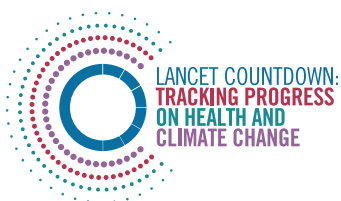


# Joint brief

## The *Lancet* Countdown on Health and Climate Change & Médecins Sans Frontières

2024



# Every climate action counts: The ripple effect of each failure on health care in humanitarian settings

At the time of writing, many people around the world are feeling the pain, disruption, and devastating health consequences driven by climate change. The world has been shocked by the widespread flooding in Europe and the consecutive catastrophic hurricanes in North America. Yet far less attention is given to the impacts of climate change in places where Médecins Sans Frontières (MSF) works, such as Central African Republic, Chad, Côte d'Ivoire, Democratic Republic of Congo, Myanmar, Niger, Nigeria, and South Sudan. In 2024, these populations have likewise been affected by devastating floods, many of them not for the first time.

Although immediate impacts like injury, displacement, and limited access to healthcare may be similar worldwide, the compounding crises that follow and the capacity to recover from these vary significantly. Individuals in low-resource and humanitarian settings face significant health threats while contributing the least to global emissions. These regions are often vulnerable to climate hazards and possess low adaptive capacity, increasing people's susceptibility to the negative impacts of climate change.



Angumu, Ituri Province, DR Congo. Pamoth is located on the shores of Lake Albert. The camp regularly floods, forcing already displaced people to move again, inland. (Photo: Solen Murlon)

In this brief, drawing on evidence from indicators in the 2024 report of the *Lancet* Countdown on Health and Climate Change,<sup>1</sup> MSF teams present examples of how climate change and environmental degradation are making provision of assistance more difficult by amplifying health and humanitarian needs and by further complicating interventions.<sup>2</sup> It also highlights activities that respond to the climate crisis using a three-pillar approach: **mitigating** MSF's environmental footprint, **adapting** healthcare delivery and emergency response to the current and future realities of climate change, and **advocating** for those impacted.

The complexity of climate change and environmental degradation, coupled with highly politicised and siloed global response efforts often make it insufficiently clear to health and humanitarian implementing partners that every issue is part of a continuous process, where each component informs the others. In this brief, MSF staff outline six focus areas where teams are engaged in developing environmentally-informed health and humanitarian interventions, emphasising their interdependence, and how failure to act on one issue not only impedes progress on that specific component but also affects the entire sequence of subsequent actions.



Aerial view of flooding in Didangali district, N'Djamena, Chad. Didangali district is on the southern outskirts of the capital. Three men are using a boat to try to reach their home to retrieve blankets and some utensils. Most of the displaced people were unable to take many things with them. Much of their possessions either washed away in the flood or were abandoned to facilitate evacuation. (Photo: Fausto Podavini)

# Integrating mitigation: Not a simple swap, a systemic overhaul

Expanding its definition of the medical and humanitarian ‘Do No Harm’ principle to integrate environmental degradation, MSF set an ambitious course in 2021 by committing to reduce greenhouse gas (GHG) emissions by 50% by 2030. To achieve this, mitigation priorities must be as integral to MSF’s mission as any medical protocol, ensuring the organisation is not contributing to the future harm of people and planet. Efforts should focus on high-impact areas, guided by empirical data that highlights where the biggest difference can be made. Indeed, a great deal of actions that mitigate climate change also help adapt to its effects, offering multiple, interrelated benefits including increased resiliency to shocks and reduced reliance on fossil fuel supply chains. In an operational setting, temperature-controlled medical warehouses are a simple, effective, often overlooked example – both reducing dependence on fossil fuels and adapting health structures to external weather conditions.

The path forward requires nuance. While it’s vital to adapt interventions to lower environmental impact, it’s equally important to recognise when sustainable alternatives are limited. A delicate balance must be struck, ensuring that mitigation efforts do not compromise the quality of care MSF delivers. A continual, evidence-driven evaluation of our actions is critical to this process; to craft a future where environmental stewardship and humanitarian care are not competing priorities, but intertwined imperatives.

MSF’s logistics teams are already innovating in this field. By leveraging guidance tools like ‘PACEMAKER’ and developing practical, context-sensitive solutions, they enable critical decisions that blend ecological mindfulness with operational efficiency.<sup>3,4</sup> The Rethinking Single-Use Medical Items project is a case in point. This project is mapping MSF’s most frequently used items and their lifecycle, from manufacture

to disposal, to truly gauge their environmental toll and prioritise mitigation action. One of the main challenges identified is the lack of sustainable alternatives on the market, and when available, implementing reusable alternatives in systems lacking proper infrastructure, like industrial laundry and sterilisation. **Sustainability in medical products is not a simple swap—it’s a systemic overhaul**, which will require investment in infrastructures, effective implementation of sustainable medical practices, and advocacy towards a regulatory shift in the medical products market.

In low-resource settings, the obstacles are even steeper. Reliable data on pollution exposure is scarce, and inadequate waste management, lack of resources, and the slow uptake of technology make sustainable practices hard to implement.<sup>5</sup> According to Engineers Without Borders, waste management is a significant problem in Sierra Leone, producing 96,000 tons of plastic waste annually, with little capacity to dispose of it effectively.<sup>6</sup> Yet, innovation can flourish under constraint. MSF’s “**3D Printing for All**” initiative is a testament to this: by recycling plastic bottles to create non-critical medical items, it is an example of not only tackling waste but also creating a model for localised, sustainable production.



Ministry of Health Laboratory Supervisor, Mamoud Bah, placing a pipette on a 3D printed pipette holder, inside the laboratory of the Magburaka Government Hospital. (Photo: Mohamed Saidu Bah)

The responsibility remains with health implementing partners, such as Ministries of Health and organisations like MSF, to conduct thorough assessments of the sustainability of medical products and to incorporate sustainability criteria into their procurement processes. Like others in the health sector, nearly half of MSF's carbon footprint comes from procuring goods and services, with 25% from purchased goods, of which 20% are single-use medical items. However, to preserve patient care, certain items cannot be further reduced or reused. Sustainability metrics must urgently be incorporated into the prequalification of medical products, including for plastics, and manufacturers must face significant pressure to collaborate on developing sustainable alternatives, especially in low-resource settings.



MSF Laboratory Supervisor, Ibrahim Massaquoi and MSF 3D printing Tech Lead, Silvestr Tkáč, standing in front of the MSF 3D printer in Makeni, Tonkolili district, Sierra Leone. Sierra Leone is one of the four countries in which MSF has procured a 3D printer. In Sierra Leone, over 250 items have been printed in one year including disinfectant holders, humidifier bottle holders, test tube racks etc. All items that are printed are either difficult to source locally or costly to purchase. (Photo: Mohamed Saidu Bah)

### Towards sustainable medical research

In 2021, healthcare GHG emissions contributed to 4.6% of global GHG emissions, up by nearly 10% from 2020 (indicator 3.5).<sup>1</sup> Clinical trials, while essential, account for around 5% of global healthcare costs and emit around 100 megatonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) per year.<sup>7</sup>

To address the environmental impact of essential medical research in resource-limited and hard-to-reach areas, MSF assessed the carbon footprint of two studies conducted by Epicentre<sup>1</sup> in Niger and Uganda. The clinical trial on dose-splitting of yellow fever vaccines (YEFE) in Uganda spanned 132 months, while the study in Niger was a cross-sectional survey of measles seroprevalence (SeroP) that took 68 months. Sample storage represented a large proportion of the duration of both studies.

In terms of CO<sub>2</sub> emissions, the total cost of the YEFE study was 513 tons of CO<sub>2</sub>e (tCO<sub>2</sub>e), and the SeroP study was 43 tCO<sub>2</sub>e. In the YEFE study, 32% of emissions were attributed to staff emissions, 15% to laboratory analyses, and 24% to staff and participant travel (national and international). Sample storage (freezers and air conditioners) amounted to 10% (52 tCO<sub>2</sub>e) of the total footprint. In comparison, as the SeroP study was a short and simple survey, 47% (20.6 tCO<sub>2</sub>e) of the carbon footprint was related to the long-term storage of biological samples at temperatures as low as -80°C.

The costs of the YEFE study highlight the importance of considering all phases of studies to quantify their carbon footprint. Overall, continuing to invest in local capacities and infrastructure rather than depending on international resources remains a priority, as well as identifying lower-emission transport options at national level. However, both studies highlighted that more work is needed to reduce the footprint related to sample storage management. Several avenues could be explored including improved building insulation and using solar energy.

<sup>1</sup>Epicentre is an MSF structure dedicated to medical research and epidemiology.

# Fit for the future: Climate-informed health care amidst compounded crises

The contexts in which health and humanitarian actors work have already changed profoundly in response to human-caused environmental changes. Given the current projection scenarios, it is unrealistic to maintain operational methodologies that were effective over the past 30 years, built for when crises predominantly occurred sequentially. The 2024 report of the *Lancet* Countdown showed that out of 15 indicators monitoring health hazards and impacts related to climate change, 10 had reached record-high numbers in the most recent years of data – from extreme weather events to food insecurity levels, and more.<sup>1</sup> Crisis events that used to occur one at a time are now occurring simultaneously, compounding risks and emergencies and threatening good health.

Established methods for humanitarian response from previous crises must evolve to remain fit for purpose. New strategies must recognise the impacts and influences of climate change on health as well as health-supporting systems. In addition to properly

assessing climate-health risks and vulnerabilities, strategies must build-in resilience to shocks. This resilience requires a focus on infrastructure which can weather the impacts of extreme events, as well as on operating models which maintain the flexibility and agility to change shape and location as needed while still protecting quality of care.

Environmental changes are altering the fabric of people’s lives and by extension health and humanitarian operations. When an **MSF team in South Sudan travelled to Labarab Payam** in 2024 to conduct a multi-antigen vaccination campaign, environmental changes had forced the population to switch their sedentary lifestyle for seasonal movement, resembling semi-nomadism. The vaccination team planned three rounds of inoculation but faced continued changes in location and timing of their target population, as population movements were influenced by unpredictable seasonal patterns and unfamiliar patterns of rain that affected the



The Health Promotion Manager and Field Coordinator Support assessment team conduct an interview with the Red Chief (Community Leader) and community representatives to better understand humanitarian needs in Labarab Payam, South Sudan. (Photo: Alix Meert, Project Coordinator).

availability of water and bush-meat. Demonstrating how implementing partners like MSF now require increased operational flexibility.

Even in emergencies, the provision of healthcare in climate-vulnerable settings requires foresight and planning in addition to population proximity. The use of scenario-based simulation exercises can help create a future-focused approach and strategic reflection, enabling better preparation for looming healthcare challenges. As Ministries of Health and their implementing partners move to enact the recommendations of the 77th World Health Assembly Climate and Health Resolution, particular focus should be given to scenario planning to guide preparedness efforts.

Climate change acts as a threat multiplier, exacerbating existing health issues and inequities.<sup>8</sup> Crises such as extreme weather events can overwhelm healthcare systems, often leading to temporary suspension of non-acute care services. These services are suspended to reinforce acute care for a surge of patients with severe short-term medical needs or due to population access constraints. Yet the fallout from climate shocks is often most keenly felt by patients that rely on long-term services for their survival. Attention is diverted to immediate visible causes of mortality, while the true burden of morbidity and mortality may be less obvious among already vulnerable populations, such as people with



MSF vehicle gets stuck while conducting the first round of a multi-antigen vaccination campaign in South Sudan during the rainy season. (Photo: Gloria Mwambazi).

underlying conditions whose illnesses were able to progress during interruptions of care.<sup>9</sup>

Greater healthcare resilience is needed to preserve quality and ensure continuity of care, avoiding the consequences of interruptions of non-acute services for those whose lives depend on them. For example, in flood-prone areas, risk mapping can help determine the placement of health facilities to ensure continuity of higher resolutions of care. Emergency response plans should be in place to decentralise certain non-acute care services and include creative referral systems. These plans should be enacted based on established local monitoring and pre-determined thresholds for action.



Southern Madagascar. At a crossroads on the national road, empty jerrycans await the arrival of a tanker truck to provide water for the families in the area. Three consecutive years of drought severely affected harvests and access to food. Violent sand winds also covered part of the arable land and food used during the lean season, such as cactus fruit. As a result, the chronic food and nutrition crisis, known on the island as *kéré*, is hitting the inhabitants even harder. (Photo: Ainga Razafy/MSF)

## Decentralising care for continuity: HIV services post-Cyclone Idai in Beira, Mozambique

In the immediate wake of cyclone Idai in Beira, Mozambique in 2019, MSF faced the challenge of supporting the Ministry of Health in continuing to provide HIV care amid widespread disruption. HIV care consultations in the Munhava Health Centre, which was then the only centre offering services for key populations (KP) - including sex workers, men who have sex with men, and transgender individuals - and outpatient advanced HIV disease care, were completely halted for weeks.

MSF was able to adapt service delivery by mapping additional health centres and employing microplanning strategies, including a method involving peer educators for community outreach. By shifting the focus from central facilities to community-based healthcare hubs, MSF brought services closer to the affected populations. This approach not only addressed the challenges posed by the closure of facilities but also provided a framework for continuous care in the face of future disruptions.



In an MSF community clinic in Beira, a local theatre group performs a short play about the risks of not seeking HIV treatment and the stigma associated with men seeking medical care. By shifting focus from central facilities to community-based healthcare hubs, MSF has brought services closer to affected populations, helping to prevent interruptions in essential care following climate-related events, such as Cyclone Idai (Photo: Mariana Abdalla)

Over time, training and mentorship played a crucial role in successfully implementing and sustaining decentralised services. Health workers were equipped with the skills needed to provide additional care previously contingent on referrals, and ongoing support aimed to ensure the quality and continuity of services. Additionally, decentralising supplies and establishing hyperlocal monitoring and evaluation systems were essential to maintaining service delivery.

In 2024, MSF in Beira has made strides in making healthcare service delivery more resilient to climate shocks by decentralising aspects of care. Currently, ten facilities offer KP-friendly services alongside outpatient advanced HIV care, covering approximately 80–85% of the city's population. Additionally, Mozambique's policies now include provisions for maintaining service delivery during emergencies, reflecting lessons learned from past climate-related events. This progress demonstrates the growing importance of building resilient healthcare systems that can better withstand the impacts of the climate crisis.

The experience gained from Cyclone Idai and the adaptations subsequently implemented highlights the value of flexible and adaptable service delivery in ensuring continuity of services during crises. By decentralising certain services, enhancing the capacity of local hubs and engaging communities, the negative impacts of such climate-related events can be mitigated. This approach requires adequate resources and commitment from both national governments and international donors. Policies must reflect the need for resilient health systems and support for adaptive community-based services to effectively manage the challenges posed by the climate crisis.

# Improving early warning systems 4 health

In the age of “Early Warnings 4 All”, the UN initiative to ensure every person on Earth is protected by early warning systems by 2027 (and a host of other initiatives and innovative financing solutions), there is significant global attention on enhancing early warning systems. Yet there is a lack of early warning knowledge products, especially those focused on health outcomes or adopting a “One Health” approach, for contexts where MSF operates.

Comprehensive and reliable climate information is vital for health and humanitarian sectors to make informed decisions. This information can help them prepare for, and respond to, changing patterns of climate-sensitive infectious diseases, increasingly

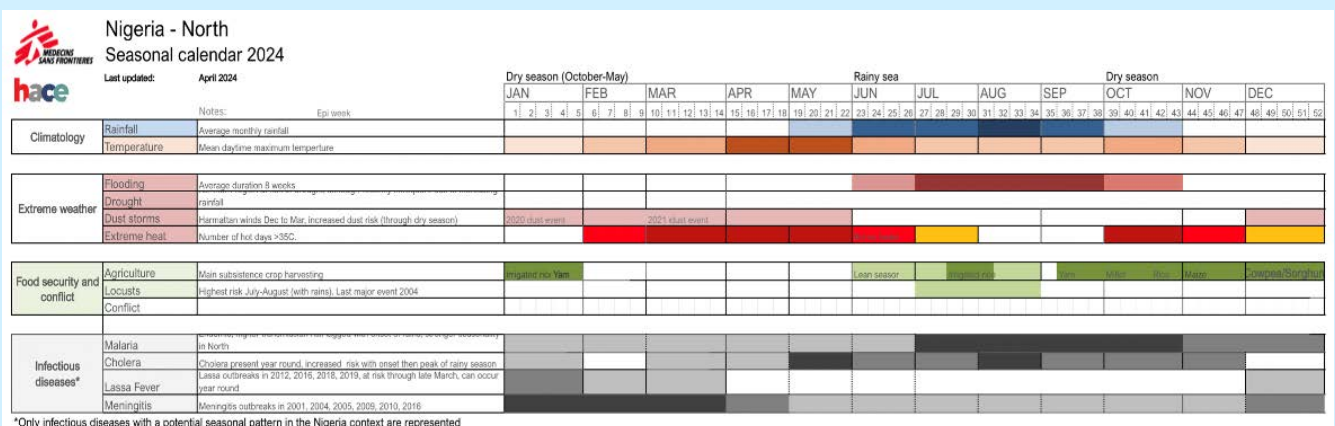
frequent and stronger extreme weather events, and the growing complexities of environmental hazards. It is urgent and essential to adapt with the help of tailored climate products and services.

MSF has an operational presence in many of the countries that are part of the UN “least developed countries” group (LDCs), fewer than half have fully developed multi-sectoral early warning systems.<sup>10</sup> The lack of such systems leaves the most vulnerable populations, including those in humanitarian settings, at increased risk of the impacts of climate shocks. Although climate information and services have increased worldwide, this information often remains siloed, is overly technical, biased towards

## Providing health insights to support seasonal planning

Seasonal Outlooks review forecasts for the upcoming season and inform on potential impacts to human health, the environment, nutrition, agriculture and pests, using a “One Health” approach. Rainfall, temperature, and extreme weather prediction models are analysed alongside peer-reviewed literature on disease seasonality patterns and epidemiological bulletins on recent disease outbreaks. This information is condensed into clear and usable products.

So far, Seasonal Outlooks have been launched for East Africa, West Africa and Central America, and the Caribbean, with potential to expand to other regions. Despite being in its development phases, we have already seen some success stories in East and **West Africa**. The **East Africa Seasonal Outlook** brought attention to unprecedentedly high water levels in Lake Victoria and the impending effect on floodplains in South Sudan. Following feedback, this was accompanied by a more technical report and ignited collaborative action on a flood forecasting tool to help anticipate and respond to flooding in Old Fangak and Leer. This included increased supplies to reinforce dykes for flood protection and discussions with local communities about evacuation plans.



An MSF seasonal calendar for Northern Nigeria outlines trends in climate, extreme weather, food security, and infectious diseases, emphasising months where crises may converge and humanitarian programmes need to anticipate and adapt.



English language speakers, and rarely includes health outcomes, making it disconnected from the operational needs of health implementing partners.

Adapted climate products and services can be a crucial part of the public health preparedness and response. However, an integrated analysis of multi-hazard data, particularly at subnational and more localised levels is essential for targeted health responses. The World Meteorological Organisation (WMO) has reported that most of its members actively provide data to create health-sector tailored products, but uptake is low.<sup>11</sup> This poses significant barriers to organisations involved in health and humanitarian emergency response, such as MSF. Therefore, in 2024, MSF began making Seasonal Outlooks- reports summarising recent climatic trends and impacts in MSF countries

of operation. These reports, such as those highlighted below, have proven transformative, yet complex to compile.

To safeguard vulnerable communities from climate hazards, and ensure the efficient allocation of attention and resources, global efforts should prioritise: 1) improving localised climate data collection and prediction accuracy; 2) creating multi-hazard early warning products that address the needs of vulnerable populations in humanitarian settings;<sup>ii</sup> 3) fostering collaboration among sectors and stakeholders to integrate diverse data and forecast products; 4) building community trust in forecasting by increasing accuracy; and 5) improving usability through community feedback and involvement in design.

## Layering climate, environment, and health risks: Recognising vulnerability and provoking action

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To understand climate adaptation in humanitarian settings and to set priorities, MSF reviewed guidelines from other organisations.<sup>12</sup> The review highlighted the need for climate vulnerability assessments. An additional analysis of health vulnerability and adaptation to climate change assessment tools revealed that 56% of these assessments were conducted in high-income countries demonstrating a shortage of examples from lower-resource settings.<sup>13</sup> While MSF has a long practice of assessing vulnerability, these assessments have historically not included climate or environmental hazards.

Often used as the basis for developing National Adaptation Plans (NAPs) including Health National Adaptation Plans (HNAPs), climate change risk assessments and vulnerability assessments represent an essential step in discerning which populations or systems are most susceptible to the adverse effects of climate change and in identifying the priorities for intervention. As vulnerability is a key part of risk, to effectively manage risk, it is essential to understand how vulnerability is generated, increases, and

builds up in a population to know who and where will be targeted.<sup>14</sup> Climate health and vulnerability assessments (CHVAs) concentrate on health impacts, highlighting health system preparedness, and population health vulnerabilities.

Only 61% of WHO member states that committed to building climate-resilient health systems reported having completed a vulnerability and adaptation assessment (indicator 2.1.1).<sup>1</sup> Yet CHVA research and guidelines exist, such as WHO's Climate Change and Health: Vulnerability and Adaptation Assessment and the Health Facility Level Climate Vulnerability and Capacity Assessment (VCA), which provide partners with essential direction on data collection, information sources, and interpreting climate-health links.<sup>15</sup> However, for population-level assessments, guidelines remain high-level and geared towards national or health systems level intervention.<sup>12</sup> Implementing partners must develop specific templates or methodologies to guide localised and multi-sectoral interventions.

<sup>ii</sup>The IASC Climate Crisis Roadmap recommends ensuring that emergency programming is informed by joint risk and climate analysis, with an emphasis on supporting Early Warning Systems at local level in fragile and conflict affected states.

Climate health risk and vulnerability assessments are crucial for identifying health impacts from climate change and those most vulnerable to them and determining intervention priorities. Yet more evidence is needed to guide uptake and implementation in low-resource and humanitarian

settings at population level, including approaches that layer risks to identify where health and humanitarian vulnerabilities converge either geographically or temporally, where responses or anticipatory action is most urgent.

### A tool to assess climate, environment, and health risks and vulnerabilities in humanitarian settings

Recognising the gap between high-level guidelines and the need for actionable, context-specific tools in low-resource settings, MSF and the Red Cross Red Crescent Climate Centre co-developed a user-friendly tool to assess subnational climate, environmental, and health risks in countries of operation. The assessment tool needed to be relatively easy to use in humanitarian contexts. Piloted in Nigeria, the tool's approach layered data on climate and environmental hazards, health issues relevant to MSF, exposure risks, and health and social vulnerability factors, to identify priority areas for action.

Results and recommendations were formulated at country and subnational level and included actions for periods where MSF teams would face a convergence of risks, requiring preventative action to safeguard health services. Examples of such actions included planning for flood-related risks from the anticipated 2025 La Niña conditions; the need for country- and site-specific heat action-plans; foresight to adapt to predicted water scarcity issues; preparedness for changing patterns of water- and vector-borne diseases; and a need to reinforce certain vaccination activities.

## Strengthening surveillance: Tracking climate and environmental trends to tackle health threats

Humanitarian contexts exacerbate vulnerabilities and risk factors for illness, increasing the threat of certain diseases, which should be closely followed through climate or environment-informed public health surveillance. However, effective monitoring is often complicated by many factors, including data availability, inconsistencies in data collection methods across health and environmental agencies, and challenges in integrating these data. Notably, only 23% of WMO member states reported having public health surveillance systems that integrate meteorological information (indicator 2.2.1).<sup>1</sup> Additional issues arise from the often-indirect nature of climate-health relationships, as well as the need for more advanced analytical tools – such as machine

learning and predictive modelling – to link climate and health data. As many health professionals may lack access to or expertise in these tools.

MSF public health surveillance activities range from event-based monitoring within health facilities to community-based surveillance. Marrying public health with climate and environmental surveillance data to determine triggers and trends, as well as using climate projections are essential to better forecast climate sensitive health issues. However, as with many health actors, MSF's epidemiological data are not systematically analysed alongside climatic variables.

One example of an initiative that uses environmental surveillance to forecast health issues is the Malaria Anticipation Project (MAP). This project leverages machine learning models to predict the timing and intensity of potential malaria peaks, which are heavily influenced by environmental factors.

Additionally, a pilot study is underway in Nigeria that reviews and analyses malaria surveillance data since 2016. The goal is primarily to enhance understanding of the relationship between climate and disease prevalence, simply by adapting the way routinely collected data is processed, and thereby improving the timing, selection, and scale of interventions. MSF teams will routinely incorporate time-series analyses into health data processing, which will enable better correlation of health outcomes with environmental factors such as rainfall, humidity, or temperature. Integrating health data with climatological data will enhance understanding of the impact of climate on health, but it is the quality and proximity of both climate and health data in humanitarian settings that

will ultimately determine effectiveness in improving decision-making at project level.

However, environment-informed public health surveillance extends beyond integrating climate data into infectious disease monitoring. Environmental contaminants significantly contribute to non-communicable diseases and can affect the transmission of infectious diseases.<sup>16</sup> Few studies investigate the combined role of environmental degradation and climate change on human health. Existing integrated systems primarily monitor air and water quality related to health outcomes, especially communicable diseases. While contaminants from industries like mining, oil extraction, agriculture, battery recycling and others often goes unmonitored. However, given the link between environmental pollution and climate change, adapting health surveillance systems to be not just climate-informed but also environmentally-informed requires the incorporation of contaminant monitoring.



Niger: climate change adds more hardship for the most vulnerable. Every year, when the rainy season and the lean season begin, malaria and malnutrition are on a steep rise, especially among children under five. MSF increases its volume of activities to respond to the growing needs in the paediatric unit at Magaria's hospital, where the organisation has been present since 2005. (Mario Fawaz/MSF)

## Identifying and supporting vulnerable communities in Karakalpakstan

For decades, the rivers flowing into the Aral Sea in Central Asia were diverted to irrigate cotton. Once the 4th largest inland body of water in the world, the Aral Sea is now 10% of its original size. The dramatic reduction in surface water and excessive use of agricultural chemicals resulted in severe environmental degradation and health impacts. The crisis is greatly exacerbated by climate change and widely recognised as one of the world's worst ecological disasters. Karakalpakstan, Uzbekistan, is one of the areas most impacted by the crisis.

In 2023, TerraGraphics International Foundation (TIFO), MSF, and the Ministry of Health of Karakalpakstan collected soil, water, and air samples at 80 locations and analysed them for pesticide residues, salinity, and heavy metals. The goal of the project is to identify the populations most at-risk of exposure to environmental and climate health risks in order to develop and implement interventions to improve health outcomes.

Pesticide residues, including the by-products of now-banned DDT and lindane, were identified in 100% of drinking water samples, and water salinity results were consistently elevated. Exposures via drinking water of greatest concern for rural communities relying on shallow wells draw from irrigation canals. Consumption of contaminated drinking water, along with inadequate nutrition and socio-economic factors, are likely contributing to elevated rates of disease reported by Karakalpak researchers and health workers.

This ongoing investigation provides the first set of comprehensive, publicly available data from the region in more than 20 years. Findings will inform an intervention that reduces health impacts by targeting exposure reduction in the most vulnerable and susceptible subpopulations.



Abandoned fishing ships at the former Aral Sea port of Moynaq, Karakalpakstan. The sea shore is now more than 100 km from this once bustling seaside town. (Photo: TIFO)

# Health priorities in humanitarian settings: A pressing gap for WHO and IPCC

Research on the health impacts of climate and environmental change, particularly in low-resource and humanitarian contexts, remains inadequate for effective adaptation efforts. This knowledge gap hampers efforts to adapt health and humanitarian services to the current and future impacts of climate change and environmental degradation, especially for the most vulnerable populations. It also limits the ability of policymakers to make informed and appropriate decisions in these contexts, potentially leading to increasing disparities.<sup>17</sup>

The 2024 report of the *Lancet* Countdown found that scientific literature on climate change and health has expanded in recent years due to an increase in funding. In 2023, for instance, there were 4,080 publications on health and climate change, which represents an increase of 7.4% from 2022 (indicator 5.3.1). However, most articles focused on countries with high or very high Human Development Index (HDI). Similarly, in 2021, a WHO review of existing literature on climate and health found that although research on the topic had surged, it remained uneven and incomplete. While health vulnerabilities to climate change received substantial attention, research on the effectiveness of adaptation measures remained limited.

The Intergovernmental Panel on Climate Change (IPCC) Assessment Reports are the gold standard for synthesised knowledge on the causes, potential impacts, and response options to climate change. Yet, an **MSF review of the latest IPCC assessment** report highlighted a lack of knowledge to address the climate change-related health needs of people affected by humanitarian emergencies.<sup>18</sup> Meningitis, snakebite, leishmaniasis, measles, Ebola, and human African trypanosomiasis, were flagged as climate-sensitive diseases and humanitarian health problems, which were underreported or absent in the latest IPCC report.<sup>18</sup>

Key initiatives in climate and health multilateral spaces will dictate which research questions are prioritised and what evidence is utilised. Many evidence gaps fall over humanitarian settings, therefore additional emphasis on these contexts is needed in the next year towards 1) the IPCC, which has begun its 7th assessment cycle, with Working Group and Synthesis Reports due in 2029; 2) research financing institutions, which at COP28 in 2023, established Guiding Principles for Financing Climate and Health Solutions, which included commitments to close evidence gaps through research and accelerate the deployment of effective, locally adapted practices; 3) WHO, which, following the Climate and Health Resolution adopted at the 77th World Health Assembly, are again seeking to develop a global agenda for research for Action on Climate Change and Health to facilitate actionable research, translate evidence into policy, boost funding, and promote inclusive research.<sup>19</sup> This is the moment for evidence gaps, such as those highlighted by MSF, to be placed front and centre as urgent research priorities that focus on achieving equitable outcomes.



Measles epidemic in Ingende, DR Congo. During MSF's emergency response to measles in Ingende, Equateur province, MSF also rehabilitated the borehole at Ingende's General Reference Hospital (HGR), which had not been operational for more than 6 months. (Photo: MSF)

# Conclusions

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While this brief can highlight need and offer recommendations, many of the answers rely on political action from global decision-makers for advancement. Context-specific research is needed to inform mitigation and adaptation practices. Regulation and incentives for medical product manufacturers are needed to refocus resources on sustainable alternatives. Adequate, predictable, and unified climate finance is needed to implement adaptation and avoid further losses and damages. Foresight planning, early warning

systems, and proper assessment of climate and health vulnerabilities are needed to guide targeted adaptation. Environmentally-informed public health surveillance systems and the availability of localised climate data are needed to better understand climate-health relationships and protect the health of populations. Community trust and engagement is needed for successful uptake of adaptation solutions. And crucially, ambitious emissions reductions are needed to ensure adaptation strategies remain effective.



Climate change worsens health problems in Madagascar. An MSF team places in a boat some supplies that have to be transferred to a remote health center in Nosy Varika. Poor infrastructure and heavy rains worsen access to health care for the people in remote communities in Madagascar. MSF teams travel by boat, plane, motorbike or by foot to reach the health centres in remote areas. (Photo: Mitsi Persani/MSF)

# Recommendations

The brief offers recommendations, however meaningful progress requires action from global political decision-makers. MSF emphasises the interconnectedness of the different issues raised at the intersect of health, humanitarian, and climate action, urging readers to consider these in a continuum and recognise that inaction on one front prevents progress overall.

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**Issue:** The health-care sector generates about 4.6% of global greenhouse gas emissions, primarily from the supply chain (Scope 3), which includes the production, transport, storage, and disposal, of pharmaceuticals, medical devices, and therapeutic nutrition items. Like others in the health sector, nearly half of MSF's carbon footprint comes from procuring goods and services, with 25% from purchased goods, of which 20% are single-use medical items. Health implementing partners are urged to evaluate and incorporate sustainability criteria into procurement but are typically left to undertake this task autonomously due to the absence of regulation. While entities like Health Care Without Harm (HCWH) promote sustainability in medical product prequalification, it remains non-mandatory in global regulatory frameworks.

1

**Recommendation: To facilitate decarbonisation without compromising quality of patient care, sustainability metrics must be integrated in WHO prequalification processes. Global, regional, and national regulatory agencies must set standards and intensify pressure and incentives to shift medical product industry resources toward sustainable alternatives, including for plastics, especially for low-resource and humanitarian settings.** Sustainability in medical products is not a simple swap—it's a systemic overhaul, which will require investment in infrastructures, effective implementation of sustainable medical practices, accompanied by strong advocacy towards a regulatory shift in the medical products market.

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**Issue:** Crisis events are now occurring simultaneously, compounding risks and emergencies. Current responses to climate change impacts in health and humanitarian programmes remain largely reactive,<sup>2</sup> undermining the quality and continuity of care during overlapping crises. Few health authorities or governments in MSF's operational areas have developed and implemented action plans for continuous care amid climate disruptions, likely linked to a significant annual adaptation finance gap of \$194-366 billion.<sup>20</sup> Progress hinges on countries meeting commitments and a new ambitious adaptation package to be established at COP29 under the new collective quantified goal on climate finance (NCQG) the global target established for a minimum of USD 100 billion per year by 2025.<sup>21</sup>

2

**Recommendation: New strategies and finance for implementation are needed for health and humanitarian action to remain fit for purpose in current and future realities. These must acknowledge climate change's effects on health and related systems, assess risks and vulnerabilities, and incorporate resilience to shocks.** Adequate, predictable, and unified climate finance for adaptation and technical support is urgently needed to enable Ministries of Health and their implementing partners to adopt forward-thinking strategies, integrate anticipatory actions, and enhance flexibility and agility in their operating models. Including greater healthcare resilience to preserve quality and ensure continuity of care, avoiding the consequences of interruptions to non-acute services.

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**Issue:** Tailored climate products are crucial for adapting health and humanitarian programmes to protect communities from climate hazards. Less than half of UN least developed countries (LDCs) group have comprehensive multi-sectoral early warning systems.<sup>22</sup> This shortfall exposes vulnerable populations to greater climate shock risks. While climate information has increased globally, it often remains siloed, overly technical, and neglects health outcomes, and biased towards English speakers, thereby failing to address the operational needs of health implementing partners.

3

**Recommendation: Global attention to EWS has increased but must ensure it makes significant progress toward implementation where most needed including for vulnerable populations in humanitarian settings and health implementing partners.** Significant effort is required to further localise climate data collection, improve accuracy of predictions, overcome forecast product silos, and build trust, including through involvement of affected communities as users.

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**Issue:** Climate change risk and vulnerability assessments are essential for identifying populations and systems most at risk from climate change effects and prioritising interventions. They inform the development of National Adaptation Plans (NAPs) and Health National Adaptation Plans (HNAPs), which are vital for countries aiming to meet the 1.5°C Paris Agreement target. However, only 61% of WHO member states have completed a vulnerability and adaptation assessment, and existing guidelines tend to be “high-level”, targeted towards national or health system interventions

4

**Recommendation: More evidence is needed to guide uptake and implementation of population climate-health risk and vulnerability assessments in low-resource and humanitarian settings.** Including more user-friendly approaches for sub-national and local levels, as well as those which layer risks to identify where health and humanitarian vulnerabilities converge geographically and temporally, and where responses or anticipatory action is most urgent.

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**Issue:** Only 23% of WMO member states have integrated public health surveillance with meteorological data.<sup>23</sup> Issues of data availability, inconsistencies in data collection methods across health and environmental agencies, and challenges in integrating these data are complicating factors. Yet, effective monitoring systems are essential for understanding the complex interactions between environment, climate, and public health, for identifying susceptible and vulnerable populations, and for mitigating risks posed by environmental degradation and change. Despite the role of environmental contaminants in non-communicable diseases and infectious disease transmission, studies of the combined effects are scarce. Existing integrated systems primarily monitor air and water quality related to health outcomes, especially communicable diseases. Contaminants from industries like mining, oil extraction, agriculture, battery recycling and others often go unmonitored.

5

**Recommendation: Substantial efforts are needed to support health and environmental agencies to systematically monitor and then integrate public health surveillance and meteorological and environmental data to identify actionable triggers and trends—particularly in humanitarian contexts with increased disease risks.** Solutions should place equal emphasis on enhancing routine health data analysis to better correlate outcomes with external environmental factors, as on developing advanced predictive tools to connect climate and health data.



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**Issue:** Research on the health impacts of climate and environmental change, particularly in low-resource and humanitarian contexts, remains inadequate for effective adaptation efforts. This knowledge gap hampers efforts to adapt health and humanitarian services to the current and future impacts of climate change and environmental degradation, especially for the most vulnerable populations. It also limits the ability of policymakers to make informed and appropriate decisions in these contexts, potentially leading to increasing disparities.

6

**Recommendation: IPCC AR7 and WHO via REACH 2035, and research financing partners urgently need to close critical knowledge gaps by prioritising research on the health impacts of climate and environmental change in low-resource and humanitarian settings.** This is essential for developing effective adaptation measures and informing policy decisions that address the needs of vulnerable populations. Examples of climate-sensitive health issues relevant to such populations, but under-reported or absent from the latest IPCC report, include meningitis, leishmaniasis, measles, Ebola and snakebite.

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## Organisations and acknowledgements

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### THE LANCET COUNTDOWN

The *Lancet* Countdown: Tracking Progress on Health and Climate Change is a multi-disciplinary collaboration monitoring the links between health and climate change. In 2024, we published the 8th *Lancet* Countdown annual indicator report, funded by Wellcome and developed in close collaboration with the World Health Organization. The report represents the work of 122 leading experts from 57 academic institutions and UN agencies globally. Published ahead of the 29th UN Conference of the Parties (COP), the report provides the most up-to-date assessment of the links between health and climate change. For its 2024 assessment, visit <https://www.lancetcountdown.org/>.

### MÉDECINS SANS FRONTIÈRES/DOCTORS WITHOUT BORDERS (MSF)

MSF is an international, independent, medical humanitarian organisation working to alleviate suffering and to provide medical assistance to people affected by conflict, epidemics, disasters, or exclusion from healthcare in over 70 countries today. Climate change, a human-induced reality, is also of great concern to MSF, as it may well alter the dynamics of conflict and the incidence of disease, impacting communities already at risk. On the basis of scientific reports outlining what can be expected in the future, the organisation recognizes how vital it is to prepare to assist the people most affected. At the same time, MSF is assessing its own carbon footprint and taking steps to incorporate environmentally responsible working methods, products and equipment into its projects.