



Interlinkages between health impacts of air pollution and inclusivity

Key messages and recommendations

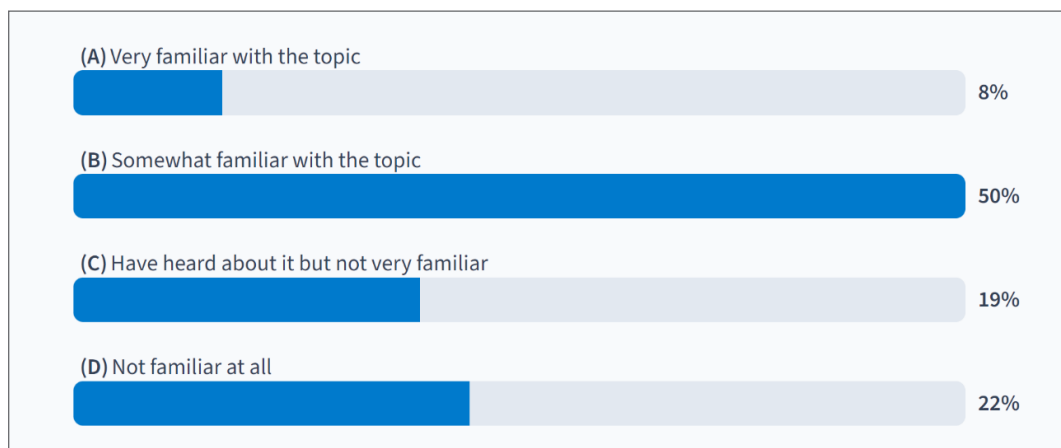
Air pollution is a global crisis, posing severe health risks and widening inequalities worldwide. In the Hindu Kush Himalaya (HKH) region, air pollution has surged over the past decade, with some cities struggling with deteriorating air quality. The health impacts are significant, ranging from respiratory and cardiovascular disease to premature mortality. However, the exposure and impacts of air pollution are not evenly distributed – marginalised and vulnerable groups face greater health issues despite their minimal contribution to emissions.

Income disparity exacerbates these impacts. Lower-income individuals are often forced to live in more polluted areas due to limited housing options and financial constraints. This socioeconomic divide increases their exposure to harmful pollutants and creates barriers to accessing cleaner household energy sources. Such inequalities amplify, revealing a critical intersection between environmental justice and health inclusivity. Addressing these disparities is essential for creating equitable solutions that improve air quality and health outcomes for all.

At ICIMOD, we ran a two-day regional workshop (15-16 August 2024) on interlinkages between the health impacts of air pollution and inclusivity. The event was organised within the Himalayan Resilience Enabling Action Programme (HI-REAP) supported by the United Kingdom's Foreign Commonwealth and Development Office (FCDO). It brought together representatives and government agencies from Bangladesh, Bhutan, India and Nepal, specifically from the Ministry of Health, Ministry of Forest and Environment, Health and Medical Research Council, international experts and relevant partners.

The key messages and recommendations are based on the group discussions during the event, where the participants engaged in thorough discussions and shared their insights. Here we present key messages and recommendations from the event for future action:

Figure 1: Awareness of gender and social indicators in air pollution and health inequality is predominantly moderate.



Overview of participants understanding on linkage health impacts on the air pollution and inclusivity

Pre-evaluation assessment was conducted among the participants which reveals a generally high level of awareness among them regarding the health impacts of air pollution, particularly concerning vulnerable groups such as low-income communities and young children. While many participants expressed familiarity with the topic, there are notable gaps in understanding specific methodologies and the integration of gender and social issues in air pollution solutions. (See Figure 1) This suggests an opportunity for further education and resources to enhance knowledge in these areas.

Data availability and gaps in linking between air pollution-health from inclusion

Despite the presence of air quality monitoring stations and several health surveys throughout the HKH region, considerable data gaps remain in correlating health outcomes to air pollution. The data on air quality and health surveys of Bhutan are reliable, but they fail to link environmental factors with health outcomes across genders and occupations. Bangladesh has extensive air quality and health data, but it lacks the level of clarity required to link pollution levels to specific health consequences across wide demographic groups. In India, significant monitoring and health surveys exist, yet a definite link between air pollution and health impacts remains unclear. The study of Nepal provides vital insights into air pollution, but it often overlooks how different demographic groups experience health impacts.

Specific to the household/indoor air pollution remains a significant issue across the HKH region, with numerous studies and research available. However, these studies, often lack comprehensive linkage between health indicators and disaggregated data by gender and occupation. Many studies highlight the severe air quality issues associated with traditional cooking methods and

other indoor pollutants, but they fall short in linking these environmental factors to specific health outcomes.

These gaps highlight the need for more integrated and intersectional data connecting environmental measures to health outcomes to promote inclusivity and effectively address the health effects of air pollution.

Standardised methodologies and gaps in health impact assessment in HKH/south asia context

Assessing the health impacts of air pollution in South Asia involves diverse methodologies tailored to each country's context. There are identified gaps in linking air quality data with health impacts due to inconsistent monitoring and a lack of longitudinal studies. Bhutan relies on burden assessments and epidemiological studies but faces challenges with data quality and resource constraints. Bangladesh uses qualitative methods like focus groups and quantitative approaches such as time-series analysis yet struggles with data quality and logistical issues. India leverages extensive data but lacks a focus on health inequalities, leaving gaps in understanding differential impacts. Nepal uses a mix of qualitative and quantitative approaches yet deals with biases and resource constraints. Each country's approach highlights strengths and limitations in addressing health inequalities from a Gender Equality and Social Inclusion (GESI) perspective. These diverse approaches highlight the need for more comprehensive consistent and targeted methodologies and approaches to bridge gaps and address health disparities effectively.

Gender, socio-economic domains and dimensions relevant to the air pollution

It is crucial to consider various dimensions and indicators that reflect gender and socio-economic factors which are relevant to the health impacts of air pollution. Air pollution is a social issue because those with greater resources, who contribute more to pollution, tend to face less exposure while economically

disadvantaged individuals, who contribute the least, bear the brunt of its harmful effects due to higher exposure. As women, children and economically disadvantaged groups are at the forefront, GESI perspectives should be integrated into air pollution management strategies.

Additionally, disparities in healthcare access lead to significant barriers to timely and effective treatment for pollution-related health issues. Data on mortality and morbidity shows how these vulnerable populations suffer disproportionately. Likewise, lower educational attainment further compounds these issues, as lower levels of education correlate with less awareness and poorer health outcomes. Socio-economic factors such as occupation and income deepen these disparities, highlighting a systemic failure to address gender and socioeconomic vulnerabilities in environmental health policies. A systematic approach is needed to develop equitable and effective interventions integrating these critical dimensions.

Dissemination of air pollution health impact information at sub-national scale

Effectively disseminating information on the health impacts of air pollution is critical for fostering public awareness and guiding policy advocacy. Despite various mechanisms in place, significant challenges persist. Digital platforms, such as websites and dashboards, offer real-time data and broad accessibility but often fail to reach populations with limited technological proficiency or those in remote areas. Media outlets like TV programs and newspapers play a crucial role in spreading awareness, yet they may not always provide in-depth information or engage diverse demographic groups effectively. Advocacy campaigns and community outreach efforts, while essential, often encounter limitations in coverage and reach, particularly in underserved regions. Early warning systems and specialised organisations can enhance targeted communication but may struggle with data accuracy and timely updates. While the diversity of dissemination methods shows a commendable effort to inform the public, gaps in accessibility, coverage, and engagement highlight the need for more integrated and inclusive strategies to ensure that critical air pollution information reaches all population segments effectively.

GESI targeted air pollution solutions

Integrating gender equality and socio-economic inclusion into air pollution mitigation strategies is essential for achieving effectiveness and equity in public health. Interventions should be targeted considering diverse community needs and challenges. Effective strategies should encompass outreach efforts that ensure marginalised and isolated groups receive vital information and services. For instance, promoting clean cooking technologies can significantly reduce indoor air pollution's impact on women. Additionally, improving healthcare access and infrastructure for low-income communities can alleviate health disparities. Implementing financial incentives and subsidies makes clean energy solutions more accessible while using gender-disaggregated data to design inclusive public transport systems ensures that all demographic groups benefit from cleaner environments. By addressing these varied dimensions, air pollution management can become more comprehensive and equitable, ultimately protecting the health and well-being of all community members.

A collaborative way forward for air quality in south asia

In summary, group of international experts' emphasised addressing air pollution in South Asia requires a multifaceted approach that prioritises inclusivity and health impacts. By focusing on subnational data, expanding air quality monitoring, and integrating non-invasive health biomarkers, we can gain a clearer understanding of the issue. Additionally, enhancing simulations to include gender and socio-economic factors, alongside recognising the economic costs of air pollution, will drive more effective solutions. Regional collaborations, particularly through ICIMOD, will be vital in fostering partnerships and events that advance these initiatives forward. Notably, the recent [Thimphu Outcome](#) – recommendations from the Second Regional Science Policy Dialogue on Air Quality Management in the Indo-Gangetic Plain and Himalayan Foothills (IGP-HF) – proposes 11 actionable steps that emphasize both health and inclusivity, guiding the region towards cleaner air.

For more information contact:

Bertrand Bessagnet

bertrand.bessagnet@icimod.org

Kamala Gurung

kamala.gurung@icimod.org

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International Centre for Integrated Mountain Development
GPO Box 3226, Kathmandu, Nepal
T +977 1 5275222 | E info@icimod.org | www.icimod.org