

# State of Delhi's Air

# 2020

## Summary Report



**EnvEco**  
**LOGIC** Spearheading Sustainable Growth

Partners





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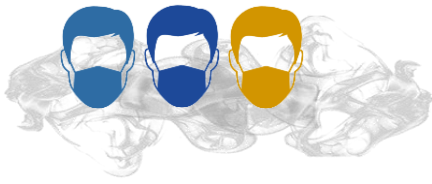
**Purpose:** State of Delhi's Air 2020 is purely a primary research (survey) based study. The purpose is to educate government, organisations working in the field of curbing air pollution and researchers on how people, the largest stakeholder group perceives various dimensions of air pollution problem in Delhi in the context of their preparedness and involvement in dealing with the crisis.

**Partners:** Envecologic was supported by TERI School of Advanced Studies as the Knowledge Partners, UN Sustainable Development Solutions Network (SDSN) Youth – South Asia as the Sustainability Partners, United Residents Joint Action for Delhi (URJA) as the Citizens Partners, and 180 Degrees Consulting as our Outreach Partners.

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# Preface

The State of Delhi's Air 2019 report is a public perception study analyzing the impact of air pollution on the lives of people living in Delhi and how they are dealing with it, besides analyzing factors driving their involvement to manage the crisis. The study is based on insights drawn from a survey of 5,000 respondents conducted across the length and breadth of Delhi covering youth, middle and old age brackets, making it the largest survey in this space till date on the topic.

The state of air pollution in Delhi has been leading us all into a public health emergency. It won't be wrong to say that air pollution is a great leveller because it is sparing no one. Doctors acknowledge that Delhiites, especially children, are increasingly falling prey to lung related ailments due to exposure to poor air quality. A Delhi based environmental think tank has even noted that Delhi loses 80 lives everyday to air pollution prematurely, on average. If the problem is so grave, then it should have turned into large scale movement or revolution, involving government and citizens alike, against air pollution. But that has not been the case so far. There is still a major disconnect between various policies and people, in terms of ease of implementation or even awareness amongst masses. No regulation, policy or any solution as such can succeed without active public participation as they form the largest and the most important stakeholder group. Without the cooperation of the masses, every action plan is pre-destined to fail. Therefore, the first stage of solving the crisis needs to be to estimate the public's understanding of the situation and preparedness, which is essentially the motivation behind the study.

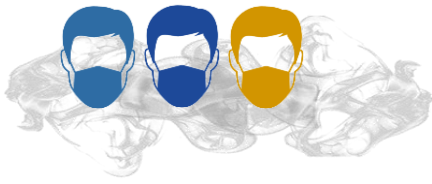
This survey-based study, thus, aims to capture insights in terms of people's perception of level of urgency attached to air pollution, preparedness to deal with it, level of awareness of regulations/laws, and factors limiting people's active involvement in the process of managing air pollution at their level. While the problem cannot be tackled overnight, the study also captures how people are adapting to the crisis to safeguard their health.

These insights will bridge the gap in understanding factors that will directly aid the newly elected Government in Delhi and other organizations working at the grassroot level to deal with both mitigation and adaptation aspects of air pollution. By understanding factors driving people perception towards air pollution, the efforts can be further streamline and reprioritized.



# Highlights at a Glance

- 65% of respondents reckon that Delhi's air quality has reached a state of health emergency. About three-quarters of these people comprise of the youth that understands what is at stake and what this means for their future.
- 94% of respondents have suffered from at least one ailment in the past one year which is either known to be caused or aggravated by Air Pollution. One out of every two respondents experienced frequent coughing & wheezing or dry throat and itchy eyes.
- Almost 95% of those respondents with child/ren less than 10 years of age have suffered from lung related issues such as throat congestion for long periods, wheezing or breathing problems, and end up consuming frequent doses of antibiotics. Only 15% of these think air pollution in Delhi has led to a state of health emergency.
- 60% respondents are not convinced that indoor air pollution can be as bad as outdoor air pollution, even though most spend more than 80% of their day indoors. Majority of these are, however, convinced that outdoor air quality is a major concern.
- Only 26% use pollution prevention aids like masks or air purifiers actively. For the remaining three quarters respondents, infeasibility to use them all the time and being unsure about benefits emerged as top deterrents.
- Three out five respondents were not aware of the most important policies in place to address air pollution in Delhi. Most popular policy, i.e. diesel and petrol vehicle to be de-registered after 10 & 15 years, itself is not known to 40% of all respondents. One in every two respondents was not aware of penalty on waste burning.
- Nearly 40% respondents confessed their unwillingness to abide by the odd-even policy and over 24% respondents expressed unwillingness to switch from diesel cars to more eco-friendly options. Installation of solar rooftops was the least appealing idea amongst respondents as a means to reduce dependency on thermal power plants. Using public transport emerged as the most preferred option by 80% respondents.
- Nearly a fifth of all respondents expressed that they would not pay anything for cleaner air, most of who believed that it is government's responsibility to provide it. The average per capita willingness to pay to access cleaner air was Rs 5,822, about 1/4th of the estimate economic burden on every Delhiite.
- 45% respondents spent on medical treatment for ailments typically caused by air pollution, which is reactive spending. Masks and air purifying plants are the next most purchased items to deal with air pollution. Interestingly, 14% respondents acknowledged that they spent on traveling out of Delhi during peak pollution period.



# Context

Air pollution is the fifth largest cause for premature deaths in the Indian Subcontinent. This number is particularly critical in Delhi's context, considering Delhi is counted among the most polluted cities in the world. Particulate matter (PM 2.5 & PM 10 for example) that are released into our environment from vehicular emissions, construction activities, etc. are a major contributor to increasing cases of pulmonary diseases, heart diseases, lung cancer, and even deaths.

The magnitude of the problem has only worsened over years, and it's imperative to tackle it. Not only is exposure to toxic air resulting in a health crisis, it has severe financial implications as well. As per a World Bank report, India's losses from air pollution have contributed directly to the economic burden. To put things in context, India has lost 560 billion dollars between 1990 to 2013 in workforce disruptions and the severe health crisis caused by worsening air toxicity.

According to a study by Indian Institute of Technology, Bombay, sick workforce in the country is an important parameter to measure the impact of air pollution, as it results in reduced productivity, which can be estimated looking at Restricted Activity Days (RADs) and no. of medical visits. In 2015 alone, Delhi witnessed 29 million cases of Restricted Activity Days (RADs), and 0.12 million visits to the emergency room for respiratory issues. The condition is so poor, that postings to Delhi are now more frequently being looked upon as 'hardship postings' and are among the least preferred options among foreign nationals (including the diplomatic community).

Given the current state of Delhi's air, nearly 20 million people are staring at incalculable risks of health afflictions, and compromised

lifestyles to varying degrees. However, the current scale of efforts is far from what the scale of problems demands. Even with respect to existing policies, a number of factors render them ineffective. Lack of awareness about these policies in the public, limited communication with respect to their efficacy and applicability are some of the reasons for their failure.

Considering these factors, it becomes critical to capture the levels of people's preparedness towards dealing with the current air pollution crisis – their level of awareness of existing policies, how they impact them, and difficulties (if any) in adhering to them.

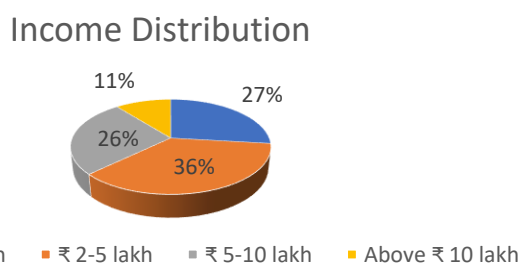
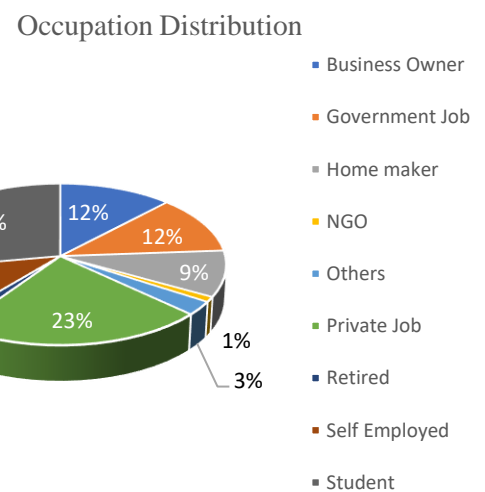
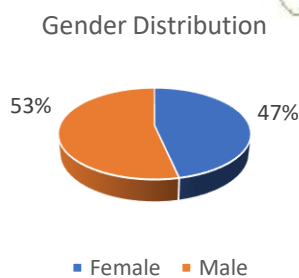
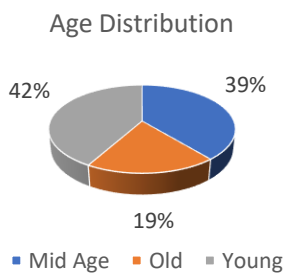
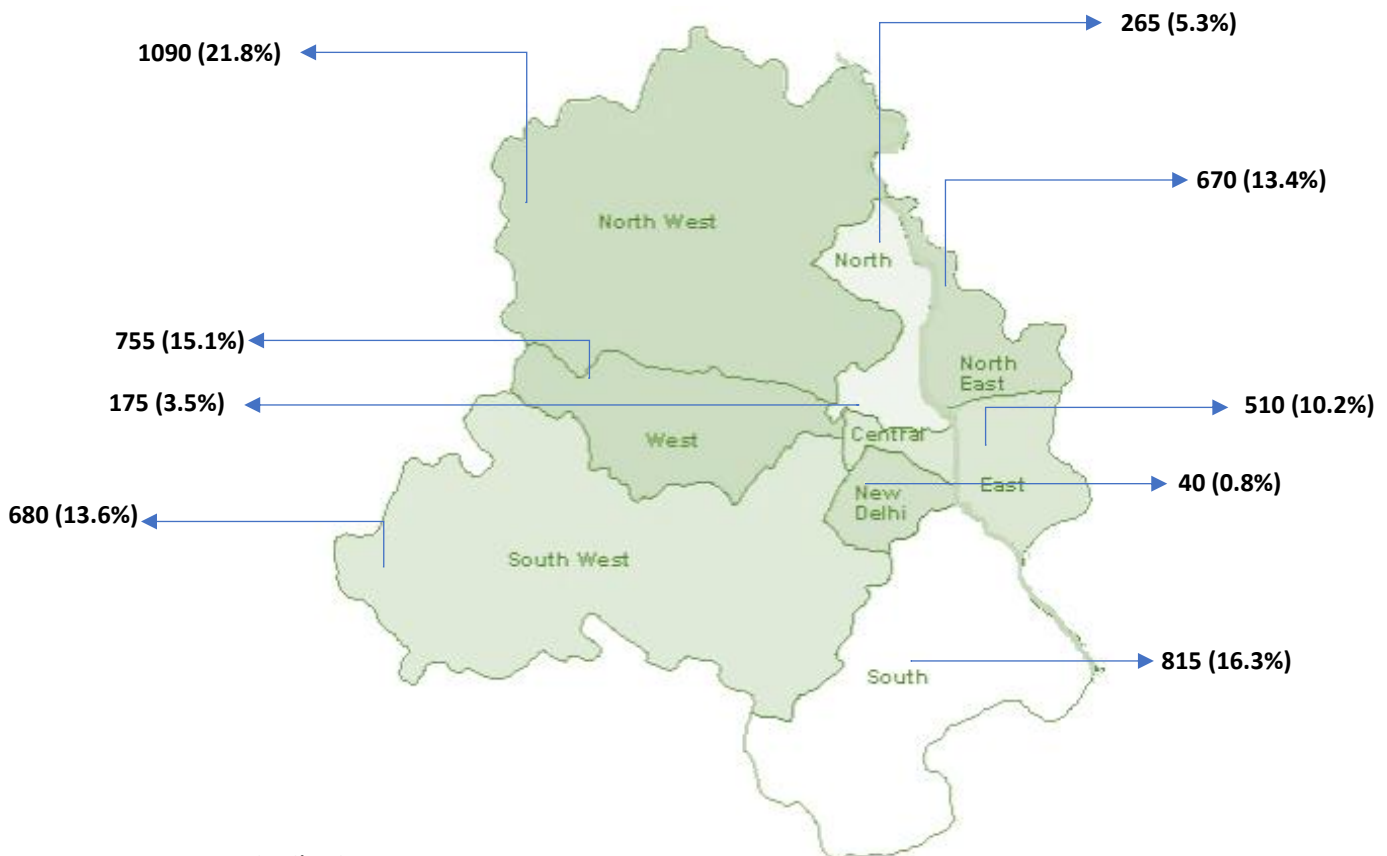
To summarize, the report aims to study the level of priority the public places on air pollution, and how prepared are they to protect themselves from its compromising impacts on their lives.





# Survey Sample

Following a rigorous statistical procedure using the outcomes of the 2011 Government of India population Census, a sample of 5,000 respondents was determined. Making sure that the survey outcomes represent the voice of Delhi, proportionate sub-samples were identified from all districts of Delhi keeping the age and gender composition intact. The survey was conducted through questionnaire filled using responses from face to face interaction with all the respondents in 2019.



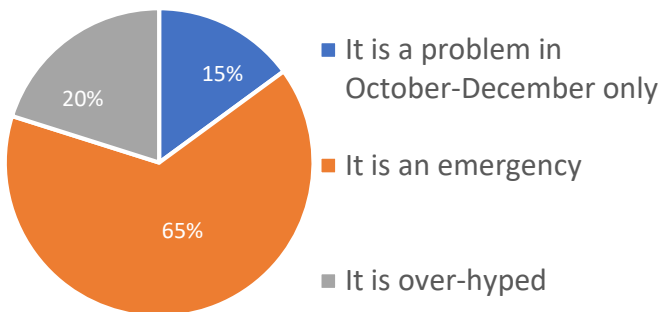


# Results & Discussions

## Level of urgency Delhiites attach to Air Pollution crisis

*In context of Air Pollution, which of the following do you agree with?*

- It is an emergency
- It is over-hyped
- It is a problem in October-December only



According to the survey, 65% of respondents accepted that Delhi's air quality has reached a state of health emergency. 70% of these people, comprise of the youth that understands

what is at stake and what this means for their future.

Furthermore, 15% of the population is convinced that the deteriorating levels of poor air quality only pose a problem during October to December period, coinciding with stubble burning, Diwali and winter season.

Lastly, we see that 20% of the population consider the whole air pollution crisis to be overhyped and blown out of proportion. This section is the most vulnerable to the effects of air pollution as they are least likely to take any kind of precautionary measures for the same.

## Correlating ailments with Air Pollution

*Which of the following ailments have you suffered from in the last 1 year?*

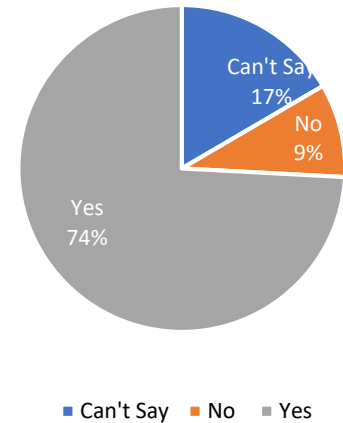
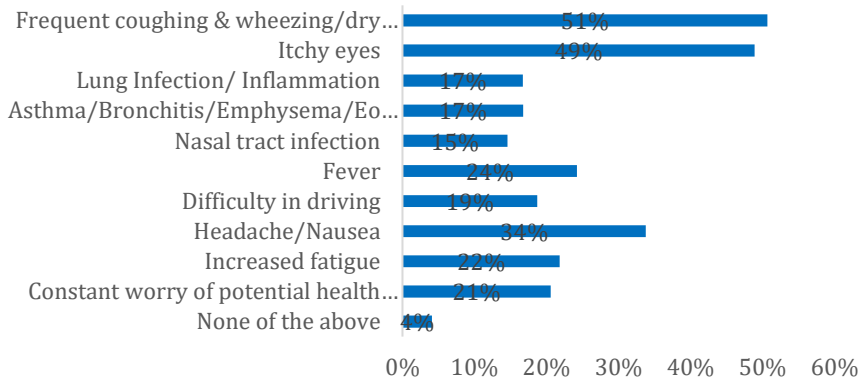
*Frequent coughing & wheezing/dry throat | Itchy eyes | Lung Infection/ Inflammation | Asthma/Bronchitis/Emphysema/Eosinophilia | Nasal tract infection | Headache/Nausea | Increased fatigue | Constant worry of potential health impact | None of the above*

*Do you believe one or more symptoms mentioned above were caused due to air pollution?*

- Yes
- No
- Can't say



## State of Delhi's Air 2020



The aim of the set of two questions is to capture whether people are able to identify the health impact of air pollution.

The result shows that around 95% of the respondents acknowledged that they have suffered from at least one of the listed ailments in the last one year. 51% respondents complained of having experienced frequent coughing, wheezing or dry throat, when especially when outdoors and in peak pollution seasons. Nearly the same number (49%) of respondents experienced itchy eyes. This translates into one out of every two people from the survey sample

experiencing one of the aforementioned difficulties.

74% of the respondents were able to establish a connection between the two. Some responses also acknowledged that a common cold or throat infection took much longer to cure than it would a few years ago. 17% of the responses were 'can't say' as they were not sure whether to attribute the deteriorating health to air quality and 7% of the population were convinced about no correlation between bad air quality and falling sick.

## What about the most vulnerable stakeholder - our children?

**Do you have children less than 10 years of age?**

- Yes
- No

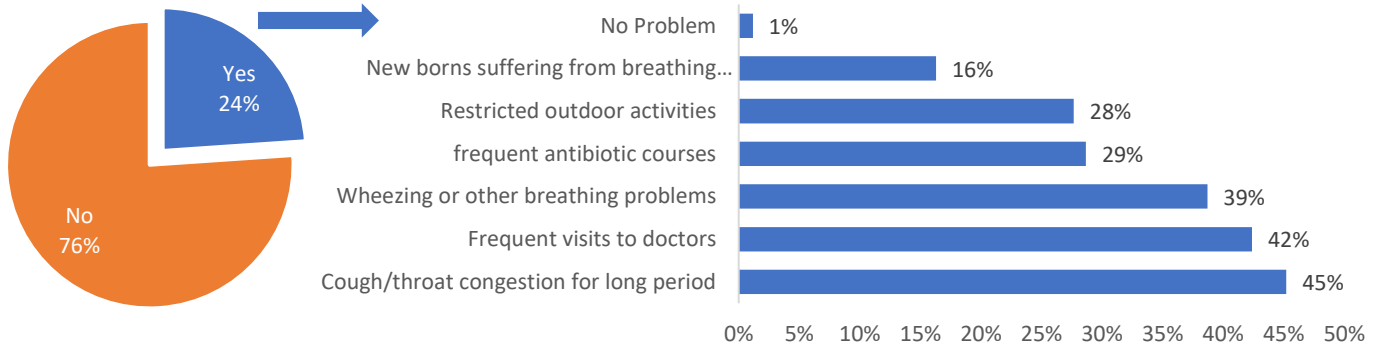
**If your answer to the above is 'yes', then which of the following apply to your children?**

- Cough/throat congestion for long period
- Wheezing or other breathing problems
- frequent antibiotic courses
- Frequent visits to doctors
- Restricted outdoor activities
- New borns suffering from breathing problem/eye irritation/cough/fever/skin rashes
- No problem





**Respondents with Children less than 10 yrs**



This question is addressed to parents living in Delhi who have children under 10 years of age.

According to the survey, 24% of all 5,000 respondents have children less than 10 years of age. 45% of these respondents noted that their children suffered from coughing and throat congestion for long durations. 39% of the sample sub-set had their children suffer from wheezing and breathing issues. 16% of these parents confirmed that their newly born children suffered from breathing issues, eye irritation, coughing, fever or skin rashes, especially during high pollution seasons.

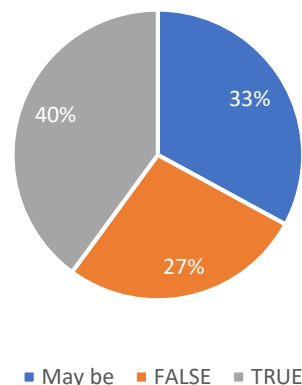
When these responses were mapped against the question on perception of urgency level in the context of air pollution, only 15% parents acknowledged that it is indeed a state of health emergency, and expressed worry for their children's health. It is a concern that nearly 60% of these respondents feel that air pollution is only an October-December problem, which may impact the level of preventive care extended to their children. Worse still is the response of over quarter people who, in their earlier response, noted that air pollution problem is over-hyped.

## Are you pollution-proof indoors?

**Indoor air pollution can be as harmful as outdoor Air Pollution, if not more.**

- True
- False
- May be

People, on an average, spend more than 80% of the day indoors, whether office, home, schools or colleges. Level of awareness in this case is crucial to determine corrective actions to limit exposure. 40% of the respondents subscribe to the fact that indoor air pollution can be as bad as outdoor air pollution. However, nearly 60% people are not convinced that it could be the





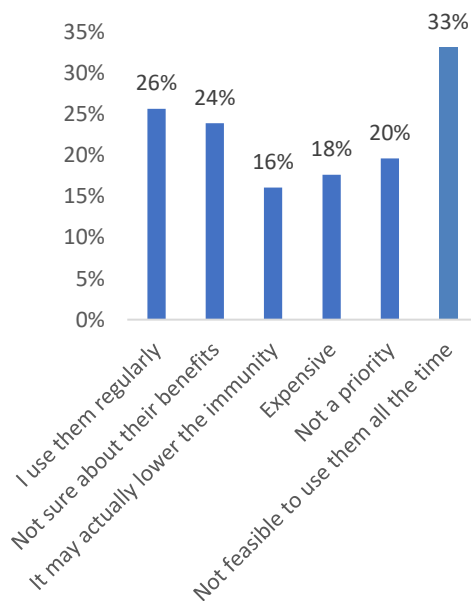
case. While considerable number of indoor air pollution sceptics were across all income groups pointing towards lack of awareness, majority respondents earning in the lowest income bracket (earning Rs 2 lakh or less annually) did not agree to indoor air pollution being a

problem. This can be correlated with the fact that air quality does not feature in the top subsistence-based priorities for them. Interestingly, almost 60% of indoor air pollution sceptics happen to attach high level of urgency to outdoor air pollution.

## First line of defense for people: Masks & Air Purifiers

### What prevents you from using masks and air purifiers regularly?

- I use them regularly
- Not sure about their benefits
- It may actually lower the immunity
- Expensive
- Not a priority
- Not feasible to use them all the time



In the absence of any other technique, air purifiers and masks have emerged as the as immediate protection aids against the increasing levels of pollution in Delhi as the first line of defense. Thus, the question singles them out to understand what people perceive of masks and air purifiers.

As established from the responses of the first question, most Delhiites perceive air pollution in the city to be at

emergency levels. Even then, the survey records only 26% respondents indicating that they use masks or air purifiers regularly.

Nearly three quarters of all respondents don't depend on these preventive aids. 33% of the respondents, belonging to this lot, do not find it feasible to use while believing that exposure to bad air is inevitable. About a quarter of all respondents confessed that they are not sure the benefits or effectiveness of these products. Most of these people feel that these alternatives are marketing gimmick and that the problem is either too severe or too trivial to pay heed to these aids.

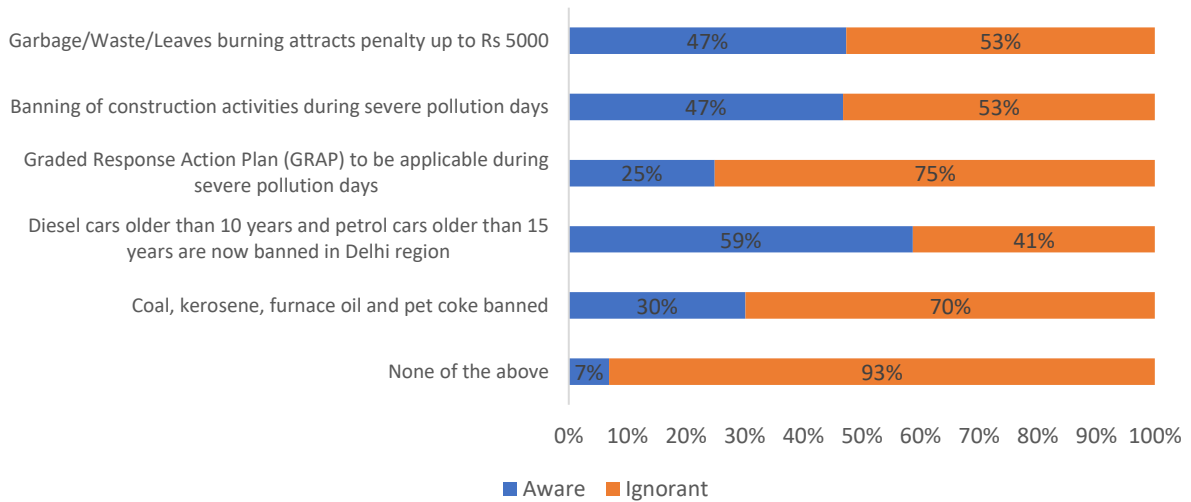
20% of the respondents believe that using pollution aids is not a priority. 18% of the population thinks that these are too expensive to indulge in. 16% of the respondents are convinced that using these alternatives will actually lower their immunity in the longer run. This would result them in falling sick far more frequently than before causing more of an issue.



## Policy-people disconnect?

**Which of the following government initiatives on air pollution are you aware of?**

- *Garbage/Waste/Leaves burning attracts penalty up to Rs 5000*
- *Banning of construction activities during severe pollution days*
- *Graded Response Action Plan (GRAP) to be applicable during severe pollution days*
- *Diesel cars older than 10 years and petrol cars older than 15 years are now banned in Delhi region*
- *Coal, kerosene, furnace oil and pet coke banned*
- *None of the above*



Government policies or initiatives are only successful if people are aware of them at the very least. The awareness is likely to result in greater collaborative government-people force in efforts towards curbing air pollution.

This question helps understand the problem at the grass root level and plausibly address the inability to bring change despite many efforts by the government.

The survey results show that out of the five most popular policy measures, 3 out of 5 people, on an average, do not even know that policy measures exist to tackle air pollution.

The fact that use of coal, kerosene, pet coke etc. are banned in Delhi and graded response action plan (GRAP), Delhi's emergency response plan, are not

known to 70% and 75% respondents, respectively.

There is a ban on construction activities during the health emergency and garbage burning has a penalty of Rs. 5000 are also not known to over 50% of the respondents.

The most popular policy, i.e. banning of diesel cars older than 10 years, itself is not known to about 40% of the respondents.

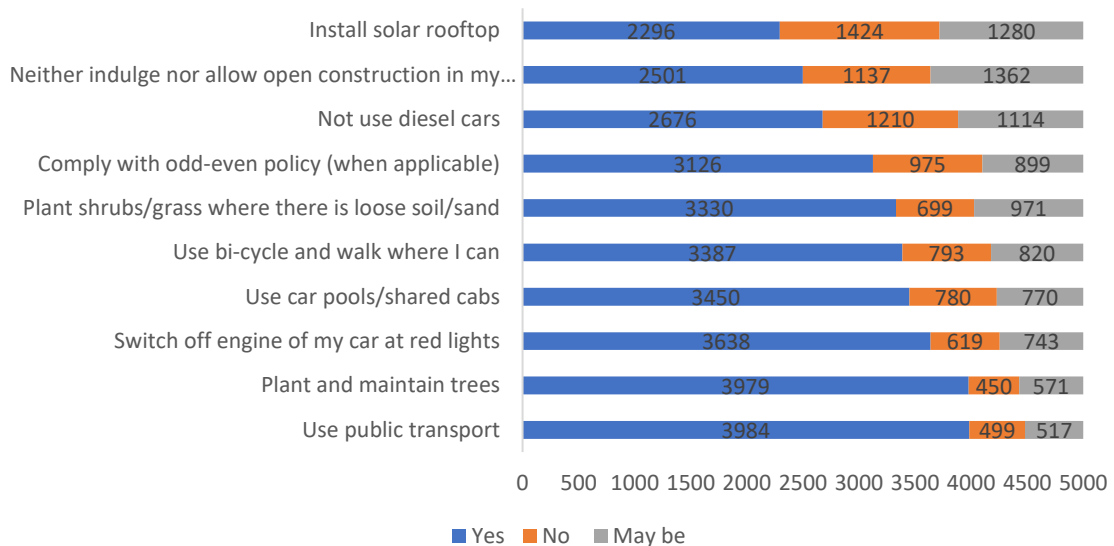
The results clearly indicate that these people need to be made aware of the policies and measures in place. The failure or success of any government initiative is solely dependent on the public's response to it. Due to lack of awareness if the public doesn't cooperate with the authorities, they are setting themselves up for failure.



## Gauging people's willingness to participate in making Delhi pollution-free

**What is the willingness with which you can comply with the following:**

- Use public transport
- Comply with odd-even policy (when applicable)
- Use car pools/shared cabs
- Use bi-cycle and walk where I can
- Neither indulge nor allow open construction in my neighborhood
- Plant shrubs/grass where there is loose soil/sand
- Switch off engine of my car at red lights
- Install solar rooftop
- Not use diesel cars
- Plant and maintain trees



The survey question gives an exhaustive set of solutions to the respondents to express their preference or willingness to abide by or adopt. It captures initiatives the area where people are willing to take up in order to curb air pollution.

Use of public transport and planting (and maintaining trees) emerged as the top two ways preferred by almost 80% of respondents, in which they can contribute to reduce air pollution. Next in the rank are switching off engines at

the red light, using car pools, using bi-cycles for short distances, which 65-70% people expressed preference for.

The least popular solution is solar installation amongst Delhiites as indicated by the fact that only 46% of all respondents expressed their preference, lowest in the order.

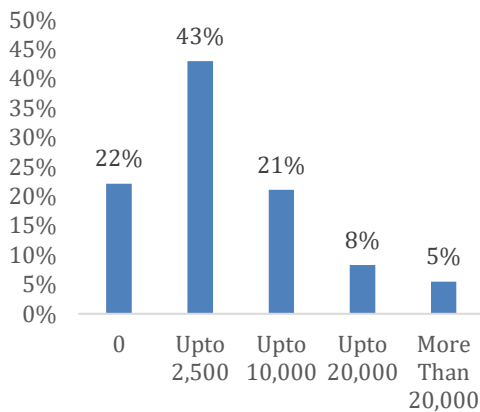
Almost 20% respondents expressed that they don't want to comply with odd-even policy.



## How much is clean air worth?

How much are you willing to spend annually to breathe clean air?

- ₹0
- upto ₹2,500
- upto ₹10,000
- upto ₹20,000
- More than ₹20,000



This question aims to capture people's willingness to pay to improve air quality or how much is clean air worth to them. 22% respondents' willingness to pay was recorded as zero. This means that they don't want to pay anything for air pollution and possibly think that it is the government's responsibility to ensure that the air they breathe is safe and clean, and that it's a fundamental right. This section could also include those who are air pollution sceptics and don't perceive it as a real problem.

43% respondents are willing to spend up to Rs 2,500 per annum to limit exposure to unbreathable air. Fewer number of respondents indicated greater willingness to pay. 21%, 8% and 5% respondents subscribed to the willingness to pay up to Rs 10,000, Rs 20,000 and more than Rs 20,000 respectively.

Upon analysis, people's willingness to pay is estimated to be Rs 5,822 per capita. This can be put in an interesting comparative perspective when analysed against the backdrop of economic burden of air pollution. It can be estimated from an IIT Bombay study that every Delhiite bears Rs 21,894 in terms of economic burden due to air pollution.<sup>1</sup> People are severely undervaluing their health or simply do not have the economic means to be able to pay such a large sum, even if they care, due to economic constraints.

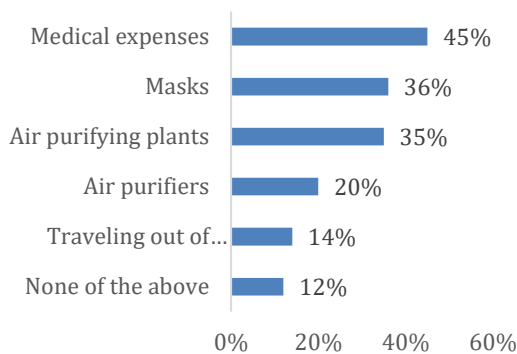
<sup>1</sup> <https://www.orfonline.org/expert-speak/air-pollution-in-delhi-policy-people-and-perception-51615/>



## Adapting to the Air Pollution Crisis. Are efforts preventive or reactive?

**Did you have to spend on any of the following to deal with air pollution?**

- Air purifiers
- Masks
- Air purifying plants
- Medical expenses
- Traveling out of Delhi during peak pollution period
- None of the above



This question is in tandem with the previous one. After understanding what kind of money people are willing to spend in order to breathe cleaner air, we now look at the means of doing so. Investing in masks, purifiers, medical expenses, travel to avoid air pollution are all additional expenses incurred by the common man. This question aims to draw out insights on how people are divided between reactive and preventive measure with respect to air pollution.

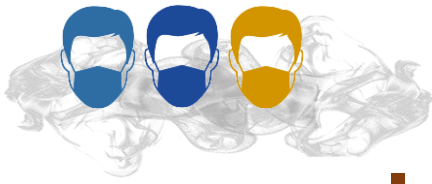
Almost 45% of the respondents have spent on medical expenses to deal with ailments typically caused by or

aggravated by air pollution. The question worth asking here is how much of this money could be diverted towards more productive activities if cheaper preventive measure were taken.

36% of the respondents did indeed spend on masks and 20% spent on air purifiers, preventive aids to limit exposure polluted air. These results are interesting as they can be correlated with 26% of those who indicated that they used aids such as air purifiers and masks. In this case, it is likely that a section of respondents uses both aforementioned aids. A large section of respondents (35%) spend on indoor air purifying plants.

Even though only 14% respondents formed this class but indicating an interesting emerging trend where Delhiites are also choosing to travel outside Delhi during peak pollution periods.





# Implications & Way Forward

- Youth of the city is perhaps the biggest stakeholder in the air pollution crisis in Delhi and naturally is heavily invested in it. In the face of this adversity, a sense of helplessness enfolds these youngsters as a majority of them feel ill-equipped to deal with the health crisis at hand. There is an opportunity to leverage youth's concerns and energy towards a paradigm shift in steering the goal towards lowering pollution levels.
- The crisis has painted a bleak future for Delhiites, especially the children living in the city, that are left vulnerable to the harmful effects of air pollution. 95% of the respondents that have children under 10 years of age and on average one in every two people living in the city suffers from ailments caused or aggravated due to air pollution. In a country where medical services anyway shortfall the need, we are staring at an exponential increase in need for medical services due air pollution caused ailments. While focusing on mitigation activities, public healthcare services will have to be strengthened.
- According to the survey results, 45% of the respondents are paying medical bills incurred due to air pollution. These efforts need to be turned into preventive measures in order to minimize exposure and health risk. This can potentially lead to a significant economic burden. Measures must be taken to turn this reactive measure into preventive one.
- Despite the hype surrounding the air pollution crisis which has shed considerable light on the current scenario in the capital, there isn't much awareness around indoor air pollution. A more thorough awareness program is needed to educate people on this as people spend more than 80% of the day indoors.
- While mitigation in the air pollution crisis is critical, it is not very realistic to see results overnight. In the meantime, one should also focus on adaptation measures seriously to minimize health impacts. The government must also provide subsidies on preventive aids wherever possible to facilitate reach and affordability for all.
- Government has put a number of policies in place in order to fight air pollution in Delhi. People's inability to identify with these policies is setting them up for failure. Simply put, they cannot follow a policy they don't relate with. Awareness campaigns on educating people on existing policies is imperative. An aggressive approach, as adopted earlier in case of polio, malaria and dengue campaigns, need to take place in order to warrant the same level of attention from the people.
- The insights derived from willingness to pay show that the average citizen of Delhi undervalues clean air and the impact air pollution would have on their health. Thus, further highlighting the need to educate and create awareness for the people.

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