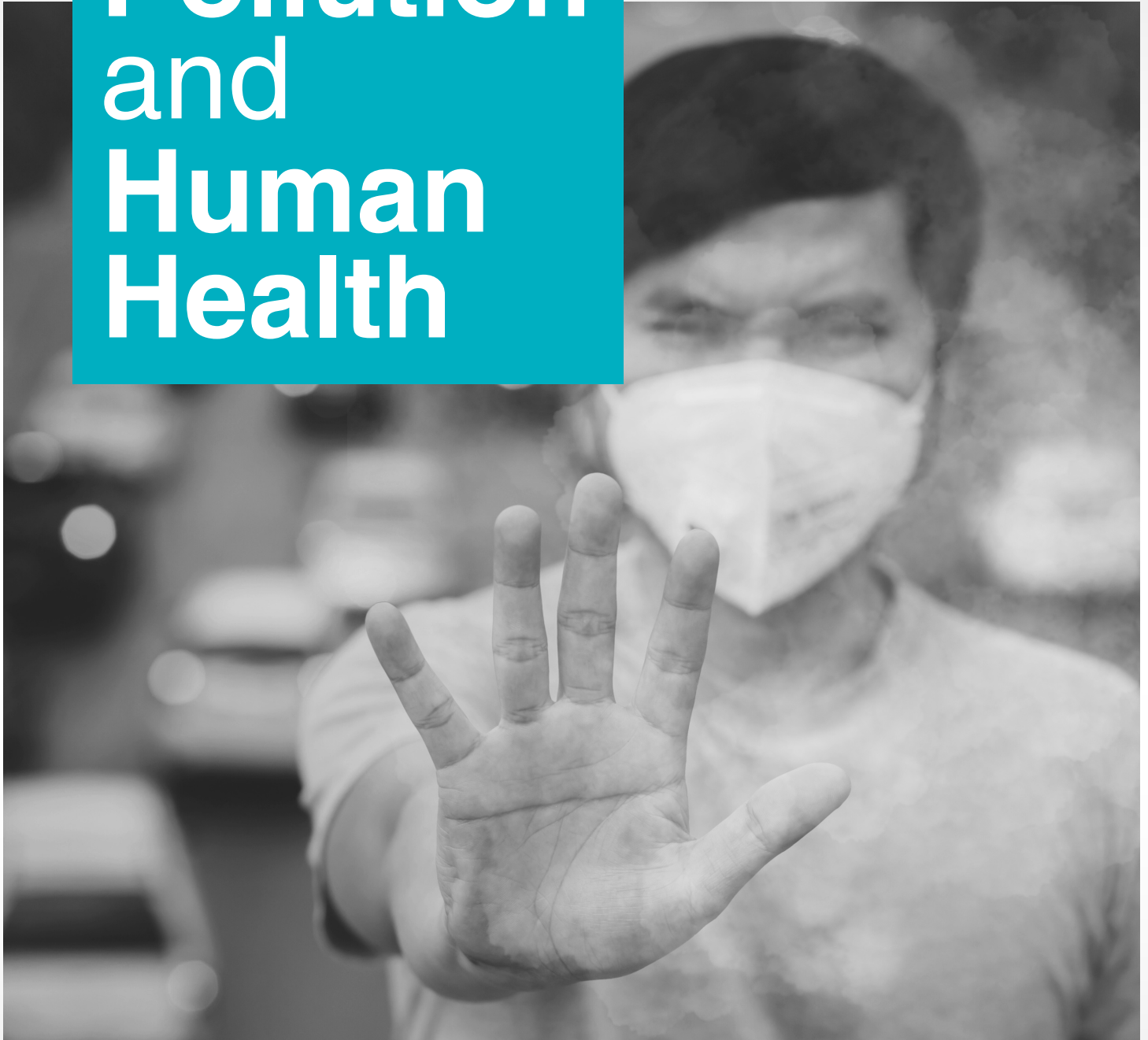


A Study of People's  
Perception of

# Air Pollution and Human Health



## Jharkhand

Air pollution has recently received greater attention due to its detrimental effect on human health. The quality of air plays a significant role in the well-being and health of humans. Traffic congestion may increase vehicular emissions that contribute to outdoor air pollution, especially in the urban areas. Traffic-related air pollution is a major contributor to outdoor air pollution in the urban settings, producing significant amounts of carbon dioxide (CO<sub>2</sub>), particulate matter (PM), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs) (Zakaria, et. al., 2019).

The continuous data that is collected through the monitoring stations installed by the Central Pollution Control Board have found higher levels of PM<sub>2.5</sub> and PM<sub>10</sub> concentrations in the air of Bengal with the effects of traffic congestion. Biomass burning activities and ultraviolet radiation from sunlight also contributed significantly to high concentrations of PM<sub>10</sub> and ozone particularly from the tropics region.

United States Environmental Protection Act (USEPA) classifies particle pollution mainly into two different sizes based on their predicted penetration capacity into the lung; coarse particulate matter (PM<sub>10</sub>) and fine particulate matter (PM<sub>2.5</sub>).

Coarse particulate matter is a particle with an aerodynamic diameter of 10  $\mu$ m whereas fine particulate matter with an aerodynamic diameter of 2.5  $\mu$ m (USEPA 2016). This type of particulate airborne will be deposited into the head region of the airway when inhaled due to its bigger size compared to fine particulate matter which will be deposited further into the tracheobronchial region (Brown, et. al., 2013). The pollutant is generally emitted from vehicle components such as brakes and tires as well as suspension of road dust in urban areas.

**Human perception** plays a fundamental role in people's response to preventive measures (Pantavou, et. al., 2017). People's behaviours and responses to preventive measures depend on the way they perceive environmental stimuli, therefore to protect public health through adaptation measures it is significant to consider people's perception and behavioral changes. The sense of air quality varies among groups and individuals (Zakaria, et. al., 2019). Our study examines traffic-related air quality perception and its effect on human health among active commuters in the state of West Bengal. This study on perception suggests regulation of the transportation system in the state and reducing the risk of adverse health effects.

## OBJECTIVE AND METHODOLOGY OF THE STUDY



**This study aims to estimate people's opinions on how air pollution is causing a health threat to human life.** Primary data is used to conduct the study from the common masses, who commute on a regular basis, who buy groceries, drive auto rickshaws, the traffic police, the security guards, and the street vendors. All attempts were made to capture the response from men and women who get exposed to ambient air pollution regularly. The survey was conducted on a total of **1250 respondents from Jharkhand by SwitchON Foundation in 2022**. Out of which, **680 respondents** were from the capital city of **Ranchi**.

## QUESTIONS WERE CANVASSED ON THE FOLLOWING TOPICS

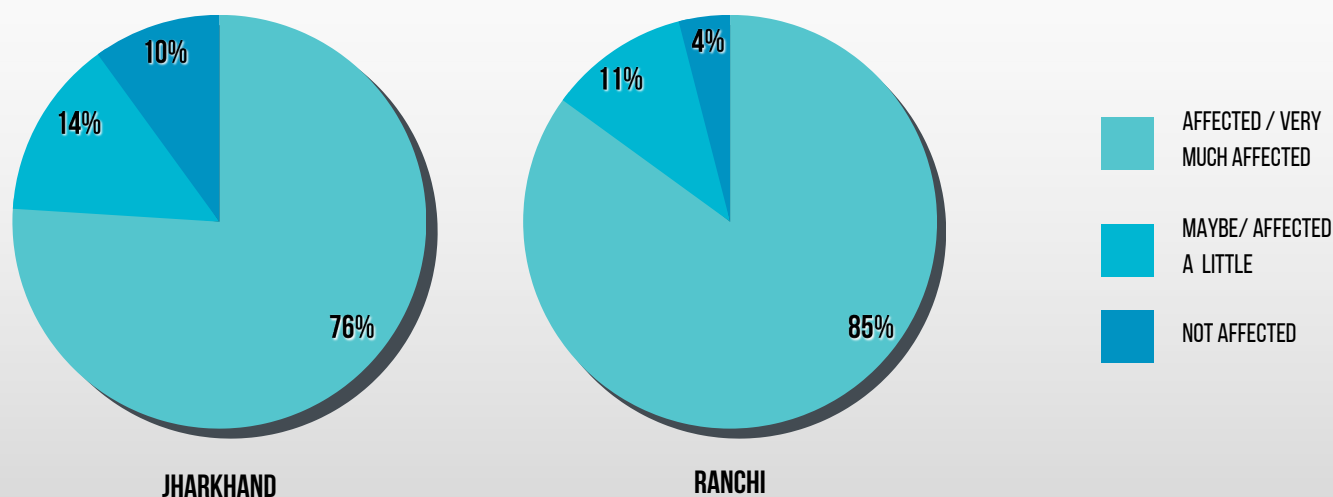
- Do you feel air pollution is causing a problem to you and others around you?
- What factor(s) according to you are the largest factors of air pollution?
- What according to you, the government policymakers and other stakeholders should do to combat the rising air pollution?

## FINDINGS OF THE STUDY

**1250 people** across the state of Jharkhand were asked if they feel that air pollution is causing any threat to their health. The responses were clubbed into 3 categories based on the degree-

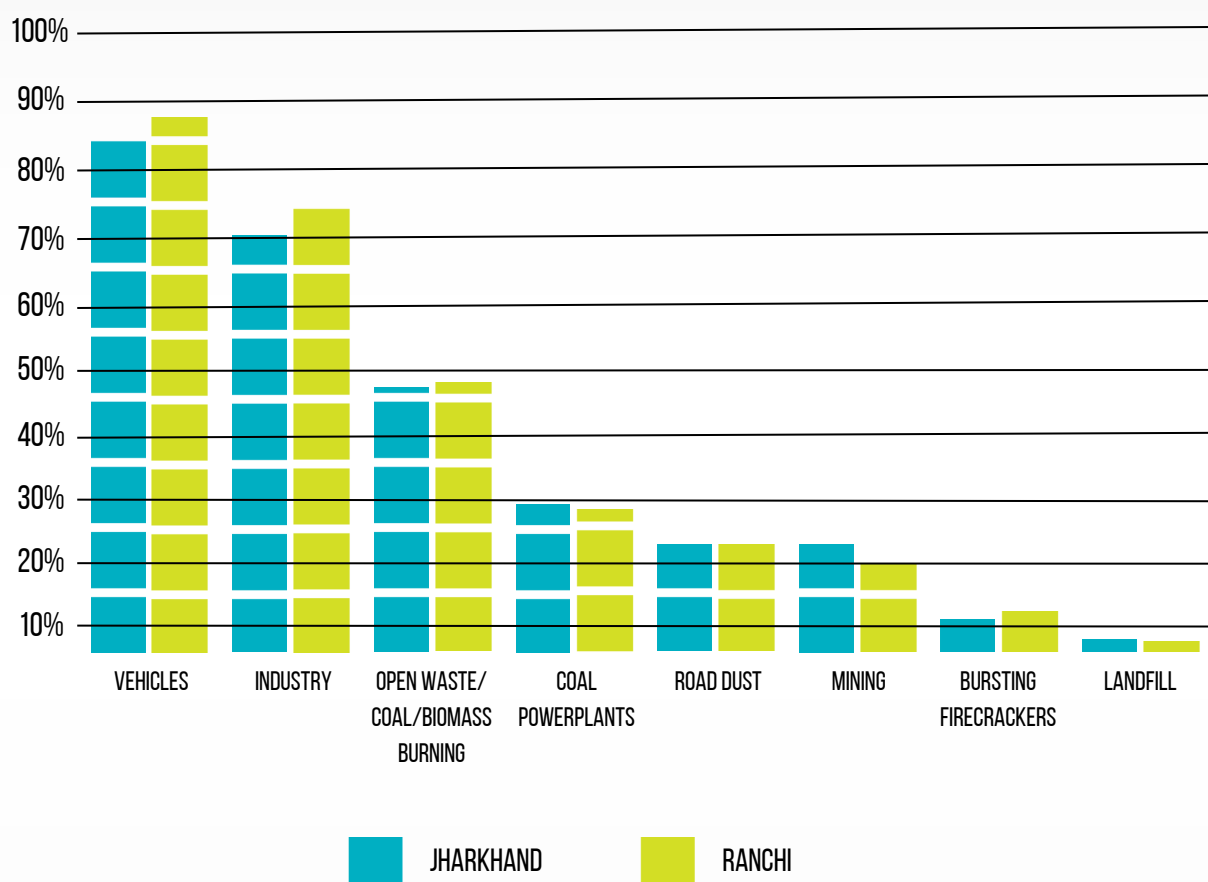
- Affected/ very much affected,
- Maybe/ affected a little, and
- Not affected

### PEOPLE ASSOCIATING AIR POLLUTION WITH HEALTH THREAT ( 2022 )



- Several people (76% in Jharkhand, and 85% in Ranchi) in the survey said that air pollution is causing a threat to human health.
- People living in rural areas said human health is affected a little or not much affected due to air pollution, whereas people living in the heart of the city said air pollution is causing serious damage to health.

### REASONS OF AIR POLLUTION ( PEOPLE'S PERCEPTION )

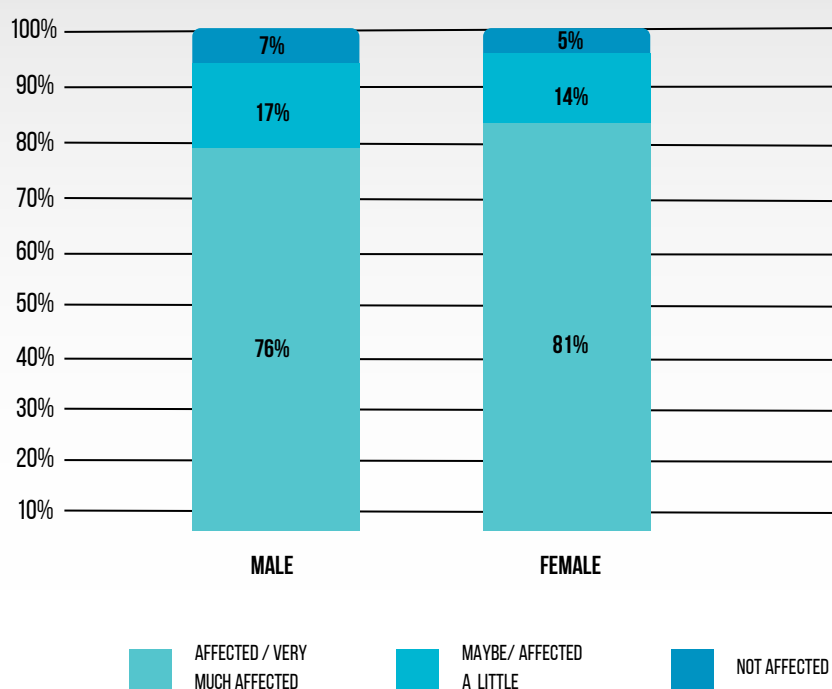


During the survey, the respondents were asked to list at least 3 sources of air pollution. The responses are ranked and graphically represented.

- 85% of residents of Jharkhand, and almost 80% of respondents surveyed in the city of Ranchi said vehicular emissions are the major pollution-causing factor, followed by industries and open waste burning.
- Almost 50% of the respondents listed open waste burning to be a responsible factor of air pollution.
- The rising number of private vehicles in the study region is clearly increasing the pollution level of our country.



## AIR POLLUTION: A THREAT TO HUMAN HEALTH LOOKING THROUGH GENDERED LENS



- A large majority of people said in the survey that air pollution is causing a threat to human health.
- Separate analysis was done for both male and female respondents, where it is seen that everybody considered air pollution to be a threat, irrespective of their gender.

The respondents were also asked about their expectations from the government and policy-making bodies to control the rising pollution levels. Their statements are listed below-

## EXPECTATIONS FROM GOVERNMENT/ POLICYMAKERS AND OTHER STAKEHOLDERS BY THE CITIZENS OF JHARKHAND



### • AWARENESS GENERATION

1. Educate the common mass to practice afforestation.
2. Create public awareness about the detrimental effects of air pollution on human health (respiratory health, and lifestyle diseases)
3. Educating children and youth on protecting our environment and teaching them ways to keep it clean and green.
4. Imposition of fines and penalties on citizens for breaching government rules and regulations
5. Providing funds to schools and NGOs by the government to conduct workshops on keeping the environment clean.

### • MOBILITY AND RENEWABLE ENERGY

1. Active promotion of cycling, walking carpooling, and public transport use over private cars in urban areas and shift to electric cars. Create green spaces in cities to help reduce pollutants.
2. Government should make separate zones for cycling and pedestrians so that people can choose to walk or cycle
3. Incentivize solar cells to make them pocket-friendly
4. Active promotion of renewable sources of energy

### • INDUSTRY AND CONSTRUCTION

1. Reduction in industrial wastes and air dust
2. Imposition of stringent laws by the government to promote the use of scrubbers and catalytic converters in industries
3. Ensuring that industries obey the pollution control benchmarks

### • WASTE MANAGEMENT

1. Reduction of plastic wastes, particularly single-use plastics
2. Prevention of open burning of coal, fossil fuels, and waste
3. Promote segregation of waste at the household level (proper segregation of medical wastes, vegetable waste, and electronic wastes)

## CONCLUSION-

Our study has revealed that **both males and females** across Jharkhand have considered **air pollution to be a threat to human health**. People perceive the **rising number of vehicles on the roads** to be the **primary cause of air pollution**. During the surveys, they expressed their opinion of the active promotion of **cycling, walking, carpooling, and shifting to electric vehicles** as measures to control air pollution. The respondents want the government to **create walking zones and cycling paths** on the roads for active promotion of cycling and walking so that people cycle for livelihood and not for lifestyle. The common mass wants the government to impose fines and penalties on citizens who violate pollution regulating laws, related to vehicles, industries, and waste. People have expressed their views to **create awareness among children, youth, and the common mass on environmental protection** through workshops and training sessions. Therefore, these strategies should be considered by the government, non-government organisations, and training schools to advocate and train people on cleaning the environment.





## REFERENCES-

- Brown JS, Gordon T, Price O and Asgharian B 2013 Thoracic and respirable particle definitions for human health risk assessment. Particle and Fibre Toxicology 10 p. 1-12
- United States Environmental Protection (USEPA) 2016 [accessed online: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#PM>]
- Pantavou K, Lykoudis S and Psiloglou B 2017 Air quality perception of pedestrians in an urban outdoor Mediterranean environment: A field survey approach Science of the Total Environment 574 p 663–670.
- Zakaria, M. F., Ezani, E., Hassan, N., Ramli, N. A., & Wahab, M. I. A. (2019). Traffic-related air pollution (TRAP), air quality perception and respiratory health symptoms of active commuters in a university outdoor environment. In IOP Conference Series: Earth and Environmental Science (Vol. 228, No. 1, p. 012017). IOP Publishing.



1A, D. L. Khan Road,  
Kolkata – 700027

     @SwitchONIndia

SwitchON Foundation is a leading, award-winning not-for-profit organization, established in 2008 with a focus on Environment Sustainability and Equal Opportunities. SwitchON is presently working in 10 states across India, through its two programmes: Empowering Energy, Water, Agriculture Nexus (EEWA) and Clean Air & Sustainable Cities (CASC). We emphasise on creating a networked ecosystem and taking a practice of policy approach, to spearhead and support interventions, enterprises and networks to reduce social inequalities and mitigate climate change.