

Call for Expressions of Interest

Research on the health and climate benefits of Black Carbon exposure reduction interventions in cold-climate settings

Summary

The Clean Air Fund is seeking expressions of interest for research studies to evaluate real-world reductions in black carbon emissions and the associated health and climate impacts from the introduction of cleaner technologies and interventions in cryosphere (cold-climate) settings in low- and middle-income countries (LMICs). We are seeking studies assessing interventions in space heating and industry. These studies should assess the performance of black carbon-reducing interventions in terms of relative emissions reductions under actual use conditions, evaluate the associated health and climate benefits and, where possible, seek to understand community acceptance with a view to ensuring uptake and long-term sustainability. The study outputs should also include evidence-based recommendations to inform black carbon emission reduction strategies, policies and programmes for clean technology adoption in LMICs, helping to shape understanding of future research and investment opportunities, e.g. for governments and development banks, to deliver strong climate and health co-benefits.

Context

Also known as soot, black carbon is a powerful climate and health harming air pollutant, comprising of visible, dark fumes emitted from incomplete combustion of carbon-based fuels, solid waste and biomass burning. It is a contributor to poor air quality and is linked to lung disease, heart disease and premature deaths, with emerging evidence for an increased risk of cancer and dementia¹²³.

Black carbon emissions are particularly concentrated regionally in East Asia, South Asia, and North and East Africa, primarily from the residential, transport and industrial sectors and open burning. Residential energy and industry are major contributors to black carbon emissions, accounting respectively for 35% and 14% of total global emissions in 2022⁴.

Mitigation of the impact of black carbon in cryosphere regions merits particular attention: A recent study indicated that black carbon from the South Asian region drives one-third of overall glacial mass loss in the Tibetan Plateau⁵ and similarly affects the Himalayas, Alps,

¹ World Health Organization (WHO). Health effects of black carbon. WHO Regional Office for Europe. 2012

² U.S. EPA. Integrated Science Assessment (ISA) for Particulate Matter (Final Report, Dec 2019). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-19/188, 2019.

³ World Health Organization. WHO Global Air Quality Guidelines: Particulate Matter (PM_{2.5} and PM₁₀), Ozone, Nitrogen Dioxide, Sulfur Dioxide and Carbon Monoxide. Geneva, World Health Organization, 2021.

⁴ Clean Air Fund. Tackling Black Carbon: How to Unlock Fast Climate and Clean Air Benefits. London: Clean Air Fund. 2025.

⁵ Yang, Junhua, et al. "Reduced solid water storage over the Tibetan Plateau caused by black carbon." *Communications Earth & Environment* 6.1 (2025): 430.

Andes and Rockies. Black carbon is one of the major reasons why the Arctic is warming four times faster than other parts of the world, increasing the chances of dangerous climate tipping points being breached. In cryosphere-dependent regions, where glaciers and seasonal snow underpin water security and livelihoods, black carbon has a disproportionate impact by accelerating glacier and snow melt and reinforcing a cycle of climate vulnerability⁶.

Exposure to black carbon and its associated health risks is unevenly distributed, with the highest burdens falling on socially and economically marginalised populations, particularly in the Global South⁷. Women and children in low-income households are often more exposed to black carbon due to use of solid fuels or living near pollution sources. These challenges are often more acute outside urban areas, where dependence on coal, fuelwood or other forms of biomass to meet energy needs remains high. Addressing black carbon thus requires not only technical mitigation strategies but also attention to distributional impacts and the broader context of energy poverty and environmental justice.

While many promising technologies and interventions to reduce personal exposure to black carbon exist, there is limited real world evidence of their effectiveness in reducing health impacts. With regards to residential heating, much of the existing evidence base is derived from cooking-focused interventions and broader household energy transitions, with studies typically focusing on household air pollution and particulate matter exposure. Studies on brick kilns in [Nepal](#) and [Pakistan](#) have measured black carbon emission reductions from zigzag kiln conversion but have not assessed the resulting impact on health risks. Alongside generation of evidence on health and climate benefits, it is important that studies respond to locally led priorities and challenges and consider acceptance and uptake of cleaner solutions among communities as a key factor to ensure sustainable and scalable uptake.

Study scope

Budget: Up to GBP 220,000 (US\$300,000)

Timelines: Up to 3 years

Geography: Inhabited cryosphere (cold-climate) regions of LMICs.

Technologies and interventions: Cleaner technologies / interventions for space heating and industry that reduce exposure to black carbon.

We will prioritise studies targeting zero emission technologies and interventions that support the phase out of fossil fuels. We may also consider energy efficiency measures

⁶ Clean Air Fund. Tackling Black Carbon: How to Unlock Fast Climate and Clean Air Benefits. London: Clean Air Fund. 2025

⁷ *ibid*

where clear economic, technical, political, social or logistical constraints limit immediate transition to cleaner alternatives.

Examples of solutions that we are particularly interested in include: electrification; renewable thermal integration; advanced heat recovery; low-carbon fuel substitutions; equipment upgrades; advance process control.

Space heating: Our focus in this sector is on energy transition and efficiency, decarbonisation and affordability. Studies may target residential buildings or commercial and institutional (e.g. schools, hospitals, hotels, etc.) settings in rural or urban areas. For examples of innovative space heating fuels and technologies please see:

<https://www.teriin.org/sites/default/files/2020-08/wwf-india-report.pdf>

Out of scope: Applications will not be considered where the primary purpose of interventions is for cooking (as opposed to heating), as the evidence base is currently more advanced with regards to cooking interventions.

Industry: Our focus is on energy-intensive formal and informal or unregulated industries and industrial processes. For example, brick production can be a significant source of black carbon emissions and so we would be interested in supporting studies that examine the health and climate benefits associated with transitioning to cleaner, more energy efficient technologies. Please see this CCAC factsheet for more information: [Bricks-SEA.pdf](#)

Outcomes:

Research should prioritise the quantification of black carbon emissions and exposure reductions as a result of implementation of cleaner technology solutions.

- Health outcomes should be prioritised through appropriate methods to quantitatively measure health impacts from changes in black carbon emissions/concentrations (for example, premature mortality and relevant morbidity indicators).
- Climate outcomes – through appropriate methods to quantitatively estimate climate impacts from changes in black carbon emissions/concentrations.
- Where feasible, interventions could assess wider social and/or economic outcomes, including community engagement and acceptance of technology.

Research methodology:

Research investigating the real-world reductions in black carbon emissions and the associated health and climate benefits, in comparison to baseline emissions and impacts of current/previously used technologies from black carbon-reducing interventions.

Applicants should provide the following information in expressions of interest, as part of the methodology section:

- Specify which climate (e.g. radiative forcing, CO₂-equivalent, etc.) and health metrics (e.g. DALYs, years of life lost, hospital admissions avoided, etc.) will be used in the study design and why.
- Specify the comparative study design that will be used (e.g. same-site before-after, matched control site, difference-in-differences with matching, interrupted time series) and why it will serve as a valid counterfactual.
- Specify the intervention period proposed, including the number of operational seasons that will be covered and whether measurement will continue after implementation support ends.
- Specify the health and climate outcomes to be claimed, how they will be evidenced and why this approach is appropriate.
- Study designs may include previously published health data to estimate health outcomes attributable to the change in intervention. Black carbon emissions may be simulated using existing emission inventories, or any other ex-situ or in-situ data.

We are keen to support studies that incorporate participatory approaches with affected local communities as part of the overall research design to ensure community-level relevance and uptake of interventions.

Out of scope: Please note that due to the resources and timing of the grant, we cannot fund mechanistic or toxicology studies, randomised controlled trials, or procurement of technologies or solutions.

Application process & timeline

- This is two stage process involving an initial Expression of Interest (EoI) followed by a second stage where successful applicants will be invited to submit a full application.
- Applicants should submit their EoIs via Clean Air Fund's application portal, which will open on 18th September 2026.
- Any questions related to the EoI must be submitted by 17:00 BST on 25th September 2026 via email to superpollutants@cleanairfund.org. We will provide answers to frequently asked questions on our website by 1st October 2026.
- All submitted EoIs will be reviewed by the Clean Air Fund team.
- Authors of short-listed EoIs will be contacted to further develop their applications and submit a full proposal and budget.
- Clean Air Fund is unable to provide feedback on applications which are not shortlisted.
- Invited proposals will be reviewed by a Scientific Advisory Committee (SAC) who will make recommendations to the Clean Air Fund.
- Final funding decisions are the responsibility of the Clean Air Fund.

Indicative Timeline

Activity	Indicative Timeline
Call for Expressions of Interest published	28th August 2026
Applications portal opens	18 th September 2026
Deadline for applicants to submit any questions/clarifications	25th September 2026
Deadline to submit EoI, application portal closes.	23rd October 2026 at 18:00 BST
Final CAF decision and notification.	13th November 2026
Successful applicants invited to submit a full proposal.	

Annex 1: Expression of Interest Application Outline:

Please find the expression of interest application outline below, for reference

Annex 1: Expression of Interest Application Outline

Please note that applications should only be submitted via the application portal which will open on September 18th 2026. The link to the portal can be found on the [Clean Air Fund Research Funding Opportunities webpage](#) once open.

The contact email should be used for questions regarding the application, and should not be used to submit applications.

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Phase 1: Expression of Interest

Due Date: 23/10/2026, 18:00 BST

Summary

The Clean Air Fund is seeking expressions of interest for research studies to evaluate real-world reductions in black carbon emissions and the associated health and climate impacts from the introduction of cleaner technologies and interventions in cryosphere (cold-climate) settings in low- and middle-income countries (LMICs). We are seeking studies assessing interventions in space heating and industry. These studies should assess the performance of black carbon-reducing interventions in terms of relative emissions reductions under actual use conditions, evaluate the associated health and climate benefits and, where possible, seek to understand community acceptance with a view to ensuring uptake and long-term sustainability. The study outputs should also include evidence-based recommendations to inform black carbon emission reduction strategies, policies and programmes for clean technology adoption in LMICs, helping to shape understanding of future research and investment opportunities, e.g. for governments and development banks, to deliver strong climate and health co-benefits.

Budget

220,000 GBP maximum

Contact

Super Pollutants Team: superpollutants@cleanairfund.org

Eligibility

Please confirm that you:*

- ☐ Do not have a research grant from the fossil fuel or tobacco industries.
- ☐ Are not applying for funding from the fossil fuel or tobacco industries.
- ☐ Are not employed on a research grant from the fossil fuel or tobacco industries.

Please confirm whether your study aligns with the following statements:*

- ☐ The primary purpose of the technology or intervention is for space heating or industry.
- ☐ The proposed study targets a cold climate setting in a low- or middle-income country.
- ☐ The study is not a toxicological or mechanistic study, randomised controlled trial nor entail new deployment of the technologies or solutions.

Details

Study Title

Proposed Start Date

From March 1st 2027 earliest

Proposed End Date

Maximum duration up to 3 years

Total Budget Estimate

Up to 220,000 GBP

Partners

Who will be the lead organisation?

Organisation Name

Will any other organisations be involved in the study?

- ☐ Yes
- ☐ No
- ☐ Unsure

Please list partner organisations and briefly describe their role in the study.

300-character limit

Please outline the relevant experience held by the organisation(s) and involved personnel.

1000-character limit

Study Scope

What sector is your study targeting?

- ☐ Space heating
- ☐ Industry

What is the technology or intervention being studied?

200-character limit

Will the study take place at the sub-national (city), national (country) or regional (countries) level?

Target geographies are inhabited cryosphere (cold-climate) regions in LMICs

- ☐ Sub-national
- ☐ National
- ☐ Regional

Please list the specific location(s) included in the study.

400-character limit

Context

Please provide background and justification for the research study. Focus specifically on the geographic area(s) where the study will be implemented and the source(s) of black carbon the study aims to address.

This section should include:

- The key air quality, health, environmental, policy, or socioeconomic conditions relevant to the study.
- The main stakeholders, decision-makers, or communities affected by or involved in the study.
- Why this study is needed now and how it responds to local priorities, challenges, or opportunities.

Responses should be **specific to the proposed study and region of work**, rather than providing a general overview of air pollution or black carbon.

2000-character limit

Research approach

Briefly describe your proposed research approach and methods.

This section should include:

- The climate and health metrics you intend to use in the study design.
- Details of the proposed study design and why this is appropriate.
- The intervention period proposed, number of operational seasons covered and whether measurements will continue after the study ends.
- The health and climate outcome to be claimed, how it will be evidenced, and why this approach is appropriate.

Please note you will be asked to specify the study outcomes in the next section.

Research Question and Hypotheses

1000-character limit

Research Methods

10,000-character limit

Briefly outline how your study integrates equity as part of its design.

600-character limit

Outcomes

Short-term outcomes should describe the changes, benefits, or early signs of progress that are expected to occur as a result of the research study. Outcomes should be specific, measurable where possible, and achievable within the grant timeline. As a guide, we usually recommend a maximum of 3 outcomes.

The recommended structure to use is:

- Who? The individual, group, community, organisation, or type of actor.

- What? The explicit change we expect to see in the identified actor.
- Where? Location they are doing this in.
- When? Timeframe or date you expect to see this change.

Example outcomes include but are not limited to:

- *By [month/year], there exists new, publicly available evidence addressing research gaps regarding the health effects of black carbon in [country/city].*
- *By [month/year], national and sub-national policymakers responsible for air quality, health or climate policy use evidence from the study to inform discussions on black carbon mitigation strategies in [country/city].*

How many short-term outcomes will be included in the study?

- ☐ 1
- ☐ 2
- ☐ 3

Outcome 1

300-character limit

Outcome 2

300-character limit

Outcome 3

300-character limit

Declaration

As this funding opportunity is supported by Wellcome, applicants must review [Wellcome's statement on the use of generative AI](#) and indicate whether no, minimal or substantive AI assistance was used in developing their application.

Please confirm the level of generative AI use in the development of this application.

- ☐ None
- ☐ Minimal
- ☐ Substantive

Expand on how you have used AI in your application.

300-character limit

End of Expression of Interest Application