Tackling Air Pollution: Empowering Pakistan's Urban Residents with Air Quality Forecasts

The air quality challenge in Pakistan

Health Impact

7 million lives at risk: Air pollution leads to millions of premature deaths worldwide each year (WHO).

Rise in respiratory and cardiovascular illnesses as well as cognitive dysfunction—especially among vulnerable groups such as children and the elderly.

An average Lahori can live 7 years longer if pollution levels are brought down to safe standards.

Economic Impact

Pollution costs developing countries **1-2%** of their GDP—driven by higher healthcare costs and lower labor productivity.

In South Asia alone, productivity losses from pollution surpass

$95 BILLION ANNUALLY

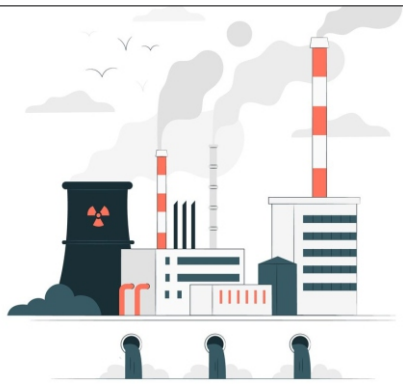
Air quality forecasts can help residents

- Avoid hazardous air
- Plan avoidance and take precautions
- Limit time spent outdoors

How research assessed demand for air quality data in Lahore

Two IGC-funded studies explored key questions through a Randomised controlled trial (RCT) sampling roughly 1000 residents in a working-class neighbourhood of Lahore.

- Do urban residents value air pollution forecasts?
- Can training improve their ability to predict pollution?
- How do forecasts impact avoidance behaviour such as mask-use and outdoor time?
- Do residents value air pollution information from government sources less than information from private sources?



Design

RCT-1

Control Group received no intervention, **Forecast Group** received daily SMS forecasts for 8 months, **Training Group** received in-person training on forecasting and **combined group** received both SMS forecasts and training.

RCT-2

Government Group received daily SMS forecasts attributed to the government. **Private Group** received daily SMS forecasts attributed to a private citizens group.

Key Findings

Residents' willingness to pay

- around PKR 93 for 90 days of forecasts— equivalent to 60% of mobile internet costs or 20% of a day's wage.
- increased for N95 masks by 5% of the retail price and reached 70% of the retail price, suggesting modest subsidies could significantly boost mask adoption.

Changed time use based on pollution levels with forecasts

- Participants spent 16% more time outdoors on low-pollution days and 3% less on high-pollution days with changes most significant for families with children.

Source of air quality information did not affect demand

- Willingness to pay for forecasts unaffected by whether citizens' believe the source is government or private even when government quality is perceived to be a little lower than private

Policy implications

- preference for continuous, reliable information over perceived accuracy.
- potential for scalable services to improve well-being across the city.

Based on research study titled: Belief formation, signal quality, and information sources: Experimental evidence on air quality from Pakistan by Sanval Nasim, Arman Rezaee, Matthew Gibson and Shotaro Nakamura