by 2050 will be providing **nutritious and affordable diets.**

BOX 5

FOOD SECURITY AND NUTRITION IN INDONESIA

The link between food security and climate change is a two-way relationship. Climate change is a threat to food and nutrition security. Climate change impacts such as extreme weather (drought, prolonged and heavy rainfall) affect food systems and nutrition determinants such as child growth, human health, and food prices.

Climate change also impacts the nutritional quality of available foods. Increased atmospheric carbon dioxide (CO2) levels have been shown to reduce the concentrations of essential nutrients such as iron, protein, and zinc in staple crops like rice, maize, wheat, and potatoes. Reduced levels of these micronutrients in food crops will drive micronutrient deficiencies and poor nutrition outcomes, particularly among low-income communities. For instance, lower levels of iron and zinc can lead to anaemia and weakened immune systems, while reduced protein content can impair growth and development in children. Thus, the nutritional degradation of staple crops due to climate change exacerbates the risk of malnutrition and related health issues, highlighting the urgent need for integrated strategies to address both climate and nutritional challenges.

Vice versa, food systems also contribute to climate change by increasing greenhouse gas (GHG) emissions along the supply chain. These emissions stem from land use change, agricultural production, food processing and packaging, transportation, retail, and consumption. Dietary choices affect demand for particular foods. Several popular diets with high environmental (including GHG emissions) per unit of nutritional value include ruminant meat, rice, and tilapia. The Global Alliance for Improved Nutrition (GAIN)[58] is researching which foods can maximize nutritional value while minimizing their environmental impact to further inform policy and future programmes in Asia. Additionally, poor supply chain and food consumption patterns have also resulted in food loss and waste (FLW). For example, in Indonesia, FLW accounts for more than 20 million tonnes annually, making it the second biggest producer of FLW. This amount could provide nutrition to more than 60 million people. FLW also contributes to 7% of emissions in the country.

Food security and access to nutrition play a crucial role in reducing the vulnerabilities of communities to the effects of climate change in several ways:

- Improved Health and Resilience: Adequate nutrition strengthens the individual's immune systems, making them less susceptible to diseases and health issues that can be exacerbated by climate change. Healthy communities are better able to withstand and recover from climate-related shocks.
- Enhanced Agricultural Productivity: Food security often involves sustainable agricultural practices that improve soil health and crop yields. These practices can help communities adapt to changing climate conditions by ensuring a stable food supply.
- Economic Stability: Access to nutritious food supports economic stability by reducing healthcare costs and increasing productivity. When communities are economically stable, they are better equipped to invest in climate adaptation and mitigation strategies.
- Adaptive capacity: Food security programs often include education on nutrition and sustainable practices. This knowledge empowers communities to make informed decisions that enhance their resilience to climate impacts.

Twelve provinces in Indonesia are at high risk, and five provinces are at very high risk, due to their vulnerability to climate, socio-economic, and malnutrition threats. The following map presents a composite risk index, which synthesizes the risk associated with various disasters, many of which are directly correlated with anticipated climate change impacts, such as extreme weather events, forest fires, droughts, and floods. The index also encompasses other natural disasters, including earthquakes and volcanic eruptions, for which the causal link with climate change is less established, but to which the country is inherently vulnerable. The index combines risk assessments across several categories, including social vulnerability, physical vulnerability of local infrastructure, and economic vulnerability across various sectors, including agriculture. To reduce those vulnerabilities, several priority actions are encouraged: promoting local food security, managing and reducing FLW, and implementing food fortification.

GAIN has implemented several programs focusing on climate and nutrition. First, at the policy level, GAIN is accelerating climate and nutrition policy[59] action at the same time. GAIN Indonesia is working with the government to integrate climate actions into food and nutrition plans at the national and local level. GAIN is also helping the government to bring their plan into a global commitment to N4G (Nutrition for Growth) Summit 2025 to be held on 27-28 March 2025 in Paris, France.

Second, GAIN is helping the government develop a roadmap to reduce FLW and targeting a FLW reduction of 50% by 2030 and 75% by 2045. To support this on the ground, GAIN established Indonesia Postharvest Loss Alliance for Nutrition (I-PLAN) to reduce the significant post-harvest losses in the food supply chain. I-PLAN[60] facilitates collaboration between various actors in the fish supply chain, including government agencies, local businesses, and civil society organizations. Previous initiatives have focused on fish as a crucial source of nutrition for many Indonesians, providing essential proteins and nutrients. The fishing industry is a vital part of Indonesia's economy, supporting millions of livelihoods. I-PLAN has added new opportunities for business development, productivity, and incomes, as over 50,000 cold chain technology products have been adopted by vulnerable fishermen and coastal communities. This has also created local entrepreneurship opportunities, with nearly 400 micro entrepreneurs and SMEs being supported in the fish supply chain. Over 200 I-PLAN members applied and improved their postharvest technologies and practices. This has reduced fish loss and increased access to fish in the country.

Third, GAIN worked with the government and private sectors in supporting food fortification programs focused on rice[61] and cooking oil.[62] Fortified rice helps address micronutrient deficiencies, improving the overall health and nutritional status of populations, especially in regions where rice is a staple food. Rice production is vulnerable to climate impacts. The program was connected to social protection programs to help vulnerable communities.

Lastly, GAIN is currently working in one of the vulnerable provinces in Indonesia to increase the resilience of access to sustainable and healthier foods, such as tempeh. Tempeh has been identified as a local food with high nutritional value and lower environmental impacts. Yet, it is currently produced in Indonesia with a major reliance to soybean imports. Thus, GAIN is promoting alternative tempeh using local jack beans.

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THE GENDERED IMPACT OF CLIMATE CHANGE

The climate crisis is not gender neutral. Women and girls experience the greatest impacts of climate change, which amplifies existing gender inequalities and poses unique threats to their livelihoods, health and safety. Gender inequalities, along with other social and economic inequalities, intensify vulnerabilities to climate change impacts. Growing evidence on gender and climate change identifies negative impacts across a range of economic and social outcomes for women, girls and gender-diverse populations due to underlying gender inequalities and the failure to take gender issues into account in decision and policy-making.[63] Gender norms, social roles, relations, expectations, and responsibilities are important factors in determining vulnerability and adaptative capacity to the health impacts of climate change. Women and girls are more vulnerable to disasters, both in terms of immediate impacts as well as their capacity to recover in the aftermath, because of prevailing gender inequalities.

Gender inequalities stem from laws, policies, and social norms that discriminate on the basis of gender. As a result, women typically have less access to income, finance, employment, and productive resources, including agricultural land and property. Therefore, when weather patterns change or a climate disaster occurs, disrupting infrastructure and public services or food production, women are less able to adapt, recover and rebuild. Additionally, women's unpaid care responsibilities often increase in the context of environmental change, as water, fuel and nutritious food become scarcer, and the healthcare needs rise within families.

Hard-won progress on gender equality since the Beijing Platform for Action has been **incremental but inadequate** and without action to halt climate change, the world's women and girls will potentially face a reversal of their human rights.

Globally, it is estimated that by mid-century, under a worst-case scenario, climate change may push up to 158 million more women and girls into poverty (16 million more than the total number of men and boys).[64] Besides these more obvious impacts, there are also other causal consequences of climate change and gender inequality. Evidence shows that as communities are plunged into recurrent crises, tensions within families and between partners rise and gender-based violence escalates. Droughts have been found to increase son preference and sex-selective abortion as well as the likelihood of girls dropping out of school.[66] Hard-won progress on gender equality since the Beijing Platform for Action has been incremental but inadequate,[67] and without action to halt climate change, the world's women and girls will potentially face a reversal of their human rights.

BOX 6

WOMEN AT THE CENTERSTAGE OF CLIMATE ADAPTATION PLANS

Climate emergencies have a disproportionate impact on women and other marginalized communities—exacerbating social and economic disparities. Pathfinder's[68] approach to addressing the vulnerabilities faced by women and girls is centred around the community-led approach. By building on contextual knowledge, Pathfinder creates pathways to support community adaptation and health system resilience, building on its expertise and years of relevant work. Around the world, it applies locally led solutions to climate and health challenges, delivering crucial services to women and girls while helping communities adapt to the climate crisis.

Both floods and heat waves are a huge risk for pregnant women and children. In Pakistan, the 2022 floods led to a four-fold increase in malaria,[69] which is heavily linked to birth complications and a major killer of young children worldwide. Heat waves contribute to pre-term births and obstetric complications.[70] When health infrastructure is damaged during crises, women cannot get the services they need, like safe delivery care, contraception, and menstrual hygiene supplies.

It's not just health, it's livelihood too. Women make up 68% of the agricultural workforce in Pakistan *(https://www.undp.org/sites/g/files/zskgke326/files/2023-06/policy_brief_-_gender_greening.pdf)*. Climate emergencies strip women of their agricultural livelihoods—ruining crops, destroying arable land, and leaving women and their families in rural and low-resource communities without money or food. At the same time, stress on households leads to gender-based violence and child marriages, as families feel pressure to obtain dowries when they have trouble earning an income. Women—80% of those displaced during crises—are vulnerable to sexual violence and trafficking in transitory housing, like shelters and tent camps. Girls are the first to miss school when families need help rebuilding. These situations are most common among those living in poverty.

To address these alarming trends, Pathfinder International, along with Pakistan's Ministry of Climate Change and Environmental Coordination and regional partners, convened parliamentarians from 11 countries to formulate the Islamabad Declaration. The declaration is a unified commitment by the governments of Cambodia, Egypt, Indonesia, Japan, Lao PDR, Maldives, Pakistan, Thailand, Vietnam, Mongolia, and Turkmenistan to advance gender equality and climate action through critical policies, systems, and services.

This declaration served as a blueprint at COP29 for prioritizing the needs of women and other marginalized groups in national climate adaptation plans—ensuring their voices are heard. In Pakistan, the declaration has solidified the support of Pakistan's Ministry of Climate Change in recognizing the importance of involving women and girls in national climate adaptation plans. Some of the most significant commitments made through the Islamabad Declaration for community- and women-led climate adaptation strategies include:

1. Community-led emergency preparedness and targeted disaster risk reduction plans where networks of women, their communities, and community-based organizations are best situated to develop early climate emergency warning systems. These networks not only help ensure local

communities know when a climate emergency is about to hit, they can help with preparations well ahead of time—connecting pregnant women with healthcare, preparing gender-inclusive shelters set up to house women and girls safely, offering families social safety nets that provide food and other essential supplies, and securing bridges and other essential infrastructure well ahead of time. These community-based networks must be combined with data-driven insights that analyse climate patterns to strengthen resilience during extreme weather events.

2. Evidence generation related to the protection of marginalized groups in the wake of climate emergencies. We cannot effectively advocate for significant investments in protecting marginalized communities without ample evidence. For example, we must undertake health system assessments that determine how service delivery and supply chains can be strengthened to ensure sustained sexual and reproductive healthcare for women and girls. While there is quite a bit of anecdotal evidence on the effect of climate change on women, girls, and marginalized groups, investments need to fund further research, building a robust evidence base for increased investments.

3. Engagement of women and young people in advocacy and policy decisions related to climate and disaster recovery strategies. We must actively shift power toward women and young people, enhancing their participation, voice, and agency in climate actions and decision-making. Across communities on the frontlines of climate change, women and young people can serve as climate champions, advocating for policies that will improve their own lives.

4. Bringing women into climate discussion at COP29,[71] Pathfinder, working with the Pakistan government and other partners, is already making progress on some of the commitments posed in the Islamabad Declaration by harnessing and developing the leadership skills of women and girls in Sindh and Khyber Pakhtunkhwa provinces toward climate adaptation. We must scale up these types of solutions nationally—and regionally—to save lives and encourage economic and social development through climate adaptation.

At COP29, Pakistan's Ministry of Climate Change continued to bring energy to developing climate adaptation plans that take the needs of women and girls into account. An event co-hosted by Pathfinder and the Ministry, for example, introduced a gender and climate seal to promote gender equality and climate resilience in global value chains. During another event led by the Ministry, women took centre stage as distinguished panellists discussed funding at the intersection of climate and health.

To achieve anything monumental, we need comprehensive coordination among civil society, development partners, governments, academia, and the private sector. And we need much more climate financing. While we continue to explore innovative domestic financing mechanisms like debt for climate swaps, equity financing, and results-based climate finance, we must simplify and centralize multilateral climate funds that transfer significant resources from high-emitting countries to low-emitting countries like Pakistan facing the gravest climate threats.

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THE IMPACT OF CLIMATE CHANGE ON TUBERCULOSIS

> It is anticipated that climate change will potentially worsen the factors that exacerbate existing pressures on broader determinants that influence TB epidemics, and **likely to undermine progress to End TB by 2050.**

The global magnitude of climate-sensitive diseases was estimated in 2019 to be 39,503,684 deaths (69.9% of total annual deaths) and 1,530,630,442 disability-adjusted life years (DALYs). Of these, cardiovascular diseases (CVDs) comprised the largest proportion of climate-sensitive diseases. The next largest category consists of respiratory diseases—with chronic respiratory disease contributing to 7% of deaths and 4.1% of DALYs and respiratory infection and tuberculosis (TB) contributing to 6.5% of deaths and 6% of DALYs.[72]

People with existing health conditions like TB and other chronic lung diseases are particularly vulnerable to the impacts of climate change due to the following reasons:

- The exacerbation by air pollution where particulate matter (PM2.5) and other pollutants aggravate TB symptoms by reducing the effectiveness of treatment or increasing TB incidence.
- Compromised respiratory systems, where TB primarily affects the lungs, leaving individuals more susceptible to worsening symptoms or secondary respiratory illnesses when exposed to air pollution, allergens, and extreme temperatures.
- Limited access to healthcare during climate related disruptions, such as floods or extreme weather events, limit access to healthcare infrastructure, delaying TB diagnosis, treatment, and follow-up care.
- Increased disease transmission, especially due to crowding in urban areas or displacement due to climate change events, increases the risk of TB transmission in vulnerable populations.

Based on the recent Global Tuberculosis Report 2024,[73] eight countries accounted for more than two thirds of the global total TB burden: India, Indonesia, China, the Philippines, Pakistan, Nigeria, Bangladesh and the Democratic Republic of Congo, and six of these countries are from the Asia-Pacific region. The WHO's End TB Strategy aims to end the global TB epidemic, with targets to reduce TB deaths by 95% and to cut new cases by 90% between 2015 and 2035, and to ensure that no family is burdened with catastrophic expenses due to TB. However, it is anticipated that climate change will potentially worsen the factors that exacerbate existing pressures on broader determinants that influence TB epidemics, and likely to undermine progress to End TB by 2035.[74]

BOX 7

AIR POLLUTION AND VULNERABILITY TO TB IN MONGOLIA

Countries like Mongolia face several significant environmental challenges, largely driven by its unique geographical location, climate, and economic development. Outdoor and indoor air pollution is severe during the winter months in Ulaanbaatar, the capital of Mongolia. The reliance on coal for heating, particularly in ger districts (traditional nomadic tents), combined with emissions from coal-fired power plants, leads to dangerously high levels of air pollution.

Ulaanbaatar is one of the most polluted cities in the world,[75] and during cold, windless days, particulate pollutant levels can reach up to 1000 µg/m3, which is comparable to levels found in the underground mines. Environmental surveillance (2018-2023) by the National Public Health Centre of Mongolia[76] shows that the key pollutants include particulate matter (PM10 and PM2.5), sulphur dioxide (SO2), and nitrogen dioxide (NO2) in Ulaanbaatar. Although levels have decreased in recent years, they remain alarmingly high when coal usage increases. SO2 and NO2 have also been on the rise, with concentrations significantly above recommended limits. The above surveillance shows that there is a strong correlation between air pollution, particularly PM2.5 levels, and respiratory diseases such as TB. Ulaanbaatar records a large percentage of people with TB, with data indicating that increased PM2.5 levels are associated with a higher incidence of the disease.[77]

Rapid urbanization has led to informal settlements in Ulaanbaatar, where poor ventilation and high population density increase the risk of TB transmission. This is compounded by climate-driven rural-to-urban migration. In recent years, extreme weather events like severe winters, locally termed as Dzud, and floods have further strained Mongolia's healthcare system, delaying services for TB patients and hindering adherence to treatment protocols.

Civil society organisations in the country, such as the Mongolian anti-Tuberculosis Coalition (MTC), advocate for climate change responses that account for the needs of individuals with TB with the following recommendations:

- Building and strengthening national health systems to withstand climate shocks and ensuring uninterrupted TB diagnosis, treatment, and follow-up care, including expanding mobile healthcare services to reach rural and displaced populations.
- Ensuring increased funding to address climate-induced health vulnerabilities
- Ensuring air quality management to prioritize clean energy solutions to reduce household and ambient air pollution.
- Ensuring community-led and centred approaches by involving TB-affected communities in designing and implementing climate mitigation and adaptation efforts.
- Providing awareness and education on protecting respiratory health, such as avoiding outdoor activities during peak pollution times.
- Ensuring policy integration by incorporate respiratory health and TB care into broader climate change and public health policies, emphasizing the intersection between respiratory health and environmental factors.
- Investing in research to better understand the links between climate change, air pollution, and TB outcomes, particularly in high-risk areas like Mongolia.
- Facilitating the usage of data to inform tailored interventions and track progress in mitigating health impacts.

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Bazarragchaa Tsogt
Mongolian Anti-Tuberculosis Coalition (MTC)

Rapid urbanization has led to informal settlements in Ulaanbaatar, where poor ventilation and high population density increase the risk of TB transmission. This is compounded by climate-driven rural-to-urban migration. In recent years, extreme weather events like floods have further strained Mongolia's healthcare system, **delaying services for TB patients and hindering adherence to treatment protocols.**

THE IMPACT OF CLIMATE CHANGE ON HIV

Over half of the known human diseases caused by pathogens are projected to be exacerbated by climate change.[78] While it is widely acknowledged that the direct and indirect effects of climate change on HIV are poorly understood, research is beginning to shed light on the consequences of the climate emergency for the HIV response.[79]

A report by Frontline AIDS[80] identifies a framework that demonstrates the complex interconnectedness of climate change and HIV. Increased migration and population displacement, food insecurity, economic stress, conflict, communicable diseases, and the erosion of the health infrastructure can increase the rates of HIV infection and worsen the health and wellbeing of people with HIV. Impacts on HIV programmes and people with HIV can manifest as reduced access to prevention, testing, and treatment services, poor adherence to treatment, poor nutrition, and reduced immunity. Other effects could see increases in HIV risk (e.g., more transactional sex as a result of food insecurity) and increased discrimination of populations most affected by HIV. These are amplified by pre-existing vulnerabilities that affect people with HIV.

> Impacts on HIV programmes and people with HIV **can manifest as reduced access** to prevention, testing, and treatment services, poor adherence to treatment, poor nutrition, and reduced immunity.

BOX 8

PEOPLE LIVING WITH HIV (PLHIV) AND THE FLOODS IN PAKISTAN

Pakistan, one of the developing countries in South Asia, is rated among the 5 most-affected countries due to climate change. In 2022, Pakistan faced unprecedented heavy rains and floods due to glacial melt and flash flooding that was exacerbated by climate change. The floods have shown Pakistan's high vulnerability to climate change despite contributing less than 1% of global greenhouse gas emissions. One-third of the country was under water, 33 million people were affected, and nearly 8 million people were reportedly displaced. The scale of the disaster is unprecedented for Pakistan.[81]

Increased migration and population displacement, food insecurity, economic stress, conflict, communicable diseases, and the erosion of health infrastructure increased the rates of HIV infection, and worsened the health and wellbeing of people with HIV in the country. Research found that impacts on HIV programmes and PLHIVs can manifest as reduced access to prevention, testing, and treatment services, poor adherence to treatment, poor nutrition, and reduced immunity.[82] Other effects were seen as increases in HIV risk (e.g., more transactional sex as a result of food insecurity) and increased discrimination of populations most affected by HIV. These effects are amplified by pre-existing vulnerabilities that affect people with HIV.[83]

In Pakistan, areas affected by flooding have also disproportionately affected HIV communities, especially women and children living with HIV. The flooded regions in Punjab and Sindh had experienced mass scale HIV outbreaks over the last decade, which hindered the HIV response and adversely affected people with HIV by limiting their access to prevention, testing, and treatment services. This led to poor adherence to treatment, inadequate nutrition, and reduced immunity. Given this context, it was essential to assess the needs of vulnerable communities, especially women and girls, to better respond to and adapt to climate risks, protect public health, and recover from climate-related events.

Civil society organizations working with PLHIVs such as Association of People Living with HIV (APLHIV) Pakistan, aim to enhance the capacity of women and girls as well as women living with HIV to protect and improve their and their communities' health in the context of changing climate. Ultimately, these women should be increasingly strengthened to improve their own health, reduce inequities and vulnerabilities, adapt and build resilience within their communities and healthcare systems, and provide adequate protection as they face climate variability and change.

APLHIV believes that the focus should be on activities that build capacities to effectively monitor, anticipate, manage, and adapt to the health risks associated with climate variability and change. Women and young girls who are part of this process should be able to understand and effectively prepare for the additional health risks posed by climate variability and change through a resilience approach. By identifying the main health needs, with a focus on women and young girls living with HIV, climate resilience can be achieved.

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THE IMPACT OF CLIMATE CHANGE ON VECTOR-BORNE DISEASES

The changing climate, alongside changes in land use (often induced by or contributing to climate change) and human movement, is affecting the risk of water-borne, vector-borne, food-borne, and air-borne disease transmission, undermining disease control efforts.[84] Vector-borne diseases are transmitted by hematophagous arthropods (for example, mosquitoes, ticks and sandflies) to humans, and wild and domestic animals, with the largest burden on global public health disproportionately affecting people in tropical and subtropical areas in regions like Asia-Pacific.

Vectors that transmit these diseases are ectothermic, which means the regulation of their body temperature depends on external sources, climate and weather alterations (for example, temperature, rainfall and humidity) can affect their reproduction, survival, geographic distribution and, consequently, their ability to transmit pathogens. All of these factor increase the effects of climate change on vector-borne diseases, but it needs to be acknowledged that these impacts are multifaceted and complex, often with ambiguous consequences.

> The 2022 rainfall in Pakistan, led to the surge of malaria cases to more than **3.4 million suspected cases** compared with the 2.6 million in 2021.

BOX 9

MALARIA AND OTHER VECTOR-BORNE DISEASES IN GREATER MEKONG SUBREGION (GMS)

Prevalence of vector-borne diseases, especially malaria, has increased in recent decades and the prevalence of infections is expected to further increase over the next 80 years unless measures are taken to adapt and strengthen control strategies.[85] Climate change influences the transmission of both dengue and malaria, as its effects dominate the ecological and behavioural traits of their vectors. The impacts of climate change on disease arise from temperature effects, rainfall variability, humidity, timing and intensity of outbreaks, and changes in people's livelihood.

Malaria is one of the most common vector-borne diseases in tropical and sup-tropical region like Southeast Asia, where *Anopheles* mosquitos transmit the *Plasmodium* parasite to humans. The disease is highly climate-sensitive, with its transmission patterns historically linked to the summer months in temperate regions and to humid lowlands in tropical areas.[86] Climate variability often triggers disease outbreaks. One of the striking examples is the 2022 rainfall in Pakistan, which led to the surge of malaria cases to more than 3.4 million suspected cases, compared with the 2.6 million in 2021.[87]

Like malaria, dengue fever, transmitted by *Aedes* mosquitos, is also influenced by the changing climate conditions. Aedes mosquitoes breed in small pools and rain-filled containers and typically inhabit urban

environments in tropical and subtropical regions. Rising temperatures have expanded the climate suitability for the dengue virus, leading to more local transmission and longer seasonal outbreaks.[88] The largest increases in climate suitability for dengue have occurred in equatorial tropical and subtropical zones, including Sub-Saharan Africa, Southeast Asia, and northern South America. There was also an expansion into more temperate regions, such as North America, East Asia, and the Mediterranean. This pattern also extends to other vector-borne diseases like chikungunya, yellow fever, and Zika, all transmitted by Aedes mosquitoes, posing substantial public health risks globally.

Climate change affects the transmission of diseases like dengue and malaria by altering the ecological and behavioural patterns of their vectors. Factors such as temperature shifts, changes in rainfall patterns, humidity levels, and outbreak timing all play a role. Additionally, the socioeconomic effects of climate change, including disruptions to livelihoods, further worsen the risks associated with these vector-borne diseases.

Firstly, temperature effects from climate change influence vector survival and the development rate of *Plasmodium* parasites and other viruses like dengue. As global temperatures rise, mosquitoes benefit from warmer conditions, which extend the seasons that they can transmit the disease. Warmer weather promotes mosquito breeding, survival, and the faster development of the malaria parasite within them, resulting in longer periods of disease transmission.[89] Malaria and dengue transmission peak within moderate temperature ranges, with estimates for optimal conditions between 20-27°C for mosquito survival and parasite development for malaria and 20-30°C for dengue. Warmer temperatures accelerate parasite development, increasing transmission rates, however, excessively high temperatures (>35°C for malaria and >40° for dengue) can harm mosquitoes, reducing their lifespan and limiting transmissional potential.[90, 91]

Secondly, rainfall variability increases the available habitats for mosquito larvae, as the number of rainy days and post-rain wetness critically influence vector breeding. As global temperatures rise, rainfall patterns will shift and impact the environmental conditions necessary for the growth and survival of parasites, viruses, and mosquitoes.[92] This could alter the global, national, and local burden of vector-borne diseases like malaria and dengue. However, extreme rainfall can flush out breeding sites, and prolonged droughts may reduce vector populations temporarily. In drier conditions, droughts can weaken population immunity for malaria[93] and mosquitoes transmitting dengue can adapt by utilizing stored water in households, potentially increasing the risk of dengue outbreaks in urban areas.[94]

Thirdly, humidity has been associated with the reproduction and activity of mosquitoes. High humidity increases with the egg production, larval indices, adult survival and feeding activity; in contrast, low humidity can cause eggs to desiccate and reduce adult lifespan and/or activity in favor of seeking shelter.[95] Rising temperatures and humidity can widen transmission windows of malaria and other vector-borne diseases in cooler regions while narrowing them in hotter areas.[96]

Fourthly, changes in seasonal rainfall may alter the timing and intensity of outbreaks, as it is likely to expand the range of mosquitoes, which may enable the persistence of dengue in areas where it was historically absent. Rising temperatures may enable malaria to spread to higher altitudes, such as highland areas previously free from the disease.[97]

Moreover, climate change affects people's livelihood, pushing them to greater risk of malaria and other vector-borne disease. Unpredictable rainfall patterns and extreme weather events intensify competition for essential resources like food and water.[98] Reduced agricultural productivity, caused by such climatic disruptions, forces people to go deeper into forests or closer to water sources, increasing risks of exposure to mosquitoes and malaria. Additionally, vulnerable communities with limited access to healthcare and infrastructure are disproportionately affected. For example, areas with poor housing or inadequate drainage systems see an increase in stagnant water, which promotes breeding[99] of dengue vectors.

The complex and nonlinear relationships between climate and disease transmission patterns—where no direct relationship between climate change and vector-borne diseases exist—make the outbreak prediction and existing interventions for disease eradication challenging. In simpler terms, accurately forecasting the impact of future climate change on malaria and other vector-borne diseases remains impossible due to the numerous uncertainties involved. Malaria management under climate change must consider climatic, environmental, and socio-economic variables.[100]

Greater Mekong Subregion (GMS), a trans-national region of the Mekong River basin in Southeast Asia, is not only facing ongoing malaria prevalence, but climate change conditions, including rising sea levels, heat waves, floods and droughts, and increasingly intense and unpredictable weather events.[101] These changing climate conditions may cause the climate migration from within or from other countries, especially areas where risks are perceived as lower. This climate migration pattern will either introduce malaria into areas or back into areas, or put these populations at risk if they move into areas where malaria remains.

To tackle malaria and climate change, we must strengthen prevention and control measures, including vector management, early disease diagnosis and treatment to eliminate infection sources, vaccination, improvements to water and sanitation systems, and other interventions.[102] Moreover, we must ensure infrastructures such as health centres, safe roads, and access to healthcare services for all at-risk populations, especially people in hard-to-reach-areas. Integrating existing intervention strategies with expanding empirical research could help guide future approaches to effectively address challenges and new initiatives to prevent and control malaria and vector-borne diseases amidst ongoing climate change.

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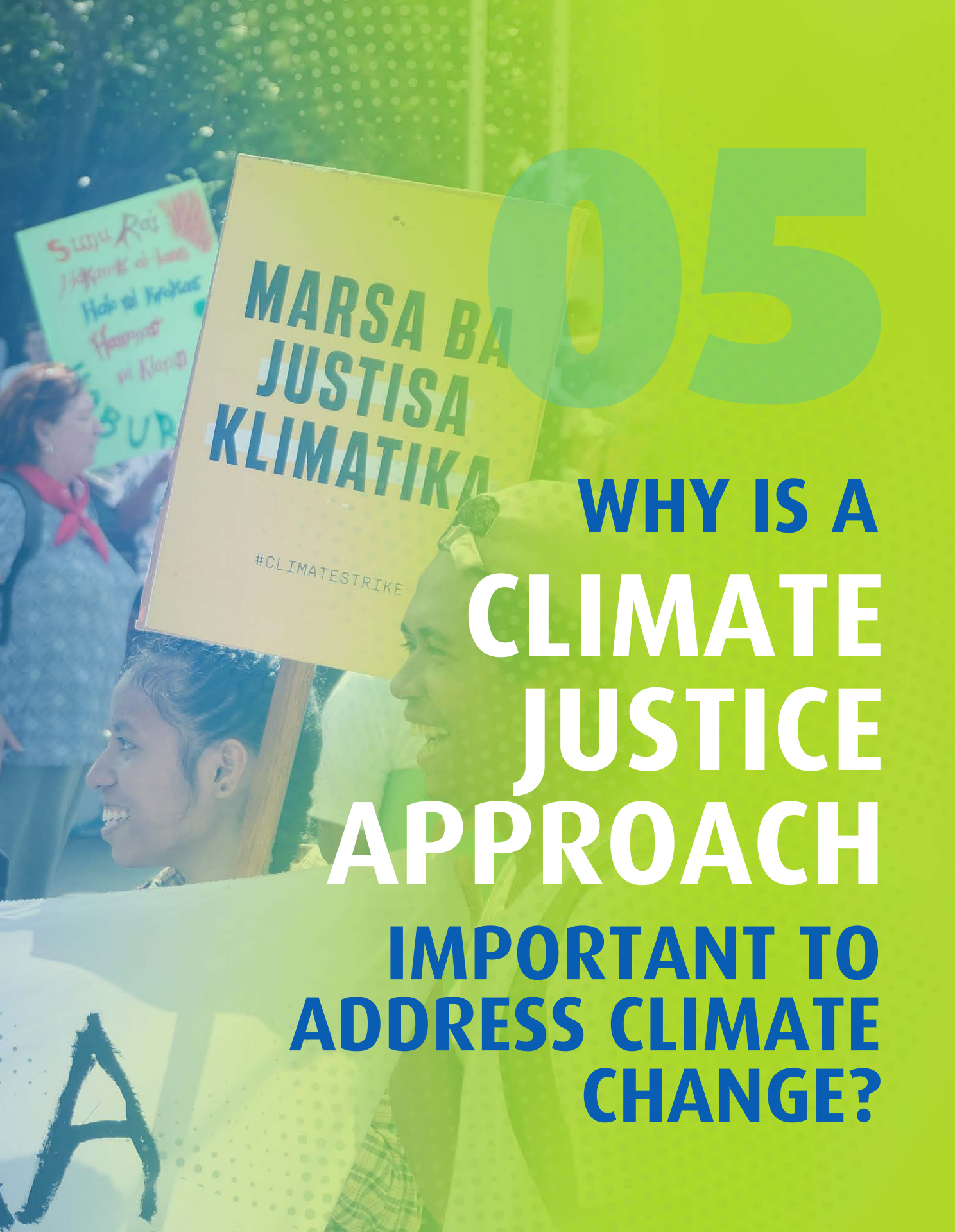

05

WHY IS A CLIMATE JUSTICE APPROACH IMPORTANT TO ADDRESS CLIMATE CHANGE?

It is evident that the real injustice of climate change is that those who have contributed least to its cause will bear the brunt of its impact, and that the people most vulnerable to the effects of climate change are those who already experience systematic exclusion and marginalization.

Therefore, climate justice offers a framework for addressing this injustice and identifying the different ways in which the climate crisis aligns with long-standing and interconnected patterns of social injustice. It is important to note that climate justice is not a new concept. Over the years, it has been used to discuss the moral and ethical dimensions of climate change, and from the social justice lens, it was seen as crucial to seek justice for populations and communities who have contributed least to the problem but are suffering its most intense impacts. It is frequently discussed in terms of common but differentiated responsibility.

The most common definition of climate justice encompasses, among other elements, notions of the distributional, procedural and recognitional injustices associated with climate change impacts and societal responses to them.[103] Therefore, the approach, while used in different ways in different contexts by different communities, generally includes these three key principles:

1. Distributive justice, which refers to the allocation of burdens and benefits among individuals, nations and generations
2. Procedural justice, which refers to who decides and participates in decision-making
3. Recognition, which entails basic respect and robust engagement with fair consideration of diverse cultures and perspectives

Climate justice is not a new concept. Over the years, it has been used to discuss the moral and ethical dimensions of climate change, and from the social justice lens, it was seen as crucial to seek justice for populations and communities who have **contributed least to the problem but are suffering its most intense impacts.**

Having discussed differential and heightened vulnerabilities faced by different populations in the earlier chapters, it is now crucial to discuss what we hope to achieve through climate justice.

Through the climate justice approach, we need to identify and bring to the forefront the needs of individuals and groups that are most marginalized by the impacts of climate change, as well as our responses to these impacts through mitigation and adaptation strategies. Ultimately, the goal is to dismantle the individual and structural architectures of marginalization, exploitation, and oppression towards these populations. In this sense, climate justice is prefigurative; it envisions not only a world in which climate change no longer exacerbates social inequity, but also one in which societal responses to its impacts themselves offer an opportunity to build a more equitable and sustainable world.

RECOMMENDATIONS

WHAT DO WE NEED TO DO?

1. IDENTIFY AND ADDRESS VULNERABILITIES

Our climate response needs to start with identifying and addressing differential vulnerabilities within communities, countries and regions. Without identifying the most vulnerable people and ensuring that they have a voice in analysis and planning for climate mitigation and adaptation, our efforts will fail to benefit those most affected and most in need of resources and support. This is most evident in many communities where access to essential services such as safe water, nutritious food and health care remain a challenge. It is almost impossible for these communities to think beyond their immediate needs, much less to make long term plans for climate mitigation and adaptation. Therefore, our climate response needs to address access barriers and systematic gaps that exist in the region.

Having seen sufficient evidence that achieving the SDG goals by 2030 in the Asia-Pacific region is increasingly unlikely, our sustainable development actions and climate response need an integrated approach to ensure the pledge to leave no one behind is truly attainable. Integrating climate change mitigation and adaptation into broader development work does not necessarily require implementing development in a new way, it merely requires considering climate impacts while planning and actively identifying opportunities to adapt and transform as needed.

> Integrating climate change mitigation and adaptation into broader development work does not necessarily require implementing development in a new way, it merely requires considering **climate impacts** while planning and actively identifying opportunities to adapt and transform as needed.

2. APPLY THE PRINCIPLES OF CLIMATE JUSTICE, EQUITY AND DIFFERENTIATED RESPONSIBILITIES

Climate justice, equity, human rights and the principle of “Common but Differentiated Responsibilities and Respective Capabilities” (CBDR-RC) have been the cornerstone of the international climate change space through the Paris Agreement[104] and the United Nations Framework Convention on Climate Change (UNFCCC).[105] It holds all states responsible for addressing human-driven climate change and environmental destruction but acknowledges that some states have historically contributed more to the climate crisis and are in a better economic position to act due to long-standing global economic inequities. More concerted efforts need to be in place to ensure our climate response reflects equity and the principles of climate justice and CBDR-RC between states and even communities. We need to strive to address these inequities head-on through long-term mitigation and adaptation strategies, with a fair distribution of the benefits and impacts of climate action and a prioritization of the most marginalized.

3. PUT PEOPLE AND COMMUNITIES AT THE CENTER OF CLIMATE CHANGE RESPONSE

COP29 strongly urged that the climate response should unlock human development and put people and communities at the heart of climate action. We need to prioritize equity, human rights, and a just transition to ensure everyone benefits from climate action. As we address vulnerabilities and inequalities, it comes with the understanding that vulnerable people are vulnerable in part because they do not have a voice in decision-making on policies and resource allocation in their communities, regions and countries, and are, therefore, left behind. As a result, policies and programs do not consider the specific constraints faced by these groups and do not enable them to overcome these constraints.

Therefore, our responses need to put communities at the centre of the climate response. Local communities are best placed to build effective, efficient, and sustainable solutions. To enable effective community engagement in climate response, we need to ensure the following:

- Community engagement efforts need to meet communities where they are by prioritizing local problems and solutions that are driven by community needs and capacities.
- Provide access to information that facilitates adaptive decision-making, as well as build capacity to interpret and use this information so that communities can manage the complex and often dynamic knowledge related to climate adaptation and its impacts on their lives and livelihoods.
- Invest in capacity building of communities and institutions on a continuous basis as one of the key aspects of sustainable and informed development. Communities must have access to data and information that would allow for better advocacy and decision-making. These investments need to be in place to enhance people's awareness on key issues and processes, building trust, coordination and cooperation, and strengthening capacities.
- Amplify voices and demands of communities in national, regional and international climate negotiations, spaces and plans. While the voices and demands of vulnerable communities and groups are being increasingly acknowledged on the international agenda, more effort is needed to ensure that these voices, including those of young people, are truly heard so they emerge as a powerful force in driving attention to issues of intergenerational climate justice.
- Provide catalytic and flexible financing for local communities to implement localised and relevant climate mitigation and adaptation initiatives.

4. BUILD RESILIENT SYSTEMS FOR HEALTH

Health systems consist of the people and actions whose primary purpose is to improve health and wellbeing. Therefore, all parts of the system are interdependent and must be strengthened to be effective in delivering core functions and collaborating with other sectors to meet the health needs of people. A resilient health system (including the institutions, infrastructure and populations) can anticipate, prevent, prepare for, absorb and adapt in response to, and recover from a wide variety of shocks and stressors while delivering quality individual and population health services as needed. They must also utilize lessons from experiences within and outside their settings to

continuously improve on their baseline capacities and performance across all contexts.[106]

The COVID-19 pandemic exposed a lack of health system resilience globally, and it is clear that climate change not only has direct impacts on human health but also threatens the capacity of health systems to manage and protect populations due to the vulnerabilities in infrastructure and critical services. Therefore, our health systems must be increasingly strengthened so that they continue to be efficient and responsive to improve population health amid unstable and changing climate conditions. This can be done through integrated approaches, including UHC planning that incorporates climate-sensitive considerations, particularly in regions most vulnerable to health impacts of climate change and low levels of UHC (Salas and Jha, 2019). We need to develop a holistic approach to health and well-being by improving access to mental health services.

There is an urgent need to invest in building and strengthening climate-informed, resilient health systems by promoting and supporting effective and iterative risk management across all levels, fostering multi-sectoral engagement, and investing in actions that increase resilience. These efforts must be tailored to population needs, country priorities and resources, and political realities.

Addressing these crises requires a **truly integrated perspective** and **coordinated action** based on a whole-of-government, whole-of-society, and the One Health approach.

5. ENSURE AN INTERSECTIONAL APPROACH TO CLIMATE SOLUTIONS AND ADAPTATION

The Seventy-seventh World Health Assembly (WHA77) in 2024[107] called on its member states to recognize the complex, multidimensional challenges posed by climate change, pollution and biodiversity loss, as well as malnutrition in all its forms. It also emphasized that addressing these crises requires a truly integrated perspective and coordinated action, based on a whole-of-government, whole-of-society, and the One Health approach.

The COVID-19 pandemic revealed major gaps in our pandemic preparedness and response, particularly in countries' abilities to respond quickly and equitably, and in shared responsibility and global solidarity more broadly. This has resulted in efforts to address this gap, including pandemic prevention, preparedness and response (PPPR) initiatives. The setting up of the Pandemic Accord, which was finalized in June 2024 is one such step. PPPR through the One Health approach has great potential to build climate resilience, however there are still some challenges that need to be overcome before it can be fully operationalized especially at the country level. We need to advocate for voices and demands of the most affected communities to be heard in decision making spaces to ensure a successful strategy for preparedness and response that addresses the interconnected nature of climate change.

6. ADDRESS BARRIERS TO THE ONE HEALTH APPROACH

The One Health approach to tackling climate change is not new but has gained traction in recent times due to public health emergencies and pandemics. These emergencies highlight the interconnectedness and changing relationships between humans, animals and the environment. Bodies like the Quadripartite—a global collaboration between the Food and Agriculture Organization (FAO), United Nations Environment Programme (UNEP), World Health Organisation (WHO) and the World Organisation for Animal Health (WOAH)—aim to create sustainable and holistic solutions to better manage threats to humans, animal, plant, and environmental health while preventing future pandemics.

The approach mobilizes multiple sectors, disciplines, and communities across various levels of society to work together in fostering well-being, addressing health and ecosystem threats, and ensuring access to clean water, energy, air, and nutritious food while taking action on climate change and contributing to sustainable development.

However, its interdisciplinary nature presents significant barriers, including differences in approach, cultures, working styles, and even terminologies. Currently, there is a wide gap in guidance and addressing these differences, making collaboration extremely challenging and with competing priorities amongst sectors. More effort is needed in to provide clearer guidance and education to address this gap.

The One Health approach stands to gain from engaging with local communities, whose insights are invaluable. However, there remains a huge gap in fully engaging with local communitiesj as most of the current effort involves researchers engaging communities in their research or surveillance. A more holistic approach is needed to involve communities from all aspects - planning, development, implementation, and evaluation.

7. BREAK THE HIERARCHY OF KNOWLEDGE AND INFORMATION

We need to dismantle the hierarchies of knowledge and information that dominates climate change spaces and discussions. The current landscape tends to prioritize top-down scientific and technological solutions. It is a missed opportunity when a wider array of knowledge remains excluded from mainstream climate change narratives, adaptation and policymaking. There is evidence that inclusive planning informed by diverse cultural values and indigenous and local knowledge is critical to maximise adaptation efficiencies and facilitate climate resilient development.[108] Therefore, more effort is needed to recognize the equal value of local, Indigenous, and traditional knowledge about mitigation and adaptation needs, and solutions to achieve climate solutions and justice.

It is a missed opportunity when a **wider array of knowledge remain excluded** from main-stream climate change narratives, adaptation and policymaking.

8. INVEST IN RESEARCH BASED ON LIVED REALITIES AND LOCAL EXPERIENCES

We need to invest in high-quality, locally relevant, and timely research to track climate-related health impacts, guide resource allocation, and inform policy decisions. Research findings must be effectively communicated with communities, leaders, and policymakers to advance climate and health action. Often, the complexities of research findings become a barrier, preventing crucial information from reaching the communities that need it the most. Efforts need to be in place to ensure there is an effective transfer of information and data that is easily digestible and useful to communities in their mitigation, adaptation and advocacy efforts. Climate impact research must also prioritize disaggregated data, ensuring that intersectional experiences, particularly regarding gender and other vulnerabilities, are accounted for, thereby promoting equity in climate action.

Additionally, climate research should move beyond a purely scientific lens to acknowledge, and utilize, existing local, contextual and Indigenous knowledge. Greater investment is needed in qualitative data, including lived experiences and knowledge often held by women and Indigenous communities. Participatory research approaches empower communities, enhance transparency, and hold policymakers accountable.

9. DIVERSIFY CLIMATE FINANCING

Climate financing refers to local, national, or transnational financing—drawn from public, private, and alternative sources—that supports mitigation and adaptation efforts to combat climate change. Now, more than ever, in the wake of the United States of America (USA) pulling out of the Paris Accord and reduced climate funding, it is crucial to push for the recognition of historical and ongoing economic inequalities and the disproportionate impacts of climate change between developed and developing countries. While the consequences of the USA's decision are still too early to quantify, they will surely have devastating impacts due to the limiting of USA's financial contributions to other countries in furtherance of mitigating and adapting to climate change globally.

Under the principle of "Common but Differentiated Responsibilities and Respective Capabilities" (CBDR-RC), the UNFCCC, the Paris Agreement, and the Kyoto Protocol impose financing obligations on developed countries, which includes the United States. These obligations require them to support developing nations in their mitigation and adaptation efforts through technology transfer, capacity building and financial assistance.[109] However, the gaps in climate financing remain significant and can set us back in our efforts for effective climate mitigation and adaptation. These shortfalls need to be urgently evaluated and addressed.

Additionally, more effort is needed to adopt gender-responsive climate budgeting in various low- and middle-income countries. Often referred to as double-mainstreaming, this is a nascent but important trend.[110] These tools help identify ways

to allocate resources to address gender-specific risks and vulnerabilities at both local and national levels, including by supporting the diversification of women's livelihoods impacted by environmental degradation. Countries in the Asia-Pacific region, such as Bangladesh, Indonesia and Nepal, have started budget tagging in key gender and climate policy institutions. More needs to be done to ensure countries adapt approaches such as this in their climate action planning and programming.

10. ACCOUNTABILITY

Accountability is a powerful tool that compels those in power to listen to and answer the claims of all rights holders, particularly those who are historically marginalized and sidelined. In the current political climate, it is more important than ever to hold our governments accountable for their climate and health commitments. To achieve this, we must establish both vertical and horizontal accountability mechanisms ranging from international monitoring bodies to national oversight structures such as parliamentary oversight committees and judicial systems. Additionally, greater awareness is needed around social accountability from the ground, driven by media and civil society efforts that have the potential to exert direct or indirect pressure to monitor government action, denounce inaction and propose alternatives. Furthermore, we need to put in place accountability tools such as community scorecards or participatory budgeting that can help uncover systemic failures, implement corrective actions, and build community ownership and grassroots policy monitoring.

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