

A satellite image of Northern India, showing a thick, greyish-brown layer of smog or haze covering a large portion of the landmass. The smog is particularly dense in the northern and central parts of the image, obscuring some of the underlying terrain. The surrounding areas, including the Himalayas in the north and the Indian Ocean to the south, are visible in their natural colors (browns, greens, and blues).

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Image Source: Smog over Northern India. August 2017. Image by NASA Earth Observatory.



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FUTURE PERSPECTIVES ON INDOOR AIR QUALITY

Over the last four decades, the growing proliferation of chemical pollutants in consumer and commercial products, the tendency towards tighter building envelopes, reduced ventilation to save energy and pressures to defer building services to reduce costs and energy, have fostered indoor air quality (IAQ) problems in most of the built-up environments in cities.

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Preliminary reports during the current COVID-19 pandemic have shown the direct effects of long-term exposure to air pollution and the resulting higher mortality rates.

A preliminary study from Harvard University showed that people living in a higher level of air pollution over the past 15–17 years have a substantially higher COVID-19 mortality rate, i.e. one unit increase in long-term average exposure to fine particulate matter ($1 \mu\text{g}/\text{m}^3$) is associated with a 15% increase in COVID-19 mortality rate on average in the analysis.¹ More data and research are needed to study the correlation between COVID-19 and other pollutants.

Architects and designers play a significant role at building inception in determining the long-term health effects of its users.² Current building policies in India are extremely fragmented in terms of recommending IAQ standards. While significant strides have been taken towards implementing 'green building' norms and policies, IAQ remains a serendipitous result rather than a design objective through these norms. This article recommends improving IAQ through building policies via a three-fold approach.

First, in terms of education, improving awareness and active participation in the design fraternity can go a long way to effectively identifying and curbing poor IAQ. Building health is seldom fully integrated into the design scheme, and most infrastructure is seen as an 'add-on' serving the purpose of affordability or building standard certifications. This kind of short-sightedness often leads to vulnerability of building infrastructure, which inadvertently causes long-term health problems for its occupants.

Second, there is ample scope for better regulations, as the fragmented approach of IAQ assessment has led to overlapping standards that are perceived more as design obstacles, and often lead to poorly-planned indoor spaces. Better regulations and reforms that can be localised and adapted to the local climate and context would be crucial in alleviating design hindrances, as well as catering to occupancy health.

Third, local and state-level subsidies through support from local and state legislations and governments would help to inspire innovation. As a case in point, such examples include KfW subsidies in Germany³, state incentives across the US⁴, BCA Green Mark incentives in Singapore⁵, etc. Besides these three approaches, a general inter-disciplinary approach to design is also crucial towards ensuring better indoor spaces. Planning for health and the efficient use of resources means creating a more holistic collaborative approach towards building engineers and medical experts.

<https://newdialogues.com/on-indoor-air-quality/>

1. Wu, Nethery, Sabath, Braun, Dominici, Department of Biostatistics, Harvard T.H. Chan School of Public Health, Boston, last updated on April 5, 2020, "Exposure to air pollution and COVID-19 mortality in the United States" <https://bit.ly/3fveuDI>
2. Phillips, Scott, "Indoor air quality: Is it an issue for architects?", Semmes, Bowen & Semmes, Presented to Maryland Society AIA, September 28, 2001, III, <https://bit.ly/2IbnDWD>
3. KfW, "Energy-efficient Construction, Home Ownership and Baukindergeld", Accessed on December 4, 2020 <https://bit.ly/36EAHNy>
4. Clean Energy Road Map, "State and Local Green Building Incentives", <https://bit.ly/3mF3CXv>
5. BCA, "Legislation on Environmental Sustainability for Buildings", Accessed on December 4, 2020, <https://bit.ly/33IAInn>