

Public Health Institutes of the World



CLIMATE CHANGE AND PUBLIC HEALTH: THE  
ROLE OF NATIONAL PUBLIC HEALTH INSTITUTES  
IN TRANSFORMATIVE ADAPTATION TO  
EXTREME WEATHER EVENTS

REPORT BRIEF

## INTRODUCTION

Climate change significantly impacts human health, and adapting to and mitigating its effects is a recognized public health issue [1, 2]. The COP28 climate and health declaration calls for strengthening health systems' capacity to address climate-sensitive health risks. It emphasizes the need for surveillance, early warning systems, response systems, intersectoral collaboration, and worldwide knowledge sharing [2]. The International Association of National Public Health Institutes (IANPHI) contributes to this adaptation through its thematic committee on climate change and public health. This committee advocates for prioritizing health and well-being in climate mitigation and adaptation strategies and for strengthening the role of National Public Health Institutes (NPHIs) as providers of science-based evidence for climate policy development [1].

## EXTREME WEATHER EVENTS (EWEs) AND THEIR HEALTH IMPACTS

EWEs are among the most concerning climate-related risks. In its sixth assessment report, the Intergovernmental Panel on Climate Change (IPCC) underlined that health impacts due to EWEs were already observed worldwide and were expected to increase. The IPCC concluded that there is a significant adaptation gap in responding to EWEs [3].

NPHIs have a vital role to play in responding to the human health impacts of EWEs through their work in monitoring, alerting, and supporting crisis preparedness and response [4].

Emergency management during EWEs is an essential public health function. However, other professionals involved in EWEs responses, from decision-makers to researchers, often overlook the critical role of NPHIs. Additionally, the focus of NPHI involvement is often limited to protection of the population, immediate surveillance, and early warning actions.

Consequently, many essential public health functions, such as health promotion or advocacy to consider health in sectoral policies remain untapped as levers for developing genuine adaptation strategies for EWEs.

# THE NEED FOR TRANSFORMATIVE CHANGE TO PROTECT PUBLIC HEALTH IN THE FACE OF EWEs

While EWEs are becoming “the new norm” [5], societies remain largely unprepared to adequately address them. The years 2015-2023 were the nine warmest years on record for global temperature, marked by an increase in severe EWEs with serious consequences for human societies and natural ecosystems. Unprecedented land and ocean warming, record-breaking storms, rains, floods, droughts, heatwaves, marine heatwaves, and wildfires have been observed worldwide [6-8]. The 2023 Lancet Countdown documented a sharp rise in the number of people exposed to extreme heat, drought, or fire danger. For instance, heat-related deaths of people older than 65 years have increased by 85% compared to 1990-2000, with climate change being the primary driver [9].

EWEs have both immediate and long-lasting severe impacts that require rapid adaptation solutions. While climate change affects the entire planet, the impacts of EWEs are unevenly distributed across regions and populations. Some areas are simultaneously facing other crises, such as socio-economic crises, geopolitical conflicts, or population displacement. Urgent action is needed to address these interrelated and complex crises and to move towards societies where “all members of current and future generations can thrive on a healthy planet” [10].

Extreme Weather Events (EWEs) demand a highly proactive approach in terms of anticipation, warning, and response. The immediate devastation and suffering they cause understandably elevates the importance of short-term solutions. However, the desire for rapid rebuilding can risk consideration of long-term health effects, overlooking psychosocial trauma, and failing to prioritize equitable and sustainable reconstruction. In the worst-case scenario, maladaptive solutions might be chosen that exacerbate future vulnerabilities or increase greenhouse gas emissions further.

Strengthening disaster preparedness, emergency response, and early warning systems are crucial examples of how NPHIs can help society adapt to EWEs. These actions should be integrated into a more comprehensive strategy known as transformative change. This approach goes beyond simply adjusting existing practices and aims for “significant changes in structure or function” [22].

# ESSENTIAL PUBLIC HEALTH FUNCTIONS AS TOOLS TO SUPPORT TRANSFORMATIONAL ADAPTATION TO EWEs

Table 1 highlights the various actions NPHIs can take before, during and after EWEs as well as their connection to the essential public health functions (EPHFs). EPHFs encompass a broad view of health, spanning emergency response to social mobilization efforts such as health promotion, community engagement, and knowledge sharing [12].

**Table 1 – Key actions taken by NPHIs in response to EWE**

		Continuous process, before and after EWEs	Response during EWEs
Monitor and evaluate	Key needs	Assess the potential risk and impacts Understand the determinants of risks Anticipate emerging risks Evaluate adaptive interventions Avoid maladaptation	Assess health risks Monitor health impacts -
	Related EPHFs	<i>Public health surveillance and monitoring: monitoring and surveillance of population health status, risk, protective and promotive factors, threats to health, and health system performance and service use.</i>  <i>Public health research and knowledge: advancing public health research and knowledge development.</i>	
Protect, Promote and educate	Key needs	Assess health care and adaptation capacities Reduce the structural determinants of vulnerability Build knowledge on relevant interventions, and disseminate actionable knowledge and guidelines through building a climate-smart health workforce Raise public awareness	Provide advice to the general population and to (health) professionals Organize emergency response and access to key resources
	Related EPHFs	<i>Disease prevention: prevention and early detection of communicable and non-communicable diseases including mental health conditions, and injuries.</i>  <i>Health promotion: promoting health and wellbeing as well as actions to address the wider determinants of health and inequity.</i>  <i>Community engagement and social participation: strengthening community engagement, participation and social mobilization for health and wellbeing.</i>  <i>Public health workforce development: developing and maintaining an adequate and competent public health workforce.</i>	

		<p><i>Health service quality and equity: improving the appropriateness, quality, equity in provision and access of health services.</i></p> <p><i>Access to and use of health products, supplies, equipment and technologies: promoting the equitable access to and rational use of safe, effective and quality assured health products, supplies, equipment and technology</i></p>	
Respond and facilitate action	<b>Key needs</b>	<p>Develop relevant early warning systems</p> <p>Train public health workforce and relevant stakeholders</p> <p>Develop tools to strengthen population resilience against EWEs at regional and local level (capacity building)</p>	<p>Communicate timely information</p> <p>Collaborate/Contribute to early warning systems</p>
	<b>Related EPHFs</b>	<p><i>Public health emergency management: managing public health emergencies.</i></p> <p><i>Public health stewardship: establishing effective public health institutional structures, leadership, coordination, accountability, and regulations and legislations.</i></p> <p><i>Multisectoral planning and financing for public health: supporting effective and efficient health systems and multisectoral planning, financing and management for public health.</i></p> <p><i>Health protection: protecting populations against health threats, including environment and occupational hazards, communicable and non-communicable diseases including mental health conditions, food insecurity, chemical and radiation hazards.</i></p>	

## STRENGTHENING NPHIs FOR CLIMATE ADAPTATION: A CALL TO ACTION

NPHIs play a vital role in anticipating, assessing, and preventing the health impacts of EWEs, positioning them as key players in climate adaptation. To further empower NPHIs in this crucial task, the IANPHI thematic committee on climate change and public health urges action on several strategic points:

### SECURING RESOURCES FOR NPHIs

Organizing, advocating for and securing sufficient and permanent human resources and funding to enable NPHIs to address EWEs effectively. These resources are essential for developing long-term strategies, fostering intersectoral partnerships, and transitioning from reactive to transformative change.

## BRIDGING KNOWLEDGE GAPS THROUGH INTERDISCIPLINARY RESEARCH

- Developing evidence-based change strategies, several critical knowledge gaps require attention:
- Monitoring and investigating the impacts of extreme heat, particularly in the Southern Hemisphere and low-income countries.
- Understanding the health effects of EWEs on specific populations (such as pregnant women, workers) and implementing effective strategies to mitigate these impacts.
- Harmonizing labeling criteria, monitoring, and reporting of EWE's mortality impacts worldwide.
- Building a better understanding of the medium- and long-term health effects of EWEs, including indirect and systemic impacts on food systems and ecosystems. This research should encompass high, middle and low-income countries.
- Conducting economic evaluations of systemic health impacts to bolster investments in change and mitigation strategies.
- Shifting research towards action-oriented solutions, focusing on operational issues, facilitating experience feedback, and promoting good practice sharing. This includes research on preparing for cascading crises, maintaining health surveillance during infrastructure damage, and limiting public warning fatigue.
- Increasing skills of public health professionals on climate adaptation.
- Engage professionals in NPHIs to prioritize transformative change to respond to climate adaptation.
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### Fostering collaboration and knowledge exchange

With adequate resourcing, NPHIs and IANPHI, aligning with the IANPHI climate change and health roadmap, can continue to play a crucial role in facilitating knowledge exchange and capacity building through meetings, webinars, and working groups.

Developing strategic partnerships with institutions relevant to transformative change and climate adaptation should continue to be fostered.

### Building strategic partnerships

With adequate resourcing, NPHIs and IANPHI can continue to actively initiate discussions, including through its thematic committees, with key organizations like the European

Environment Agency, World Health Organization, World Meteorological Organization, and the Global Heat Health Information Network. These partnerships aim to build alliances, develop joint projects, and streamline information sharing.

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IANPHI wishes to address a special thanks to the members of the resource drafting team: Mathilde Pascal, Sébastien Denys, (Santé publique France), Jaana I. Halonen and Päivi Meriläinen (Finnish Institute for Health and Welfare), Stefania Marcheggiani (Istituto Superiore di Sanità), Aakash Shrivastava and Purvi Patel (India National Centre for Disease Control), Chinwe Lucia Ochu (Nigeria Centre for Disease Control and Prevention), Marie-Jo Ouimet (Institut national de santé publique du Québec), Ilonka Horváth, Katharina Brugger and Andrea E. Schmidt (Austrian National Public Health Institute) Lisbeth Hall (National Institute for Public Health and the Environment (RIVM)), Gordana Ristovska and Mihail Kochubovski (Institute of Public Health of the Republic of North Macedonia), Angelina Taylor (Robert Koch Institute), Eduardo Samo Gudo and Tatiana Marrufo (Mozambique's NPHI – INS), Katya Brooks and Ross Thompson (United Kingdom Health Security Agency), Roma Chilengi and Raymond Hamoonga (Zambia National Public Health Institute), Paul Colletaz (Ianphi).

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