



Empowering the health
care workforce for a
climate-resilient future

Contents

Introduction	04
Impacts of climate change on global health ...	05
Increasing the focus on health care workforce resilience	06
Strategies for helping to build a climate-resilient health care workforce	07
Call to action.....	10
Acknowledgements	11
Contacts	11
Endnotes	12



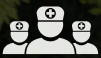
Introduction

During the peak of Cyclone Midhili, a pregnant mother with a history of hypertension found herself in labor. The storm was raging at 75km/h (45mph), with relentless rain pelting Bhasan Char, a remote island 50km (31 miles) off Bangladesh's southwestern coast. By early morning, Bhasan Char had been plunged into darkness for hours. Not even the hospital had power. Despite the severe weather and electricity challenges, a team of midwives was ready to provide critical care. With the help of well-stocked emergency kits, defined emergency protocols, and the expertise of a resilient midwife team, the mother delivered a healthy baby boy.¹

Such challenging situations emphasize the need to adapt our collective health care systems to the impending and increasing threats posed by climate change. Strengthening the resilience of health care systems—supply chains, service delivery, governance, financing, and the workforce—in the face of climate change is critical. This past year marked a significant step with the designation of a Health Day during the United Nations Climate Change Conference (COP28). Emphasizing the importance of addressing some of the challenges, barriers, and effective strategies for enhancing the climate resilience of health systems,² the designation highlights the increasing awareness of climate change and its impact on health. The health workforce, as integral components of health systems, should be a central focus towards resilience building.

Health care workers contribute to the success of resilience and continuity efforts within the health care system. Alongside leadership and governance, financing, service delivery, essential medical products and technologies, and health information systems, the workforce stands out as a critical pillar for health system resilience.³ Frontline health care workers not only provide essential patient care but also help facilitate the smooth functioning of other system components. When empowered with adequate resources and training, they can adapt and respond to emerging health threats, innovatively solve problems, and ensure the delivery of quality care, even in the face of climate-induced disruptions.

Project HOPE and Deloitte US have brought together frontline health care workers, program leaders, health system advisors, policy and advocacy professionals, community leaders, and strategic relationships to collaborate on potential solutions for enhancing climate resilience. By delving into some of the diverse effects of climate change on global health, with a specific focus on health care workers, through interviews with climate and health stakeholders and a review of key literature, the aim is to outline some promising practices and considerations for helping to build a climate-resilient health care workforce.



Impacts of climate change on global health

Climate change can exacerbate negative health impacts and inequities, threatening individual health, community safety, and the effectiveness of the health system by disrupting service delivery, lengthening or complicating supply chains, and hindering the ability of health care professionals to provide optimal care when and where needed.

Disruptions in health care delivery resulting from hurricanes, flooding, extreme heat, and wildfires have affected populations globally, from the Horn of Africa to Bangladesh to the west coast of the United States. Rising sea levels endanger health infrastructure in major coastal cities such as Jakarta and New Orleans, prompting plans to relocate or redesign critical facilities.^{4,5}

The health consequences of climate risks on individuals—both patients and health care workers are increasingly apparent through shifts in disease patterns and symptoms. Researchers have documented increases in respiratory ailments,⁶ infectious diseases,⁷ neurologic⁸ and gastrointestinal conditions,⁹ high-risk pregnancies,¹⁰ and an impact on mental health.¹¹

Consider the health impact of higher temperatures. The average person now experiences 86 days of health-threatening high temperatures, 60% of which are attributable to human-induced climate change.¹² Several alarming impacts of hotter temperatures include: i) an 85% increase in heat related deaths among individuals over 65 since 1990,¹³ ii) heatwaves and droughts in 2021 contributed to 127 million more people experiencing moderate or severe food insecurity compared to 1981-2010,¹⁴ iii) drought and heat can escalate malnutrition rates, heightening susceptibility to infectious diseases and impairing physical growth, fertility, and overall life expectancy. This in turn could lead to an uptick in depression and anxiety disorders.¹⁵



Bangladeshis battle climate-related diseases

Some of the impacts of climate change are seen in communities across Bangladesh, where major climate-driven disruptions are increasing. Even with increased forecasting and community readiness, extreme weather events such as typhoons and flooding still cause a range of health challenges. These include the spread of waterborne and vector-borne diseases such as cholera and malaria. Other complications include hypertension, stroke, and kidney and pregnancy complications. Slow-onset events like riverbank erosion and ground water salinization can also impact individual health and disrupt already marginalized communities.

"Increasing salinity [in the ground water] is leading to people being displaced from their homes. They have to move. There's migration both to urban slums and informal settlements." – Bangladesh Public Health Worker.¹⁶

Rising temperatures are just one climate factor. Climate change has worsened extreme weather events around the world. A survey of consumers across 23 countries found that 50% had directly experienced at least one major climate event in the past six months.¹⁷ In the US, the increasing ferocity of storms like hurricanes, nor'easters, bomb cyclones, and polar vortices have resulted in a substantial increase in the prevalence of extreme single-day precipitation events since 1980.¹⁸ Yet not each person experiences climate risks the same way—climate change disproportionately affects marginalized communities, which often have fewer resources to cope with the effects, amplifying existing health disparities.¹⁹

The human and economic costs of climate change and inaction are staggering. A recent report projected that by 2050, climate change could lead to an additional 14.5 million deaths and US\$12.5 trillion in economic losses worldwide.²⁰ If left unaddressed, these losses may exceed US\$175 trillion by 2070.²¹ Geographical and environmental factors can influence health outcomes, while climate risks act as force multipliers of negative health effects for communities and individuals.

These impacts can present significant challenges for health systems and health care workers. Investments to help strengthen the resilience of the health care workforce can result in substantial benefits for a population that faces and will likely continue to face climate-related health risks.

Increasing the focus on health care workforce resilience

Health care workers play dual roles; they are members of communities affected by climate change while also providing care for patients affected by conditions resulting from or exacerbated by climate events. Climate events can disrupt transportation, supply chains, and even the functionality of health care facilities that might be repurposed as shelters during crises. As a result, health workers can face significant challenges such as impact on mental health, burn out, and an overall impact on their ability to deliver quality health care services.

A recent study conducted by Project HOPE found a 25% rise in anxiety and depression globally triggered by the COVID-19 pandemic and other stressors.²² Consequently, it is estimated that more than 25% of health care professionals have “low resilience”²³ contributing to a projected deficit of 10 million health care workers globally by 2030.²⁴ In the US, physician burnout reached an all-time high of 63% during the pandemic,²⁵ with 6 in 10 health care workers saying pandemic-related stress had harmed their mental health and 3 in 10 considering leaving the profession.²⁶

To help address some of these challenges, system and organization leaders should provide health care staff and management with tools, support, and structures to manage some of these challenges effectively. Resilience involves the ability to adapt to challenging experiences and find the needed support, as well as mental, emotional, and behavioral flexibility to adjust to external and internal demands.²⁷ Leaders at the local, district and regional levels are positioned to lead resilience-building initiatives. One recent report noted that approximately four in five US-based clinicians surveyed believe that it’s important for their hospital to address climate change and that doing so is aligned with their organization’s mission.²⁸

Notably, research indicates that resilience can be developed through specific resources and practices,²⁹ but this necessitates organizational as well as individual-level changes in recruitment, training, and retention strategies. It may also require new approaches to public health education. By addressing challenges like health worker burnout, anxiety, and depression, organizations can improve worker resiliency, satisfaction, and engagement, ultimately leading to improved patient outcomes and quality of care.³⁰



Strategies for helping to build a climate-resilient health care workforce

Building workforce resilience necessitates a comprehensive and integrated approach at both organizational and individual levels. Leaders should innovate and test new workforce management strategies tailored to help combat some of the unique challenges posed by climate change. Despite the complexity involved, initiatives aimed at establishing a climate-resilient health care workforce are gradually gaining traction. It is imperative that effective strategies be propagated across geographies and integrated into the operating models of organizations to help ensure sustainable and long-term impacts.

An illustration of these efforts can be seen in Ghana, where the Christian Health Association of Ghana (CHAG) has spearheaded a multipronged approach to help support the workforce, some of which contended with floods that prevented access to facilities or use of health services. Among other changes, CHAG has explored:

- Launching staff training initiatives in collaboration with Project HOPE to help support health workers' mental health and implementing quality improvement programs to increase predictability and efficiency.
- Increasing use of solar power to help ensure a more reliable electricity supply, critical for maintaining facilities and providing air conditioning to employees during the hottest months.
- Installing fire extinguishers in all (350+) facilities to help mitigate some of the potential effects of wildfires caused by drought and increasing temperatures.

Key elements of resilience building strategies, as outlined below, underscore the need for organizational leaders and managers to evolve their approaches to help empower and develop their workforce to respond effectively to some of the effects of climate change.

Educate and equip workers to help navigate climate-related challenges

In addition to ensuring enabling environments are equipped with adequate resources and functioning infrastructure, organizational leaders should expand their workforce training programs. Many health care workers tend to lack experience in dealing with climate-related and mental health challenges that arise alongside them. As valuable and extensive as their medical training may be, it is usually highly specialized and may need to be augmented due to changing disease patterns resulting from current climate realities. Providing health care workforce with ongoing capacity strengthening should reflect the new demands. This could include:

- Building worker capabilities to help address emerging health factors and conditions driven by climate crises. While employee reskilling is frequently offered to reflect advances in technology, the same training approach is needed for employees and managers contending with climate-related stressors.³¹ In Ethiopia, for example, field health project leaders advocated for curricula upgrades to educate students and health workers on the intersection of climate change (particularly increases in flooding events) and the prevalence of waterborne diseases such as malaria and cholera. Providing pre-graduation or pre-service education could better prepare prospective health care workers for field positions.³²
- Providing training to help health care workers cope with moral distress related to making difficult decisions in challenging, climate-induced contexts, such as growing cases of malaria in unexpected areas.³³ Clinicians are understandably troubled if they're unable to provide the care they think is best based upon their professional standards of practice and their values, and so may need new guidance on how to address these type of incidents and the associated emotions.
- Training workers on mental health and well-being strategies. This could include stress management, mindfulness and relaxation practices, and self-care prioritization.³⁴ To help maximize the impact of an investment in training, early beneficiaries of this training should be tasked with carrying these insights forward to other colleagues to reach as many people as possible.³⁵ For example, Project HOPE trains midwives in Indonesia on mental health care for themselves and their beneficiaries, while teams in Latin America have extended training on climate challenges to the vulnerable communities they serve. Ultimately, this approach has allowed Project HOPE to train over 100,000 health care workers in 43 countries, helping to foster both inclusivity and shared responsibility in responding to climate events.
- Developing and fostering local social support networks. Recent studies on human capital trends emphasize the importance of organizations creating value for employees with initiatives that can contribute to their overall well-being, not just their career advancement. The study found that only 43% of workers say their organizations have left them better off than when they started, indicating substantial room for improvement.³⁶ Building social support networks can contribute significantly to employee resilience and overall satisfaction.

Ensure adequate resources and processes are in place to help enable quality care and promote worker safety, autonomy, and continuity

Worker satisfaction and resiliency go hand in hand. While organization leaders may have the intentions to develop practices that support employees, they tend to fall short in execution, even in areas where the correlation among worker satisfaction, resiliency, and attrition is well known. In health care, a variety of processes can have an outsized impact on retention. Leaders can focus on:

- Developing proactive monitoring and scheduling systems to help ensure adequate staffing levels, while allowing for necessary recuperation periods. Leaders can develop well-documented disaster policies to guide staffing and care delivery during and following extreme events such as deadly hurricanes, droughts, or heat waves.³⁷ These types of disasters heavily tax health systems and workers, often increasing caseloads and leading nurses and other health care workers to work back-to-back shifts exacerbated by inadequate nutrition and sleep—factors that should be addressed in such policies.
- Establishing comprehensive contingency plans and emergency protocols to specifically address potential climate-related crises and ensure continuity of operations. In Latin America, Project HOPE program managers have empaneled emergency preparedness teams that monitor climate-related news and activate phone trees to direct activities in communities threatened by climate events.³⁸ A Canadian study found that health care facilities that developed and socialized toolkits for emergency management of environmental events increased their resilience to climate crises. The toolkits included checklists for administrators, resource guidebooks, and facilitators' guides.³⁹
- Implementing protocols and ensuring supplies of personal protective equipment (PPE) and related resources to help safeguard worker safety in the face of infectious disease and environmental health risks. Among some of the most distressing visuals from the early days of the COVID-19 pandemic were images of health care workers improvising PPE due to inadequate supplies.
- Ensuring supply chain prepositioning. The shortages of ventilators and other supplies during COVID-19 compromised safety at many facilities, for both workers and patients.⁴⁰ Shortfalls like these require health care leaders to strengthen their supply chains and contingency planning to better ensure uninterrupted access to pharmaceuticals, medical supplies, and PPE.
- Developing tailored strategies that reflect the unique differences in impacts as related to conditions/disease prevalence, location, and gender. In regions like Bangladesh, the climate-related challenges of coastal residents where tidal surges and cyclones deliver vast waves of salt water significantly differ from conditions faced by inland dwellers. Displaced inhabitants of fishing villages lose both a source of income and of nutrition by moving inland. The gender dimensions of climate change and the resulting inequalities should also be considered.⁴¹ From a physiological standpoint, women and girls experience higher rates of conditions such as hypertension and urinary tract infections from drinking or bathing in salt-contaminated water, which can also lead to preeclampsia and kidney damage during pregnancy.⁴²



Foster a culture of contribution that encourages curiosity, creativity, and innovation to help workers adapt to some of the challenges

Work can be fulfilling and enlightening. Managers can build organizational cultures that promote exploration by, among other things, prioritizing mental health and personal growth. An affirming culture can also give workers the latitude to engage in self-care, continual education, and the option to maintain non-traditional schedules if desired. Specific actions could include:

- Encouraging innovation in patient care and processes, involving frontline workers in contributing their insights and experiences to help improve care delivery. New technologies using artificial intelligence and a combination of climate history, disease prevalence, social determinants of health, and weather forecasting metrics can be leveraged to help smooth supply chain and operations in the face of changing conditions. In Ethiopia, field health teams collaborated with university data scientists, meteorologists, and infrastructure specialists to generate climate-sensitive data to develop an early warning system that identified areas of potential and nascent disease outbreaks.⁴³ Better data and informational briefings allowed government officials and health care organizations more lead time to allocate resources appropriately and prepare for anticipated outbreaks of malaria, cholera, meningitis, and dengue fever following storms and flooding.
- Identifying and incorporating leading practices in innovation from other sectors. This could involve leveraging systems thinking to help build resilience and achieve impactful sustainability measures across complex health systems. Redesigning core processes, from managing medical waste to equipping workers with more-advanced tools to do their work, can significantly strengthen sustainability efforts.
- Participating in coalitions that help address climate-related health topics to achieve challenging goals beyond the capacity of a single contributor. By forming community-based ecosystems, rather than standalone systems, a more significant impact can be achieved on the drivers of health and community wellbeing. Health Care Without Harm, among the most well-known, launched 25 years ago and suggests focusing on health care facility resilience, public infrastructure resilience, and community health resilience.⁴⁴
- Investing in a culture of continuous learning where health care workers receive ongoing education to stay updated on patient care and safety protocols, while integrating climate change adaptation strategies into their training. Investing in workforce development not only can provide a pipeline of new workers but can also enhance the overall employee experience.
- Highlighting the potential for developing transferable skills and providing a critical public service. Effective health care delivery amidst climate change requires knowledge not only in medicine, but also in fields such as supply chain and logistics management, emergency preparedness, government policies and decision-making. Acquiring these practical, transferable skills can attract more individuals to consider joining the health care sector as it offers a unique opportunity to improve health and equity across communities and populations.
- Promoting the ability for health care workers to use their knowledge and skills in the community to raise awareness, inspire change, and mobilize action. Increasingly health providers are becoming powerful educators for their communities as well as their own health systems. Raising awareness of both the health impacts of climate change and the benefits of taking action, either as individuals or by supporting community-based initiatives, provides health care workers with the opportunity to augment the capacity and resilience of the communities in which they live as well as transform how and when care may be sought and provided.

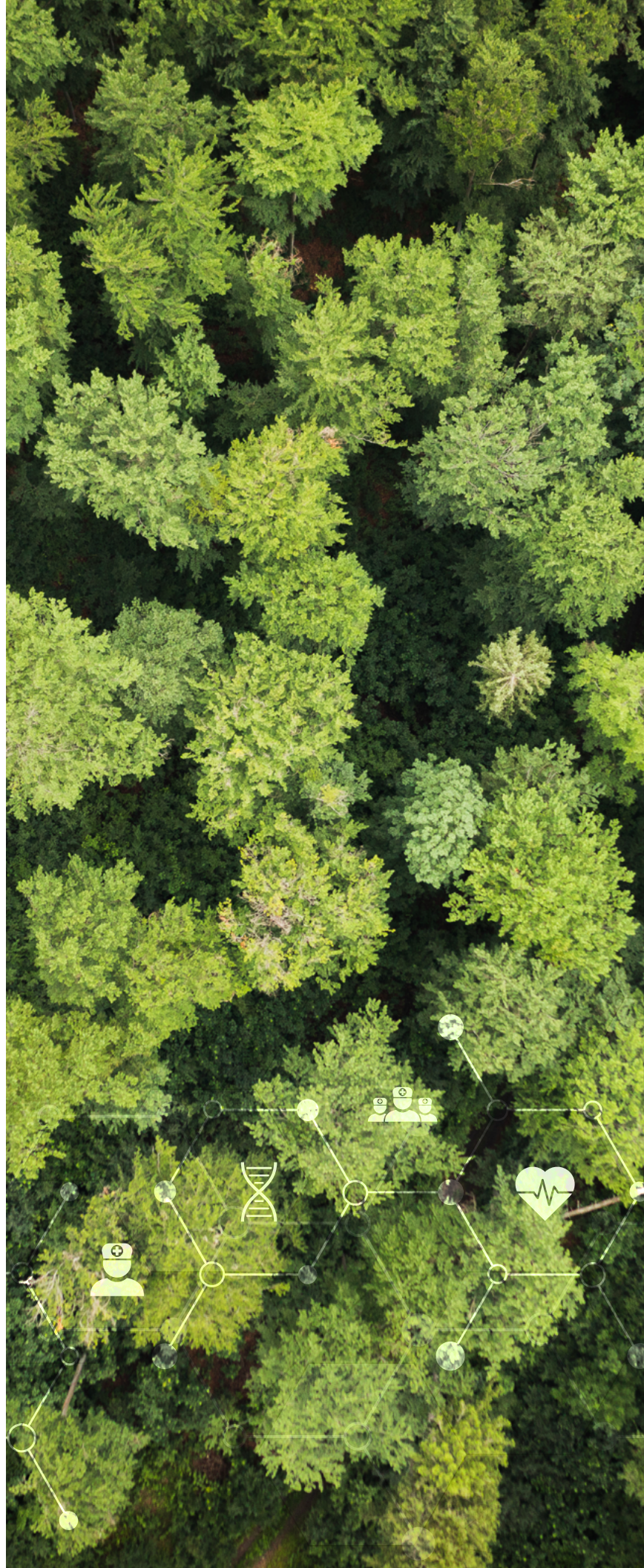
Call to action

The undeniable impacts of climate change tend to disproportionately affect low-income and vulnerable communities leading to heightened risks of increased hunger, malnutrition or migration due to extreme weather events like floods and droughts. Shifts in disease patterns, such as the spread of malaria or dengue to previously immune-naïve populations, and the rise in heat-related illnesses worldwide emphasize the urgent need for health workers to be equipped to tackle climate-related health challenges.

The health care workforce is at the frontlines of climate change, facing unprecedented challenges and risks to their own well-being to serve affected populations. These workers need the support and solidarity of the global health care community to continue providing quality care and saving lives in the face of climate change.

It is encouraged that each stakeholder—governments, donors, multilateral organizations, private sector, academia, media, and individuals—help empower the health care workforce for a climate-resilient future by recognizing and raising awareness of some of the impacts of climate change on health and the health workforce; advocating for policies and programs that help address such impacts; investing in building capacity, mental health, and worker safety; providing health workers the necessary resources, tools, and training to help cope with climate-related challenges; encouraging innovation and collaboration among health care workers and other sectors; monitoring and evaluating the effectiveness and impact of climate resilience initiatives, sharing forward leading practices and lessons learned; and celebrating and honoring the contributions and achievements of the health care workforce in helping to advance health and equity amidst a changing climate.

While no single organization can address the effects of climate change alone, collaborative action can help drive swifter and more impactful progress in safeguarding the wellbeing of those most at risk.



Acknowledgements

The authors would like to thank the following people for their valuable contributions and insights to this work: **Zewdu Assefa Edea**, public health emergency management expert and former director of early warning and information system management, Ethiopian Public Health Institute; **Dr. James Duah**, deputy director, Christian Health Association Ghana; **Ariana Gordillo De Vivera**, senior director of strategic initiatives, National Association of Free and Charitable Clinics; **Arafin Happy Mim**, Bangladesh-based midwife supervisor; **Nabila Purno**, public health programmer, United Nations Population Fund; **Adriana Wanderlinder**, Dominican Republic program manager, Project HOPE.

In addition, the authors would also like to thank Rabih Torbay, Rondi Anderson, and Bria Justus from Project HOPE, Ralph Marcello, Greg Reh, and Tyler Swain from Deloitte Consulting LLP, Terry Koch from Deloitte Global, Kathleen Spears from The Content Bureau, and the many others who contributed to the success of this effort.

Contacts

Elizabeth Baca, MD, MPA

Managing Director, Deloitte Consulting LLP
ebaca@deloitte.com

Uche Ralph-Opara, MBBS, MBA, MPH

Chief Health Officer, Project HOPE
uralphopara@projecthope.org

Andrea Dunne-Sosa, MPH

Senior Regional Director, Project HOPE
adunnesosa@projecthope.org

Endnotes

- 1 Mim, A. H. (2023). "Success Story Midwife." [Unpublished manuscript].
- 2 World Health Organization, "[COP28 Health Day](#)," December 3, 2023, Dubai, UAE.
- 3 World Health Organization, "[Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and their Measurement Strategies](#)," Geneva: 2010. Accessed March 13, 2024.
- 4 PBS, "[Why Indonesia is moving its capital from Jakarta to Borneo](#)," March 9, 2023. Accessed March 13, 2024.
- 5 U.S. Climate Resilience Toolkit, "[After Katrina, Health Care Facility's Infrastructure Planned to Withstand Future Flooding](#)," Accessed March 13, 2024.
- 6 US Environmental Protection Agency, "[Health Effects Attributed to Wildfire Smoke](#)," Accessed March 22, 2024.
- 7 Camilo Mora, Tristan McKenzie, Isabella M. Gaw, Jacqueline M. Dean, Hannah von Hammerstein, Tabatha A. Knudson, Renee O. Setter, Charlotte Z. Smith, Kira M. Webster, Jonathan A. Patz, Erik C. Franklin. "[Over half of known human pathogenic diseases can be aggravated by climate change](#)," Nature Climate Change, August 8, 2022. Accessed March 22, 2024.
- 8 Shreya Louis, MD, MS, Alise K. Carlson, MD, Abhilash Suresh, BS, Joshua Rim, MD, MarryAnn Mays, MD, Nadiel Ontaneda, MD, PhD, Andrew Dhawan, MD, DPhil. "[Impacts of Climate Change and Air Pollution on Neurologic Health, Disease, and Practice](#)," Neurology, March 7, 2023. Accessed March 22, 2024.
- 9 Anahita Sadeghi, Desmond Leddin, Reza Malekzadeh. "[Mini Review: The Impact of Climate Change on Gastrointestinal Health](#)," Middle East Journal of Digestive Diseases, April 30, 2023. Accessed March 22, 2024.
- 10 Dennis Yüzen, Isabel Graf, Anke Diemert, Petra Clara Arck. "[Climate change and pregnancy complications: From hormones to the immune response](#)," Frontiers in Endocrinology, April 4, 2023. Accessed March 22, 2024.
- 11 Alison R Hwong, MD, Margaret Wang, MD, Hammad Khan, MD, D Nyasha Chagwedera, MD, Adrienne Grzenda, MD, Benjamin Doty, PhD, et al. "[Climate change and mental health research methods, gaps, and priorities: a scoping review](#)," The Lancet, March 2022. Accessed March 22, 2024.
- 12 Marina Romanello, PhD, Claudia di Napoli, PhD, Carole Green, MPH, Harry Kennard, PhD, Pete Lampard, PhD, Daniel Scamman, PhD, et al. "[Countdown on health and climate change: the imperative for a health-centred response in a world facing irreversible harms](#)," Lancet report, November 14, 2023. [https://doi.org/10.1016/S0140-6736\(23\)01859-7](https://doi.org/10.1016/S0140-6736(23)01859-7).
- 13 Marina Romanello, PhD, Claudia di Napoli, PhD, Carole Green, MPH, Harry Kennard, PhD, Pete Lampard, PhD, Daniel Scamman, PhD, et al. "[Countdown on health and climate change: the imperative for a health-centred response in a world facing irreversible harms](#)," Lancet report, November 14, 2023. [https://doi.org/10.1016/S0140-6736\(23\)01859-7](https://doi.org/10.1016/S0140-6736(23)01859-7).
- 14 Marina Romanello, PhD, Claudia di Napoli, PhD, Carole Green, MPH, Harry Kennard, PhD, Pete Lampard, PhD, Daniel Scamman, PhD, et al. "[Countdown on health and climate change: the imperative for a health-centred response in a world facing irreversible harms](#)," Lancet report, November 14, 2023. [https://doi.org/10.1016/S0140-6736\(23\)01859-7](https://doi.org/10.1016/S0140-6736(23)01859-7).
- 15 The World Bank, "[Climate Change in Bangladesh: Impact on Infectious Diseases and Mental Health](#)," October 7, 2021. Accessed March 7, 2024.
- 16 Team interview, United Nations Population Fund (UNFPA) specialist, March 11, 2024. Notes on file.
- 17 [What does the consumer in the new normal look like?](#) Deloitte US. Global State of the Consumer Tracker. September 2021.

- 18 United States Environmental Protection Agency, "Climate Change Indicators: Heavy Precipitation." Accessed March 26, 2024.
- 19 The World Bank, "[Social Dimensions of Climate Change](#)." Accessed March 22, 2024.
- 20 World Economic Forum, "[Climate Crisis May Cause 14.5 Million Deaths by 2050](#)," January 16, 2024. Accessed March 6, 2024.
- 21 [Global Turning Point Report](#). Deloitte Center for Sustainable Progress. May 2022.
- 22 Project HOPE, "[Training Health Care Workers and Saving Lives](#)," September 2023.
- 23 Crystal Kai Tian Cheng RN, BSN (Hons.), Jie Hui Chua RN, BSN (Hons.), Ling Jie Cheng RN, MPH, BSN (Hons.), et al., "[Global prevalence of resilience in health care professionals: A systematic review, meta-analysis and meta-regression](#)," Journal of Nursing Management, February 7, 2022. Accessed March 1, 2024.
- 24 World Health Organization, "[Global Health Workforce statistics database](#)."
- 25 Tait D. Shanafelt, MD; Colin P. West, MD, PhD; Lotte N. Dyrbye, MD, MHPE; Mickey Trockel, MD, PhD; Michael Tutty, PhD; Hanhan Wang, MPS; Lindsey E. Carlasare, MBA; Christine Sinsky, MD, "[Changes in Burnout and Satisfaction With Work-Life Integration in Physicians During the First 2 Years of the COVID-19 Pandemic](#)." Mayo Clinic Proceedings, September 13, 2022. Accessed April 3, 2024.
- 26 Washington Post and Kaiser Family Foundation, "[Burned out by the pandemic, 3 in 10 health-care workers consider leaving the profession](#)," April 22, 2021. Accessed April 3, 2024.
- 27 American Psychology Association, "[Dictionary of Psychology](#)."
- 28 Commonwealth Fund, "[U.S. Health Care Workers Want Their Employers to Address Climate Change](#)," January 24, 2024. Accessed March 13, 2024.
- 29 American Psychology Association, "[Dictionary of Psychology](#)."
- 30 Emilia Barili, Paola Bertoli, Veronica Grembi, and Veronica Rattini, "[Job satisfaction among healthcare workers in the aftermath of the COVID-19 pandemic](#)," PLoS ONE 17(10), October 26, 2022. e0275334. <https://doi.org/10.1371/journal.pone.0275334>.
- 31 [Beyond reskilling: Investing in resilience for uncertain futures](#). Deloitte Insights. May 15, 2020.
- 32 Team interview, former senior field coordinator, Ethiopian Public Health Institute, March 4, 2024. Notes on file.
- 33 Connie M. Ulrich and Christine Grady, "[Moral Distress and Moral Strength Among Clinicians in Health Care Systems: A Call for Research](#)," NAM Perspectives, September 23, 2019. Commentary, National Academy of Medicine, Washington, DC. <https://doi.org/10.31478/201909c>
- 34 Frances Kelly, Margot Uys, Dana Bezuidenhout, Sarah L. Mullane, and Caitlin Bristol, "[Improving Healthcare Worker Resilience and Well-Being During COVID-19 Using a Self-Directed E-Learning Intervention](#)," Frontiers in Psychology 2021, December 2; 2021. 12: 748133. doi: 10.3389/fpsyg.2021.748133. PMID: 34925152; PMCID: PMC8675897.
- 35 Project HOPE. [CDP Video](#). Accessed March 22, 2024.
- 36 [What will it take for organizations—and humans—to thrive in a boundaryless world?](#) 2024 Global Human Capital Trends. Deloitte US. 2024.
- 37 American Nursing Association, "[Practice and Advocacy/Disaster Preparedness](#)." Accessed March 6, 2024.
- 38 Team interview, Project HOPE program manager (Dominican Republic), March 15, 2024. Notes on file.
- 39 Jaclyn Paterson, Peter Berry, Kristie Ebi, and Linda Varangu, "[Health Care Facilities Resilient to Climate Change Impacts](#)," International Journal of Environmental Research and Public Health 2014 11(12): pp. 13097-13116, December 16, 2014. <https://doi.org/10.3390/ijerph111213097>.

- 40 Umesh Khot, "[Navigating Healthcare Supply Shortages During the COVID-19 Pandemic](https://doi.org/10.1161/CIRCOUTCOMES.120.006801)," *Circulation: Cardiovascular Quality and Outcomes*. 2020; e006801. <https://doi.org/10.1161/CIRCOUTCOMES.120.006801>
- 41 Syed Monibul Hasan, Md.Be-Nozir Shah Shovon, "[Women's Vulnerability Due to Climate Change in the Coastal Area of Bangladesh](#)." Proceedings on International Conference on Disaster Risk Management, Dhaka, Bangladesh, January 2019: p. 349.
- 42 Abu Siddique, "[Investigation: Steady creep of saltwater a risk to women's health in Bangladesh](#)," *The Third Pole*, August 5, 2021. Accessed March 13, 2024.
- 43 Team interview, former senior field coordinator, Ethiopian Public Health Institute, March 4, 2024. Notes on file.
- 44 [Climate Resilience for Health Care and Communities. Strategies and Case Studies](#). Health Care Without Harm. January 2022.



About Project HOPE

Founded in 1958, Project HOPE is a leading global health and humanitarian organization operating in over 25 countries. We work side-by-side with local health systems to save lives and improve health. Our mission is at the epicenter of today's greatest health challenges, including infectious and chronic diseases, disasters and health crises, maternal, neonatal and child health and the policies that impact how health care is delivered. For more information on Project HOPE and its work around the world, visit www.ProjectHOPE.org and follow us on Twitter @ProjectHOPEorg.

Deloitte.

As used in this document, "Deloitte" means Deloitte Consulting LLP, a subsidiary of Deloitte LLP. Please see www.deloitte.com/us/about for a detailed description of the legal structure. Certain services may not be available to attest clients under the rules and regulations of public accounting.

© 2024. For information, contact Deloitte Consulting LLP.