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Belmont Forum
Climate, Environment, and Health 2

Call for Proposals

Summary:

A call for research proposals to improve understanding among the climate, environment, and health pathways to protect and promote ecological, planetary, and human health in the face of climate challenges. Convergent research and/or transdisciplinary research projects will investigate issues that impede policy implementation; address complex climate, ecosystem, and health pathways to determine processes underlying causal links; capacity development and collaboration across relevant disciplines and institutions; and foster the use of international scientific databases with local knowledge to develop climate-related decision support tools to better inform planning, resilience, and adaptation to climate change.

Research consortia should make use of transdisciplinary, end-user focused approaches to investigate and address the linkages between climate, environment, and health, with a particular emphasis on system-level project design. Projects should seek to bridge knowledge gaps, promote equitable access, identify health risks, improve predictability, and deliver usable data platforms. These innovative, cross-cutting platforms should be scalable, implementable, sustainable, and provide inclusive solutions for decision makers - specifically acknowledging and addressing on human-centric approaches to studying, capacity development, fostering collaboration, sharing data, and integrating data frameworks on disproportionately affected communities under a variety of contexts, with perspectives inclusive of the Global South and understudied groups - defined as but not limited to children, women, the elderly, persons with disabilities, Indigenous people, and Small Island Developing States (SIDS).

Research outputs should include solutions to improve healthcare preparedness, response to climate's impacts on health, and support environmental preservation resources, adaptation strategies, or develop measures to mitigate health impacts on understudied groups. Capacity development efforts should focus on building the skills for conducting research, producing, and sharing relevant data and data platforms, and promoting collaboration across the disciplines and institutions responsible for data production, integration and use relevant to the nexus between climate, environment, and health. Global geographical, ecological, cultural, and

national population diversity is encouraged to increase the scalability and applicability of the project outcomes, including working with low- and lower middle-income countries (LLMICs) where data, knowledge, services, and solutions are lacking. Consortia are strongly encouraged to foster and implement sustainable, innovative, inclusive community relationships that will develop novel, long-term equitable partnerships, and workforce development to address climate and environment-related health risks.

Eligibility and timeline

Proposals must be eligible to receive funding from at least **three** participating Partner Organizations established in **three** different countries and should include researchers from the natural sciences (including climate), health/medical sciences, social and economic sciences or humanities, as well as societal partners (*i.e.* public health organizations, civil society organizations, and non-governmental organizations). Researchers and societal partners from countries not supported by any of the partner agencies can participate in the research project at their own expense.

A total of 15 funders from 9 countries have committed up to over €12 million in cash plus additional in-kind resources for this call. The call aims to support as many projects with the funds available between three- to four-years in duration.

This call has a two-stage submission process. Deadlines for submission are:

- Pre-proposal (mandatory for full proposal submission) is due on **15 July 2023, 20:00 UTC** and must be submitted online at www.bfgo.org.
- Capacity Building Activities and Collaborative Networking activities will begin in January and continue to December 2023. These activities and projects are **voluntary** and are designed to enhance each consortia's proposal.
- Full proposals to be submitted online by **January, 2024**

All proposals must be written in English.

Call Theme:

Policy context

Climate change is a serious threat to human health (IPCC AR6 WGII)[1]. Further, the link between human health and climate, highlighted in the 2015 Paris Agreement, WMO's Annual State of the Global Climate Report, and the 2030 Agenda for Sustainable Development, provides yet another link between rising global temperatures and human welfare. The WMO-WHO Joint Office for Climate and Health was established in 2014 to promote the coordinated development and use of climate services to improve public health. Already a decade ago, there was a clear demand from the global health community for improved access to the climate and weather products needed to better understand and manage health risks related to weather and climate, and to cope with a shifting burden of disease due to climate change. The WHO now estimates that between 2030 and 2050 climate change is expected to cause an additional 250,000 deaths per year due to malaria, malnutrition, diarrhea, and heat stress; estimated direct damage costs amount to USD2-4 billion per year by 2030. Further, direct health impacts will be largest in areas with weak health infrastructures (mostly in LLMIC), the same countries which typically produce comparatively little greenhouse gasses. Thus, these climate induced health impacts are also an environmental justice issue. For example, reducing air pollution and emissions of greenhouse gases through better food and energy-use choices, can result in improved health by reducing heat-related illness, respiratory disorders, water-borne diseases, zoonotic/vector-borne disease reduction, malnutrition, noncommunicable diseases, and mental health challenges. Likewise, improving the capacity to detect and respond to climate- and environment-mediated health risks can improve health outcomes and quality of life for communities that are most disproportionately affected by the health impacts of climate change.

In 2020, under the UNFCCC process, 126 out of the 154 countries in the Global South are working to embed health adaptation into their National Adaptation Plans (NAPs). Each countries' NAP aims to identify the risks and embed options to support health systems and decision-makers in other health-determining sectors to plan for, manage and adapt to health risks associated with climate variability and change.[2] Furthermore, in June 2022, the G7 countries set a goal to make progress towards a more equitable world through building stronger alliances for a sustainable planet, ensuring economic stability and transformation, and enhancing their preparedness for healthier lives.

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[1]IPCC: Climate Change 2022: Impacts, Adaptation and Vulnerability

IPCC (2018) Summary for Policymakers. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty

[2] WHO (2015) Operational Framework for Building Climate Resilient Health Systems

Background

The IPCC AR6 WGII report states that any increase in global warming is projected to affect human health with primarily negative outcomes. Shifts in climate (e.g., variability, extreme events) impact physical and mental health through multiple pathways. Increased exposure to multiple climate-related health threats, together with changes in sensitivity, and the ability to adapt to those threats, increases an individual's risk, influences behavior, and compounds the cascade of climate-related health effects. Consequently, while the impacts of climate change will indiscriminately affect everyone, people living with underlying illnesses and those with little to no access to health care are at a higher risk.

The IPCC AR6 WGII report on human health recognizes the existence of significant health risks in the context of climate change at 1.5°C, especially in key areas such as health, livelihoods, food security (including nutrition) water supply, human health security, and economic growth. The number of people at risk from climate change and associated biodiversity loss will progressively increase. A 1.5°C increase will predispose more - vulnerable ecosystems and people to more physical and emotional damage caused by extreme weather effects - among and within regions driven by patterns of intersecting socioeconomic development, unsustainable ocean and land use, inequity, marginalization, historical power relationships, and governance. The data is abundantly clear that groups that have been economically/socially marginalized are higher in locations with poverty, governance challenges, and limited access to basic services and resources. Climate-sensitive communities are higher among climate-sensitive communities (e.g smallholder farmers, pastoralists, fishing communities) are even more at risk (IPCC AR6 WGII SPM B2-2.4).

Heat-related morbidity and mortality, ozone-related mortality, and vector-borne diseases such as malaria and dengue fever are all projected to increase as global temperatures rise (IPCC AR6 WGII SPM B.5.2). Furthermore, increase in CO_2 and heat reduces the nutritional quality and yield of staple crops (e.g., rice and wheat) particularly in sub-Saharan Africa, Southeast Asia, and Central America, and South America- leading to malnutrition and micronutrient deficiencies (IPCC AR6 WGII SPM B.4.3.3). Changes in agricultural productivity from climate change (e.g., natural hazards) will further impact individual health and communities, devastating their food security, infrastructure, property, and income, especially affecting economic, gender, and social equity (IPCC AR6 WGII SPM B1.5). Additionally, if urbanization trends in exposed areas continue, this will challenge current energy, water, health, and infrastructure services, at a time when they are already strained. This is likely to further exacerbate the conflict and migration patterns of both wildlife and humans that are driven by socioeconomic conditions and governance, more than by climate change (IPCC AR6 WGII SPM B.3.1). These issues are compounded by an unavoidable increase in multiple climate hazards and present multiple risks to ecosystems and human lives, which will significantly increase long-term diseases, mental health problems, and premature deaths (IPCC AR6 WGII SPM B.4.4).

The WHO working definition of a climate resilient health system[3] is one that can anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stress, so as to bring sustained improvements in population health, despite an unstable climate. Policy and decision-makers in all relevant determining sectors (e.g., water and sanitation, food and agriculture, healthcare, energy, urban planning) need to understand and effectively prepare for the additional health risks posed by climate variability and change. Projected estimates of global aggregate net economic impacts sharply increase with global warming levels, with estimated economic impacts per capita for LLMIC countries, often higher as a fraction of income (IPCC AR6 WGII SPM B.4.6). Therefore, climate, environment and health research are needed to help reduce the uncertainty and inequities about how local conditions may be affected now and decades ahead. Such research will help to provide a framework for insight into local solutions to develop an evidence-based plan that strengthens governmental decisions upon implementation - with emphasis on promoting equitable access and including communities across the socioeconomic, gender, and cultural divide.

Knowledge gaps

Climate change and related seasonal, annual, and decadal variability impact human health and well-being. We need to better understand how climate impacts food security (including nutrition), water supply, human disease, infectious and zoonotic disease transmission, mental health, project implementation, and economic growth, as highlighted by IPCC in the AR6 WGII report.

The relationship between climate and disease mechanisms are often poorly understood and may not be consistent across space and time. Health research uncertainties are affected by model biases that are created on shorter timescales, within a smaller region - scaling effect. Comorbid diseases, climate, and other required data of sufficient quality, historic length and appropriate spatial scale and coverage are often not readily available, and issues with translating and implementing research may limit its usefulness. Further research is needed to characterize and quantify climate variations and trends that are biomarkers associated with potential disease outcomes in different countries, cultures, ecosystems (or environments), and historically excluded communities (including gender, sexual orientation, equitable access, and age). A better understanding is needed of how climate impacts the health of natural habitats and ecosystems, the range of living organisms that carry infectious diseases, and potential human exposure, along with improved capabilities to detect, prevent, communicate, and respond to risks. In the context of health, many comorbid diseases do not show physical or visible symptoms; therefore acknowledging visible and invisible disorders (such as cancer, neurodegenerative, Post-Acute Sequelae of SARS-CoV2, and mental health disorders) are

[3] http://apps.who.int/iris/bitstream/handle/10665/189951/9789241565073_eng.pdf?sequence=1&isAllowed=y

generally understudied, because these patients are the most disadvantaged when researchers and policy makers attempt to develop a climate resilient health plan that is able to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stress. Therefore, these projects should aim to identify and predict health outcomes within the context of broader environmental, socioeconomic, and institutional concepts, through partnerships with local stakeholders and governments to determine how this knowledge can be best used for effective, inclusive, and adaptive strategies and policies, and other appropriate pathways to impact.

Recent modern technological advances combine chronological, geological, epidemiological, climate data to deliver climate and health-related information directly to local decision-makers. This advance is not only timely but necessary to address the knowledge and policy implementation gaps at every level, such as improving the chain of science communication and health messaging at the local community and at a broad governmental level through an early warning sign platform.

Rationale for Belmont Forum CRA

The Belmont Forum has designed this CRA to strengthen and expand the current scientific understanding of links between climate variability, change, environment, and health impacts. In this second call, our focus will be to address research priorities in LLMICs and underrepresented groups through the participation of indigenous peoples, local communities, and civil society (including NGOs) to implement sustainable platforms and promote capacity development between the global North and South.

Call Statement:

This is an international, transdisciplinary call for proposals with the aims to:

- foster global transdisciplinary teams of natural (including climate), medical, and social scientists, and stakeholders to co-produce world-leading research in collaboration with LLMIC communities;

- develop an understanding of the complex linkages and pathways between climate variability and change-associated impacts on the environment, on exposure pathways for health, and on human behavior and well-being;

- develop and/or integrate international or national geographical, health, and early-warning system databases that will adopt implementation science strategies with civil society partners (including NGOs) to train a workforce designed by and for the local community;

- provide applicable information, knowledge, scientific evidence, and effective tools to support long-term policymaking, decision-making, capacity development, and collaboration across all timescales, regions, and disciplines to foster a collaborative community of practice for climate, environment, and health; and

- include systems-level approaches at the intersection of climate, environment, and health to incorporate underrepresented communities of different socioeconomic, cultural, gender, and minorities into a comprehensive climate resilient health system, as defined by the WHO.

Addressing these five tenets will promote, mobilize, and establish an inclusive, transdisciplinary funding scheme for climate, environment, and health, through its preservation and celebration of diverse communities, research topics, ecosystems, and creative transformative solutions. These tenets will also create a comprehensive culture shift through education, research, service, and advocacy to inspire a world where all animals and humans can thrive — through the integration of human medicine, veterinary medicine, and environmental science — and by adapting and protecting Earth's natural systems for generations to come.

The intended outcomes and impacts are to improve planning, preparedness, and response to climate-driven health impacts using a system-based, transdisciplinary approach. Additionally, research and capacity development outputs should be used to target prevention, detection, adaptation, or development measures that provide significant human or ecological population health benefits.

Projects should employ a transdisciplinary, stakeholder-based participatory approach across a wide range of relevant disciplines to co-design and co-deliver research, build capacity and foster collaboration that meets the needs of users and bridges the knowledge gaps of climate impacts on health, particularly in relation to under-studied environmental exposure pathways. Projects are not restricted in their geographic focus; applicants should justify their choice according to the research and capacity challenges and needs of stakeholders. Projects that seek to address the knowledge gaps and challenges in LLMIC and underrepresented groups are welcome and encouraged.

Proposals should aim to take a systems-level approach to:

a. bridge knowledge gaps on the linkages among climate, environmental, and health institutions, feedbacks and interactions that connect climate variability and change to human disease and well-being, with a view to improve health through prevention, mitigation and/or adaption strategies, that incorporate the use of climate knowledge and information;

b. improve scalability, predictability, early-warning of the incidence, frequency, and extent of climate and climate-related environmental threats to health, at relevant temporal and spatial scales through database development or integration across international/national partners;

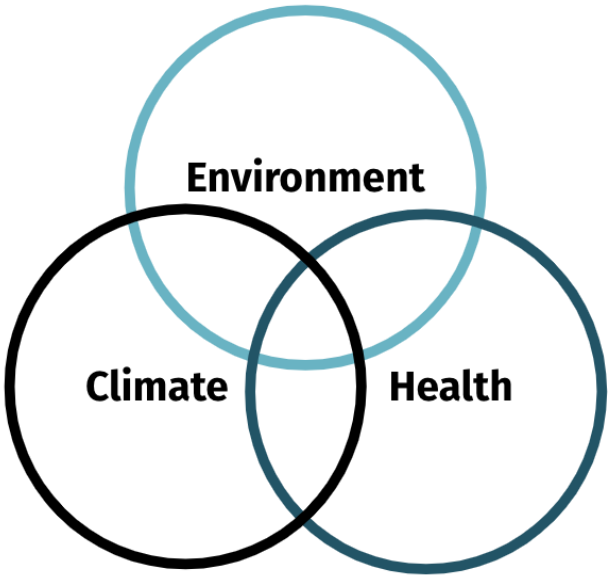
c. deliver usable data, information, tools, services, and effective innovative solutions that connect and standardize independent data repositories, allow decision-makers in health and health-determining sectors to be better prepared, increase societal and behavioral resilience, inform responses to climate-related impacts on health, and optimize planning and management strategies that have health benefits; and

d. facilitate human-centric approaches to scaling, integrating data, and sharing data frameworks to understand health risk, vulnerability and resilience (according to the amplitude of climate variations and changes, baseline conditions and existing adaptation measures at all relevant time and regional scales) on disproportionately affected communities under a variety of contexts, with perspectives inclusive of the Global South and understudied groups such as women, the elderly, persons with disabilities, Indigenous people, and SIDS; and

e. provide a sustainable model to implement long-term, collaborative action plan and community of practice that address, but are not limited to, science communication, workforce development, knowledge transfer, and health dissemination to bridge socio-economic demographics - Indigenous people, patients with acute and chronic disabilities, and health care delivery systems.

Research consortia are expected to propose a thematic focus and research strategy to formulate concrete pathways, novel actions, or solutions that provide a contribution to the health system's climate resilience and improved health - leading to benefits that advance as many UN Sustainable development goals, SDGs, as possible.

The funders recognize the breadth of the topic, climate, environment, and health is difficult to cover in a single call, but the goal is to have projects that incorporate all aspects of these three central pillars.



Themes:

Therefore, the Belmont Forum has prioritized the following three themes for this call. Projects **must** include **Theme A**, and include **Theme B** and/or **Theme C**. *Any projects that do not include Theme A, will be ineligible.*

Theme A: Decision-science of environmental behavior and implementation- Although adaptation measures, including nature-based solutions (e.g., restoring coastal mangroves in lieu of seawalls) may be more expensive in the short term compared to no action alternatives, early project planning and implementation can reduce premature deaths, morbidity, and long-term socioeconomic costs. A lack of action or planning will lead to extreme environmental hazards and chronic risks that may be life-threatening or compromise the quality of life, likely concentrating among the socioeconomically marginalized, indigenous communities, and urban residents, e.g., in informal settlements. Regardless of whether these communities are in the global North or South, progress is dependent on the development of a climate, environment, and health knowledge base on how to best decide, implement, anticipate, and overcome these cost-prohibitive barriers. In other words, successful projects should utilize societally relevant

and behavioral science research to understand individual or population level adaptation, including migration and displacement, to climate related threats including biomedical, behavioral, and health intervention strategies that can help to strengthen individual and community-level resilience through workforce or database development. Database, early-warning system, and workforce development projects must provide solutions to reduce adaptation costs, premature deaths, include underrepresented groups, communicate science accomplishments, enhance the community of practice from the local community to governments.

Theme B: Food, Environment, and Biological Security– challenges to protect human and ecological health - biological security - can be narrowed down to whether there is enough food, clean water, and protection from zoonotic disease. Climate-sensitive food-borne, water-borne, and vector-borne disease risks are projected to increase under all levels of warming and the duration of their active-seasons (e.g., neurotoxic algal-bloom) and a wider geographic distribution (in Asia, Europe, Americas, and sub-Saharan Africa), potentially putting additional billions of people at risk of premature death. Concomitantly, flood and drought also compound mental health challenges, including anxiety and stress, particularly for children, adolescents, elderly, and those with underlying health conditions. People living with disabilities or regions with more socioeconomic barriers, will be disproportionately disadvantaged, such as reduced nutrient-quality of non-heat resistant crops for LLMICs at sea level. Successful projects in this theme should detail system-level strategies to mitigate or adapt to food, environment, and biological security to address population health.

Theme C: Climate Risks to Ecosystems & Populations– Climate change risks to cities, settlements, and infrastructures will rise rapidly, especially in high vulnerability regions, e.g., coastlines and places exposed to high temperatures. For example, higher-latitude wildfires, smoke/aeroallergens, anthropogenic emissions, and chronic (unmitigated) heat exposure within urbanized and rural regions reduce labor productivity, impair respiro-cardiovascular health, and result in other life-threatening health outcomes, exacerbated in more disproportionately affected groups. Rising sea levels put small islands at risk and can increase the occurrence of sunny day flooding and saltwater intrusion, damaging key infrastructure. Reduced snowpack and earlier snowmelt in mountain ecosystems threaten the water supply for millions, globally. Climate impacts on natural habitats and ecosystems, the migration range of wildlife and insects, and their interface with domesticated animals and humans increase the risk of human exposure to infectious diseases. Successful projects should include system-level strategies to evaluate current policies, programs, implementation plans, existing cohort studies, or other ongoing research across the lifespan that could be leveraged to understand the health implications to climate change to improve human and animal health.

Project requirements:

Proposals should include a strong and deliberate linkage between the societal and environmental aspects within Global Change to ensure that they meet the Belmont Challenge for international transdisciplinary research by providing knowledge for understanding, mitigating, and adapting to global environmental change. Given the complexity and scope of the challenges, research consortia must be truly transdisciplinary, thus including researchers from: a) social sciences/ humanities/ economics and b) medical sciences/ public health/ natural sciences/ physical sciences/ technology, as well as c) societal partners (i.e. citizens, industry, civil society organizations, and non-governmental organizations), using participatory, co-design, co-development and co-implementation approach. Additional knowledge holders are welcome to be part of the proposing consortium once this minimum criterion has been met. Transdisciplinary of the research consortia and the active input of involved stakeholders (including but not limited to relevant policymakers, regulators, NGOs, communities, or industry) in the research and innovation contents is a key criterion and should be clearly demonstrated in the application. Proposals should also detail external communications activities, including the development of introductory and valorization videos for the kick-off and end-term meetings, planned social media activities as well as any other externally facing communication activities foreseen as a result of this work.

Eligibility criteria-

Successful proposals must address the Call Theme at the intersection of climate, environment, and health, and **must include Theme A and include Theme B and/or Theme C.** Submissions should clearly describe how the proposed project will address the Call Theme and accomplish the chosen Topics. Successful proposals will include well-justified budgets, partitioning of funds, and allocation of responsibilities and time. Projects should have well thought out and detailed data management, project stakeholder engagement, and communication management plans. Plans for providing broad public accessibility of data, results, and findings should be described. **Successful projects are expected to participate in coordinated activities throughout the lifespan of the project including Kick-Off, Mid-Term, and End-Term activities to be held at the Sustainability Research and Innovation Congress in person.** The expenses for these activities should be accounted for in the budget to allow participation from at least three Research Consortium members.

To be deemed eligible for this call, research groups (“Research Consortia”) require three or more Consortium participants, representing at least three different countries, each requesting support from at least three participating funding organizations. Each funding organization's specific eligibility requirements can be found in their annex for this call on the Belmont Forum Website. Projects are intended to be three years in length; however, individual annexes may provide support for varying lengths of time up to four years. Consortia members can request funding or in-kind support as outlined in each funding agency’s Annex. Additional members may participate in a self-funded capacity if the minimum participants from three countries requesting from three funders is met. Each Research Consortium must have a Consortium Lead, which acts to facilitate collaboration and communication across the team, submit the research proposal, and submit annual reports, which are due each June 15th for the lifetime of the project. **Consortium Leads must request for funding from a participating funding agency and cannot participate in a self-funded or in-kind capacity.** It is critical that each Consortium

Member and Consortium Lead review the funding agency's annexes for this Call to determine whether their funding request aligns with who is requesting support. Specific questions about eligibility should be directed to the relevant program officer listed at the bottom of each organizational Annex. We encourage the creation of a gender and geographically balanced Research Consortia that provide opportunities for early career researchers to participate.

Please be aware that certain funding agencies participating in this Research Call have adopted policies that may not allow funding for individuals if there is a person, public or private institution, company, or association from Russia or Belarus in the respective consortium. Consortia may be deemed ineligible for this reason.

How to apply:

All call documents, including guidelines for applicants and national/regional requirements, and the submission portal can be found at the Belmont Forum Grant Operations website: http://bfgo.org.

Details of the call and the application process are presented on the Belmont Forum web site: http://www.belmontforum.org, where you can also find links to training modules for proposers on the Belmont Forum YouTube channel.

Before starting to prepare proposals, applicants are advised to contact their National Contact Points as listed in the annex documents for the call.

Call Timeline:

BFgo submissions portal:	15 April 2023, 20:00 UTC
Deadline for Preproposals:	15 July 2023, 20:00 UTC
Deadline for full proposals:	January 2024
Projects funding start:	June 2024 – 2027(8)

Participating Organizations:

Partner Organizations contributing to this call		
Country	*Name*	*Website*
Americas	Inter-American Institute	IAI
Brazil	São Paulo Research Foundation (Brazil)	FAPESP
Chinese Taipei	National Science and Technology Council	NSTC
France	Agence Nationale de la Recherche	ANR
France	Alliance Nationale de recherche pour l'Environnement	AllEnvi
Norway	The Research Council of Norway	RCN
South Africa	National Research Foundation	NRF
Switzerland	Mountain Research Initiative	MRI
Switzerland	Swiss National Science Foundation	SNSF
Türkiye	Scientific and Technological Research Council of Türkiye	TUBITAK
USA	Department of the Interior	DOI
USA	National Oceanic Atmospheric Administration	NOAA
USA	National Science Foundation	NSF
USA	Department of State	DOS
Uruguay	National Agency for Research and Innovation	ANII